ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ

MÜHENDİSLİK FAKÜLTESİ

ÇEVRE MÜHENDİSLİĞİ

2024 YILI ÖZ DEĞERLENDİRME RAPORU

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2025

İçindekiler

ÖZDEĞERLENDİRME RAPORU

A. Programa İlişkin Genel Bilgiler

1. İletişim Bilgileri

Bölüm Başkanı Prof.Dr. Çetin KANTAR. Adres: Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümü Terzioğlu Yerleşkesi 17020 Merkez – ÇANAKKALE. Mail adresi ckantar@comu.edu.tr.

2. Program Başlıkları

Toplam 240 AKTS ders yükünü başarıyla tamamlayan, 4,00 üzerinden en az 2,00 ağırlıklı not ortalamasına sahip ve zorunlu stajını tamamlayan öğrencilere Çevre Mühendisi lisans diploması verilmektedir. Bologna süreci kapsamında mezunlarımıza İngilizce 'Diploma Eki' verilmektedir.

3. Programın Türü

Çanakkale Onsekiz Mart Üniversitesi 1992 yılında kurulmuştur. 2004 yılında açılan Çevre Mühendisliği bölümü lisansüstü eğitim ve öğretim faaliyetlerine 2006–2007 Eğitim-Öğretim yılında, lisans eğitimine ise 2007–2008 Eğitim-Öğretim yılında normal eğitim olarakbaşlamıştır.

4. Programdaki Eğitim Dili

2012 yılında Türkçe Çevre Mühendisliği lisans programı kapatılarak, lisans düzeyinde eğitim dili %100 İngilizce olarak uygulanmaya başlanmıştır.

5. Programın Kısa Tarihçesi ve Değişiklikler

Çanakkale Onsekiz Mart Üniversitesi 1992 yılında kurulmuştur. 2004 yılında açılan Çevre Mühendisliği bölümü lisansüstü eğitim ve öğretim faaliyetlerine 2006–2007 Eğitim-Öğretim yılında, lisans eğitimine ise 2007–2008 Eğitim-Öğretim yılında başlamıştır. Program hakkında detaylı bilgiye http://cevre.muhendislik.comu.edu.tr/ adresinden ulaşılabilmektedir. 2012 yılında Türkçe Çevre Mühendisliği lisans programı kapatılarak, lisans düzeyinde eğitim dili %100 İngilizce olarak uygulanmaya başlanmıştır. Çevre Mühendisliği (İngilizce) Lisans Programımız MÜDEK tarafından 1 Mayıs 2019-30 Eylül 2025 tarihleri arasında geçerli olmak üzere akredite edilmiştir.
Bölümümüz 5 profesör, 1 doktor öğretim üyesi ve 1 araştırma görevlisi doktor ve 2 araştırma görevlisi ile eğitim-öğretim ve araştırma faaliyetlerini sürdürmektedir. Bölümümüzde idari işler 1 sekreter tarafından yürütülmektedir.

6. Önceki Yetersizliklerin ve Gözlemlerin Giderilmesi Amacıyla Alınan Önlemler

Çevre Mühendisliği (İngilizce) Lisans Programımız MÜDEK tarafından 1 Mayıs 2019-30 Eylül 2025 tarihleri arasında geçerli olmak üzere akredite edilmiştir .

B. Değerlendirme Özeti

Ölçüt 1. Öğrenciler

1.1 Öğrenci Kabulleri

Bölümümüze öğrenci kabulü YÖK tarafından belirlenen yönetmelikler çerçevesinde, Öğrenci Seçme ve Yerleştirme Sınavı (YKS) sayısal puan türü ile yapılmaktadır. Çevre Mühendisliği Lisans Programı 2007–2008 Eğitim-Öğretim yılında öğretime Türkçe program ile başlamış ve ilk lisans mezunlarını 2010–2011 döneminde vermiştir. 2012-2013 Eğitim-Öğretim yılında lisans programını İngilizce (%100) olarak uygulamaya başlayan Bölümümüz, bu programdan ilk mezunlarını 2016-2017 akademik yılında vermiştir.

Bölümümüz giriş puanları (en düşük/en yüksek) ve kontenjanları Tablo 1.1'de verilmiştir.

Tablo 1.1. Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği giriş puanları (en düşük/en yüksek) ve kontenjanları

Akademik Yıl	Puan (MF4)		Kayıt Yaptıran Öğrenci Sayısı
	En Düşük	En Yüksek	
2019-2020	289.289	306.122	8
2020-2021	308.690	347.416	3
2021-2022	297.257	368.333	8
2022-2023	308.3	351.025	15
2023-2024	337.722	369.115	19

Bir eğitim-öğretim yılında lisans programları için mevcut olan ders ve uygulama kredisi toplamı 240 AKTS'dir. Derslerin kredisi, öğrencilerin çalışma yükleri de hesaplanarak AKTS kredisi olarak belirlenmektedir. Toplam 240 AKTS ders yükünü başarıyla tamamlayan, 4,00 üzerinden en az 2,00 ağırlıklı not ortalamasına sahip ve zorunlu stajını tamamlayan öğrencilere Çevre Mühendisi lisans diploması verilmektedir. Bologna süreci kapsamında mezunlarımıza İngilizce 'Diploma Eki' verilmektedir.

1.2 Yatay ve Dikey Geçişler, Çift Anadal ve Ders Sayma

Yatay Geçiş

Herhangi bir yükseköğretim kurumundan ÇOMÜ'ye yatay geçiş veya ÇOMÜ'nün herhangi bir programına kayıtlı öğrencinin diğer bir programa yatay geçişinde 24/4/2010 tarihli ve 27561 sayılı Resmî Gazete'de yayımlanan Yükseköğretim Kurumlarında Ön lisans ve Lisans Düzeyindeki Programlar Arasında Geçiş, Çift Anadal, Yan Dal ile Kurumlar Arası Kredi Transferi Yapılması Esaslarına İlişkin Yönetmelik hükümlerine dayanılarak hazırlanan yönerge kullanılmaktadır. Bölümümüz lisans programı dili %100 İngilizce olduğu için yatay geçiş yapacak adayların ÇOMU tarafından yapılan yabancı dil hazırlık sınıfı yeterlilik sınavından başarılı olmaları ya da ulusal veya uluslararası geçerliliği olan yabancı dil sınavlarından ilgili yükseköğretim kurumunun belirlediği başarı düzeyinde bir puan almaları gerekmektedir. Diğer yükseköğretim kurumlarının ikinci öğretim programlarından sadece Üniversitenin denk ikinci öğretim programlarına yatay geçiş yapılabilir. Ancak ikinci öğretim programlarından başarı bakımından bulunduğu sınıfın ilk %10'una girerek bir üst sınıfa geçen öğrenciler birinci öğretim programlarına kontenjan dâhilinde yatay geçiş yapabilirler. Başvurular, adayların genel not ortalaması, farklı puan türlerindeki programlara geçiş için merkezi yerleştirme puanı ve eğer varsa geçmek istediği programın ortak derslerindeki başarısı dikkate alınarak, üniversite senatosu tarafından belirlenmiş olan kriterlere göre değerlendirilir ve ayrılan kontenjana göre geçiş sağlanır. Kurumlar arası yatay geçiş kontenjanları YÖK tarafından belirlenirken, kurum içi yatay geçiş kontenjanları üniversite yönetim kurulu tarafından belirlenmektedir. Çanakkale Onsekiz Mart Üniversitesi içinde yatay geçişte öğrenciler, eğitim-öğretim süreleri içinde, bulundukları ve/veya diğer akademik birimlerde bulunan eşdeğer düzeydeki programlara Senato tarafından belirlenen esaslar ve kontenjanlar dâhilinde başvurabilmektedirler. Yatay geçiş yapan öğrencilerin öğrenim sürelerinin hesabında, öğrencilerin gelmiş olduğu kurumda geçirmiş olduğu süreler de hesaba katılır. Toplam süre, kanunla belirtilen süreyi aşamaz.

Bölüm muafiyet komisyonu öğrencinin daha önceki dönemlerde aldığı dersler ile yatay geçiş yaptığı programın derslerini dikkate alarak, senatonun belirlediği esaslara göre öğrencinin hangi yarıyıla veya sınıfa intibak ettirileceğini tespit eder, varsa öğrencinin alması gereken ilave derslerden oluşan bir intibak programı ile muaf tutulması gereken dersleri belirler.

Dikey Geçiş

Meslek yüksekokulları ve açıköğretim ön lisans programlarından mezun olan başarılı öğrenciler ÖSYM tarafından yapılan Dikey Geçiş Sınavı (DGS) ile örgün eğitim lisans programlarına geçiş yapabilmektedir. Meslek yüksekokulları mezunlarının lisans programına kabulleri, 19/2/2002 tarihli ve 24676 sayılı Resmî Gazete'de yayımlanan Meslek Yüksekokulları ve Açıköğretim Ön Lisans Programları Mezunlarının Lisans Öğrenimine Devamları Hakkında Yönetmelik hükümlerine göre ve ilgili Yönetim Kurullarınca kararlaştırılır. 2017 DGS tercih kılavuzuna göre Çevre, Çevre Kirlenmesi ve Kontrolü, Çevre Koruma ve Kontrol, Çevre Koruma, Çevre Sağlığı, Çevre Temizlik Hizmetleri, Çevre Temizliği ve Denetimi, Kimya ve Kimya Teknolojisi, Harita ve Kadastro/Harita-Kadastro/Harita Kadastro, Harita Teknikerliği gibi ön lisans programlarından mezun olanlar, Çevre Mühendisliği lisans programını tercih edebilmektedir.

Çift Anadal

Çift anadal veya yandal programları, ilgili Yönetim Kurulunun önerisi ile Senato tarafından açılır ve birimlerin işbirliği ile yürütülür. Çift anadal ve yandal programlarında eğitim-öğretim, 24/4/2010 tarihli ve 27561 sayılı Resmî Gazete'de yayımlanan Yükseköğretim Kurumlarında Önlisans ve Lisans Düzeyindeki Programlar Arasında Geçiş, Çift Anadal, Yan Dal ile Kurumlar Arası Kredi Transferi Yapılması Esaslarına İlişkin Yönetmelik hükümleri ile Senato tarafından belirlenen esaslara göre yapılmaktadır. Yatay ve dikey geçişle öğrenci kabulü, çift ana dal, yan dal uygulamaları hakkında daha ayrıntılı bilgi, http://www.comu.edu.tr adresindeki yönerge, ilke ve esaslar kısmında bulunmaktadır. Çift Anadal kapsamında, 2011 yılından önce Çevre Mühendisliği Programı ile fakülteye bağlı Gıda, Jeoloji veya Jeofizik Mühendisliği bölümleri arasında Çift Ana Dal ve Yan Dal Programı uygulanmaktaydı. Ancak, Çevre Mühendisliği Bölümü Mühendislik Fakültesi içerisinde %100 İngilizce eğitim yapan tek bölüm olduğu için

2011-2012 Eğitim-Öğretim yılından itibaren Çift Anadal/Yan Dal programı uygulanamamaktadır.

1.3 Öğrenci Değişimi

Bölümümüzdeki öğrenciler, yabancı dil, mülakat, not ortalaması gibi istenen şartları yerine getirdikleri takdirde lisans eğitimlerinin belirli bir döneminde başka bir yükseköğretim kurumunda yurtiçi (FARABİ) ve yurtdışı (ERASMUS+) öğrenci programları ile eğitim görebilirler. ERASMUS+ öğrenci programı sayesinde, öğrenciler yurt dışı deneyimi edinerek; bölümlerine, mesleklerine ve genel anlamda hayata değişik bir çerçeveden bakarak yaşam boyu eğitim bilincini kendilerine kazandırmış olmaktadırlar. Çanakkale Onsekiz Mart Üniversitesi öğrencileri, Avrupa Birliği Eğitim ve Gençlik Programları kapsamında yer alan ERASMUS Programı çerçevesindeki eğitim-öğretim faaliyetleri üniversite bünyesinde bulunan ERASMUS Koordinatörlüğü tarafından yürütülmektedir. Bölümümüzde ise ERASMUS programı ile ilgili işleri yürütmekle görevli bir ERASMUS Koordinatörü bulunmaktadır. ERASMUS programından yararlanabilme koşulları, ERASMUS Koordinatörlüğünün internet sayfasında bulunan "Erasmus Programı Öğrenim Hareketliliği Öğrenci Seçimi" bölümünde verilmiştir. Başvuru şartlarına ve ayrıntılı bilgiye http://erasmus.comu.edu.tr/ogrenim-secimsartlari.html internet adresinden ulaşılabilmektedir.

Tablo 1.2. Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümünün anlaşmalı olduğu üniversiteler

Ülke	Üniversite ismi	Değişim öğrencisi sayısı	Maksimum süre (ay)	Ders verme hareketliliği akademisyen sayısı	Maksimum süre (hafta)
Polonya	Lublin University of Technology	2	5	2	1
Çekya	Univerzita Jana Evangelisty Purkyne v Usti nad Labem	3	5	4	1
Polonya	Wroclaw University of Environmental and Life Sciences	2	5	1	1
Romanya	University of Oradea	2	5	2	2
Almanya	Hochschule für Angewandten Wissenschaften Hamburg	2	5	1	1
Letonya	University of Latvia	1	5	1	1

Bu programdan yılda en az 2 öğrencimiz anlaşmalı olduğumuz kurumlarda misafir öğrenci olarak öğrenim görebilmektedir. Gerek ülke çeşitliliği gerekse sayı bakımından kontenjanlarımızın yeterliliği göz önüne alındığında akademik yetkinlikleri yüksek olan

öğrencilerimizin yurtdışında bu programdan ilerdeki dönemde daha yüksek oranda yararlanmaları mümkün olacaktır.

1.4 Danışmanlık ve İzleme

Öğrenciler Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümü'ne kayıt yaptırdıkları tarihten itibaren akademik danışmanlık hizmetinden faydalanırlar. Bölüme kayıt olan her lisans öğrencisine öğrenim süresince eğitim-öğretim ve diğer hususlarda yardımcı olmak ve durumunu izlemek üzere öğretim üyeleri arasından tam zamanlı bir akademik danışman görevlendirilmektedir. Akademik danışmanlık hizmeti, danışmanlığı yapılan öğrencilerin mezuniyetine kadar devam eder. Özel durumlar ve zorunlu haller dışında (sağlık sorunları, yurt dışı görevlendirmeleri vb) danışman değişikliği yapılmaz. Çevre Mühendisliği Bölümü'nde öğrenciler danışmanlarıyla istedikleri zaman görüşme şansına sahip olsalar da, danışmanlar tarafından ayrıca haftalık danışmanlık saatleri ofis kapılarına asılmak suretiyle de duyurulmaktadır. Bölüme yeni kayıt olan öğrenciler, üniversitenin/bölümün tanıtıldığı etkinliklere katılırlar. Çevre Mühendisliği Bölümü'nde her akademik yılbaşında duyuru yapılarak oryantasyon sunumları yapılmaktadır. Oryantasyona katılımlarının sağlanması ve takibi, akademik danışman tarafından yapılır. Ayrıca staj için verilen iş güvenliği eğitimlerine ek olarak laboratuvar derslerinden önce iş güvenliği için eğitim seminerleri düzenlenmektedir.
Bölüm Kurulu tarafından atanan akademik danışmanlar, bölüm başkanı ile koordineli olarak çalışmaktadır. Akademik danışmanlık hizmetleri; ders seçimi konusunda öğrencilerin yönlendirilmesi, öğrencilerin başarılarının izlenmesi, sosyal gelişim ve üniversite yaşamına kolay uyum sağlaması, yönetim ile iletişimin sağlanması ve özel problemler gibi konularda verilmektedir. Öğrenciler ders kayıtlarını internet ortamında yapmakta ve kayıtların kontrolü akademik danışmanları tarafından yapılmaktadır. Danışman onayları da internet üzerinden yapılmaktadır. Öğrenci onayından sonra, danışman onay verirken öncelikle öğrencinin almak zorunda olduğu dersleri seçip seçmediğine, ders alma işlemi sırasında kredi sınırını aşıp aşmadığına, seçmeli dersler için uyulması gereken kısıtlara uyup uymadığına vb. bakarak onay işlemini tamamlar. Bu durumlara uymayan bir konu varsa öğrenciyi uyarır. Eğer, öğrencinin uymadığını veya verilen uyarıyı görmediğini tespit ederse kendisi de doğrudan düzeltme yapabilir. Öğrencinin akademik başarısı, Öğrenci İşleri Bilgi Sistemi (UBYS) yardımı ile internet üzerinden (http://ubys.comu.edu.tr/) takip edilmektedir. Ayrıca, her bir öğretim üyesinin vermiş olduğu dersler için hazırladığı ders değerlendirme dosyaları da, öğrencilerin akademik başarısını takip etmek için akademik danışmanları tarafından istenildiği zaman incelenebilmekte ve öğrenciye gerekli uyarılar yapılmaktadır.
Öğrencilere kariyer planlamalarında model ve yardımcı olabilmesi için çeşitli uzmanlık alanlarında seminerler bölümde düzenlenmektedir
(http://cevre.muhendislik.comu.edu.tr/kaliteguvencesi/etkinlikler.html).
Ayrıca Çanakkale ve diğer illerde bulunan çeşitli liselerden ÇOMÜ Mühendislik Fakültesi Dekanlığına veya Bölüme doğrudan gelen istekler üzerine bölüm öğretim elemanlarınca çevre mühendisliği eğitimi ve mesleği hakkında bilgi ile iş yaşamında gerekli olan bilgi, yetenek ve davranış biçimleri, iş olanakları tanıtılmaktadır. Öğrenciler, üniversite ve bölümle ilgili duyuruları üniversitenin ve fakültenin internet sayfasından ve sürekli güncellenen ilan panolarından takip etme imkanına sahiptirler. Öğrencilerin gereksinim duydukları bilgiler, bölümün internet sitesinde (http://cevre.muhendislik.comu.edu.tr) sürekli olarak güncellenmektedir. Bölümün tanıtımı için internet sayfasından broşüre
(https://cdn.comu.edu.tr/cms/muhendislik.cevre/files/289-bolum-brosur.pdf) ulaşabilmektedir.

Öğrenci Bilgilerinin İzlenmesi

Çanakkale Onsekiz Mart Üniversitesi Rektörlüğü tarafından yürütülen öğrenci işleri otomasyon çalışmaları kapsamında "Kampüs Bilgi Sistemi"ne geçilmiştir. Bu sistem sayesinde öğrenci işleri, öğrenci ve danışman her türlü bilgiye internet ortamında ulaşabilmektedir. Öğrencilerin kimlik bilgileri, aldıkları dersler, başarı durumları, staj durumları vb. tüm bilgileri bilişim sisteminden izlenmektedir. Öğrenci işleri görevlileri, öğretim üyeleri, akademik danışmanlar ve

öğrenciler çeşitli düzeylerde yetkilendirilerek internetten veri girişi, veri kaydı ve çıktı alabilmektedir. Üniversitenin Örgün Öğrenci Hizmetleri tam otomatik bir sistem olduğundan, öğrencilerin dönemlik ders yükleri gibi konularda danışmanın gözünden kaçabilecek ayrıntılar, sistem üzerinden takip edilebilmekte, danışmanlık sırasında verilen derslerin yönetmeliklere uygunluğu ise Fakülte Öğrenci İşleri tarafından kontrol edilmektedir.

Öğrenci Temsilciliği

Bölümümüzde; öğrenci-öğretim elemanı iletişimini artırmak, öğrencilerin sorunlarını, görüş ve düşüncelerini fakülte/bölüm yönetim organlarına ileterek öğrencileri temsil etmek, öğrencilerin kendi bünyesinde tartışıp netleşen tekliflerini bölüm kuruluna veya danışmanlarına aktarmak üzere Öğrenci Temsilciliği bulunmaktadır. (www.otk.comu.edu.tr) Kurula katılan öğrenciler eğitim-öğretim ve öğrencilerle ilgili konularda görüşlerini sunabilmektedir. Bölüm öğrenci temsilcileri "Çanakkale Onsekiz Mart Üniversitesi Öğrenci Konseyi Seçimi ve Çalışma Esasları Yönergesi" kapsamında 2 yıllık bir süre için seçilmektedir.

Yeni Öğrencilerin Yönlendirilmesi

ÖSYM tarafından lisans programına yerleşen öğrenciler kayıt yaptırırken, mühendislik fakültesi kayıt birimlerinin yanında, Çevre Mühendisliği Bölümü'nden bir öğretim elemanı da görevlendirilmekte ve kayıt aşamasında yeni kayıt olan öğrencilere bölüm ile ilgili bilgiler vererek gerekli yönlendirmeleri yapmaktadır. Ayrıca yeni kayıt olan öğrenciler için oryantasyon programı düzenlenmektedir. Bu şekilde öğrenciler; bölüm öğretim üyeleri, alacakları dersler ve kariyer planlaması konularında bilgilendirilmektedir. Ayrıca öğrencilerin sorunlarını çözmeye yönelik, Sağlık, Kültür ve Spor Daire Başkanlığına bağlı birimler bulunmaktadır. Bu birimler, daire başkanlığına bağlı kültür ve spor şubeleriyle işbirliği içindedir. Üniversitemiz kampüsünde hizmet veren Psikolojik Danışmanlık ve Rehberlik birimi mevcuttur. Psikolojik danışmanlık; başta arkadaş ve grup iletişim problemleri, uyum problemleri ve stresle başa çıkma çalışmaları konuları üzerinde yapılmaktadır. Birimin rehberlik hizmetleri ise, üniversite ortamına uyum sürecindeki güçlüklerin giderilmesi, öğrenci-aile ilişkileri, barınma sorununu çözme, gereksinimi olan öğrencilere yemek, giysi yardımı, yerleşke içi ve dışı yarı zamanlı iş bulma ile çeşitli özel ya da kamu kuruluşlarından burs sağlama gibi konular üzerinedir.

1.5 Başarı Değerlendirmesi

Çevre Mühendisliği Bölümü'nde ÇOMÜ Lisans Eğitim-Öğretim ve Sınav Yönetmeliğine göre ders geçme esasına dayalı bir sistem uygulanmaktadır. Yönetmelik gereği olarak sınavlar; ara sınav, yarıyıl sonu sınavı, bütünleme sınavı, mazeret sınavı ve tek ders sınavlarından oluşmaktadır.

a) Ara sınavlar; ilgili eğitim-öğretim programında öngörülen derslerden yarıyıl içinde yapılan ara sınav/sınavlar ve/veya ders içinde yapılan kısa süreli sınavlar, ödevler, öğrencinin becerilerine dayanan uygulamalar ve benzeri dönem içi çalışmalardır. Bölümde her yarıyılda en az bir ara sınav uygulanmaktadır. Yarıyıl başında, dönem içi sınavların şekli ve ders başarı notundaki ağırlığı öğretim elemanının teklifi ve bölüm başkanlığının onayıyla ders bilgi formunda ilan edilmektedir. Ara sınav programı; her yarıyılın ilk dört haftası içinde derslerden sorumlu öğretim elemanlarının görüşü alınarak bölüm başkanlığı tarafından ilan edilmektedir. Ara sınav notları yarıyıl sonu sınavlarından en az iki hafta önce ilgili dersi alan öğrencilere OBS üzerinden ilan edilmektedir.

b) Yarıyıl sonu sınavları; en az on dört haftalık eğitim-öğretim döneminden sonraki iki hafta içerisinde yapılan sınavlardır. Her ders için yarıyıl sonu sınavı yapılır. Bir dersin uygulamalı ders olması durumunda, teorik ile uygulamanın yarıyıl sonunda ayrı sınavlarla veya tek sınavla değerlendirilmesine öğretim elemanının teklifi ve bölüm başkanlığının onayıyla karar verilir ve yarıyıl başında ders bilgi formunda ilan edilir. Yarıyıl sonu sınavına katılmayan öğrenciler o dersten başarısız sayılır ve notu FF olarak verilir. Yarıyıl sonu sınav programları, Çevre Mühendisliği Bölüm Başkanlığınca görevlendirilen bir öğretim elemanı tarafından hazırlanır. Yarıyıl sınav programı sınavlardan en az iki hafta önce ilan edilmektedir. Yarıyıl sonu sınavı için mazeret sınavı yapılmamaktadır.

c) Bütünleme sınavları; yarıyıl sonu sınavından sonra yapılan sınavdır. Bütünleme sınavı, yarıyıl sonu sınavına girme hakkını kazanıp da bu sınavlara mazeretli veya mazeretsiz girmeyen öğrencilerle, girip de başarısız duruma düşen öğrencilerin girebildiği bir sınavdır. Bütünleme sınavına girmeyen öğrencilerin yarıyıl sonu sınavları sonunda oluşan başarı notları aynen kalmakta ve bu öğrencilere ayrıca bir sınav açılmamaktadır. Bütünleme sınavları yarıyıl sonu sınavlarının bitiminden itibaren bir hafta sonra yapılmaktadır. Bütünleme sınavları için mazeret sınavı yapılmamaktadır. Yarıyıl sonu başarı notu DD ve üzeri olan öğrenciler bütünleme sınavına alınmamaktadır.
ç) Mazeret sınavları; haklı ve geçerli nedenlere dayalı mazereti nedeniyle ara sınava katılmayan ve sınavdan sonraki bir hafta içerisinde durumunu belgeleyen öğrencilerin mazeretlerinin Mühendislik Fakültesi Yönetim kurullarınca kabul edilmesi halinde, öğrencinin katılmadığı ara sınavlar o yarıyıl içinde Fakülte Yönetim Kurulunun belirlediği tarihler arasında yapılan sınavdır. Mazeret sınavı hakkı, sadece ara sınavlar için verilmektedir. Mazeret sınavına girebilme koşulları ve sınavın uygulanmasında ÇOMÜ Lisans Eğitim-Öğretim ve Sınav Yönetmeliğinin 24. madde hükümleri esas alınmaktadır. Mazeret sınavlarına herhangi bir nedenle girmeyen öğrencilere, tekrar mazeret sınavı yapılmamaktadır.
d) Tek ders sınavları; diğer derslerden başarılı oldukları halde sadece bir dersten başarısız olmaları nedeniyle mezun olamayan öğrencilere bir yarıyılda sadece bir defaya mahsus olmak üzere, Mühendislik Fakültesi Yönetim Kurulu kararı ile dönem sonunda yapılan sınavdır. Bu sınava öğrencilerin girebilmeleri için dersin dönem içindeki ödev, staj, devam gibi gerekliliklerini yerine getirmeleri gerekmektedir. Sınavların yazılı olması esastır. Ancak, öğretim elemanının talebi, Çevre Mühendisliği Bölüm Kurulu'nun onayıyla ve yarıyıl başında ders bilgi formunda ilan edilmek koşuluyla, sınavlar, sözlü ve/veya uygulamalı olarak da yapılabilmektedir.
Sınav sonuçları akademik takvimde yarıyıl sonu başarı notlarının internet üzerinden girilmesini belirleyen tarihi takiben on beş gün içinde ilgili öğretim elemanı tarafından Bölüm Başkanlığı'na verilmektedir. Sınav kâğıtları ve tutanaklarından oluşan belgeler ile öğrencinin başarı notunun belirlenmesinde katkıda bulunan diğer belgeler, Fakülte Yönetim Kurulunca daha uzun süre saklanması öngörülmedikçe, son işlem gördükleri tarihten başlayarak, dersin sorumlu öğretim üyesi tarafından iki hafta içerisinde mühürlü bir şekilde Bölüm Başkanlığı aracılığı ile Mühendislik Fakültesi Dekanlığına teslim edilmektedir. Bu belgeler Dekanlık tarafından iki yıl süreyle saklanır ve bu süre sonunda usulüne göre imha edilmektedir.
Ara sınav sonuçları, dersin sorumlu öğretim elemanı tarafından yarıyıl sonu sınavından en az iki hafta önce, yılsonu sınavları için ise akademik takvimde belirlenen tarihlerde OBS üzerinden ilan edilmektedir. Sınav kâğıtları ve tutanaklarından oluşan belgeler ile öğrencinin başarı notunun belirlenmesinde katkıda bulunan diğer belgeler ÇOMÜ Lisans Eğitim-Öğretim ve Sınav Yönetmeliğinin 23. maddesine göre işlem görmektedir.
Öğrenci; sınav sonuçlarının duyurulmasından itibaren en geç bir hafta içinde Fakülte Dekanlığına bir dilekçe ile başvurarak sınav kağıdının yeniden incelenmesini talep edebilmektedir. Dekanlık maddi bir hata yapılıp yapılmadığının belirlenmesi için sınav kağıdını ilgili bölüm başkanlığı aracılığıyla dersin sorumlu öğretim elemanına inceletir ve sonucu öğrenciye tebliğ eder. Öğrencinin itirazının devamı halinde; Fakülte Yönetim Kurulu kararı ile sorumlu öğretim elemanının dahil olmadığı, eş veya daha yüksek akademik unvanda öğretim elemanlarından oluşan en az üç kişilik bir komisyonda cevap anahtarıyla ve/veya diğer sınav kağıtları ve dokümanları ile karşılaştırmalı olarak yeniden esastan inceleme yapılmaktadır. Not değişiklikleri Fakülte Yönetim Kurulu kararı ile kesinleşir. Fakülte Yönetim Kurulu kararı, Öğrenci İşleri Daire Başkanlığı'na bildirilmektedir. Öğrencinin başarı notu; 100 puan üzerinden verilen dönem içi eğitim öğretim etkinliklerinden (ara sınav/sınavlar, uygulama, staj, seminer, proje, ödev, laboratuvar vb.) alınan notların ortalamasının %40'ı ve yarıyıl sonu veya bütünleme sınav notunun %60'ı alınıp toplanarak hesaplanmaktadır. Başarı Notu Değerlendirme Tablosu'nu Harf Notu ve AKTS notu şeklinde vermektedir. Öğrencinin bir dersten başarılı sayılabilmesi için diğer şartlara ek olarak o dersin yarıyıl sonu veya bütünleme sınavından en az 50 puan alması

şarttır. Toplam başarı notu 40'ın altında ise FF, 40-49 arasında ise FD harf notu verilir. 2547 sayılı Kanun'un 5 inci maddesinin birinci fıkrasının (ı) bendinde belirtilen ortak zorunlu derslerden alınan (YE) ve (YS) notları ile kredisiz dersler için (DS) notları ağırlıklı not ortalamasının hesabında dikkate alınmamaktadır. Ancak kredili derslerde (DS)'nin karşılığı 0.00 sayılmaktadır. Öğrencilere puanlarına karşılık gelen başarı notundan daha aşağıda bir başarı notu verilememektedir. Başarı notu değerlendirme tablosuna göre kredili dersten bir öğrenci;

a) (AA), (BA), (BB), (CB) veya (CC) notlarından birini almış ise o dersi başarmış sayılmaktadır.

b) (DC) veya (DD) notlarından birini almış ve GNO'su 2.00 ve üzeri ise koşullu başarılı sayılmaktadır.

c) (DC) veya (DD) notlarından birini almış ve GNO'su 2.00'ın altında ise koşullu başarısız sayılmaktadır.

ç) (FD) ve (FF) notlarından birini almış ise başarısız sayılmaktadır.

d) Derse devam koşulunu yerine getirmediyse devamsız (DS) sayılmaktadır.

e) Kredisiz olan dersler ile stajların devamsızlık ve başarı değerlendirmelerinde; (YE) yeterli, (YS) yetersiz, (DS) devamsız sayılmaktadır.

Öğrencilerin başarı durumları, derslerden almış oldukları notlar ve derslerin AKTS kredileri yoluyla hesaplanan Dönem Not Ortalaması (DNO) ve Genel Not Ortalaması (GNO) değerleriyle izlenmektedir. DNO bir yarıyılda alınan derslerin her birinin AKTS kredisi ile bu derslerden alınan notların katsayısının çarpımları toplamının, aynı derslerin AKTS kredi toplamına bölünmesi ile elde edilmektedir. GNO ise tüm yarıyıllarda alınan derslerin her birinin AKTS kredisi ile bu derslerden alınan notların katsayısının çarpımları toplamının, tüm derslerin AKTS kredisi toplamına bölünmesi ile elde edilmektedir.

Bir öğrencinin Çevre Mühendisliği Bölümü'nden mezun olabilmesi için, almakla yükümlü olduğu tüm derslerden ve zorunlu stajlardan başarılı olması, kredisiz derslerden (YE) alması ve dört yıllık lisans mezuniyeti için 240 AKTS kredisi alması zorunludur. GNO'su 2.00 ve üzerinde olan öğrenciler koşullu başarılı derslerden de başarılı kabul edilmektedirler. Bir öğrencinin GNO'su 4 yıllık eğitimin sonunda aynı zamanda mezuniyet not ortalaması olarak işlem görmektedir. Öğrencinin bölümden mezuniyetine, Çevre Mühendisliği Bölüm Kurulu kararları doğrultusunda Fakülte Yönetim Kurulunca karar verilmektedir. Öğrenciler genel akademik ortalamalarını yükseltmek amacıyla bulundukları yarıyılda almaları gereken derslere ek olarak, daha önce aldıkları ve DC veya DD notu ile başarılı sayıldıkları dersleri de, kredi sınırları içinde tekrar alabilmektedir. Ancak, tekrarlanan derslerde en son alınan not geçerli olup, akademik ortalamalara bu not dahil edilmektedir.

ÇOMÜ Lisans Eğitim-Öğretim ve Sınav Yönetmeliğinin 24. maddesi gereği başarılı öğrencilere onur belgeleri verilmektedir. Onur öğrencilerine ilişkin esaslar aşağıda sıralanmıştır;

a) Bulunduğu eğitim-öğretim yılı sonu itibariyle tüm dersleri almak, devam koşulunu yerine getirmek, tüm derslerde en az (DD) almak ve herhangi bir disiplin cezası almamış olmak şartıyla GNO'larına göre kayıtlı her sınıfın birinci, ikinci ve üçüncüsü onur öğrencileri olarak kabul edilmekte ve bu öğrenciler Mühendislik Fakültesi Dekanlığı tarafından öğretim yılı sonunda teşekkür belgesi ile ödüllendirilmektedirler.

b) Normal öğrenim süresi içerisinde tüm dersleri almak, devam koşulunu yerine getirmek, tüm derslerde en az (DD) almak ve herhangi bir disiplin cezası almamış olmak şartıyla GNO'ya göre kayıtlı bulunduğu okulunu (Fakülte) birinci olarak bitiren öğrenciler akademik birim yüksek onur öğrencisi kabul edilir ve bu öğrenciler Rektörlükçe takdir belgesi ile ödüllendirilirler.

c) Normal öğrenim süresi içerisinde tüm dersleri almak, devam koşulunu yerine getirmek, tüm derslerde en az (DD) almak ve herhangi bir disiplin cezası almamış olmak şartıyla GNO'ya göre ÇOMÜ'yü birinci olarak bitiren öğrenci/öğrenciler ÇOMÜ yüksek onur öğrencisi olarak kabul edilir ve bu öğrenci/öğrenciler Rektörlükçe takdir belgesi ile ödüllendirilir.

ç) Üniversite, fakülte/yüksekokul ve meslek yüksekokulu birincileri onur/yüksek onur öğrencileri arasından belirlenmektedir.

1.6 Mezuniyet Koşulları

ÇOMÜ Çevre Mühendisliği Bölümü'nde bir öğrencinin mezuniyetine, Bölüm Kurulu'nun kararları doğrultusunda Mühendislik Fakültesi Yönetim Kurulu karar vermektedir. Programa kayıtlı bir öğrencinin mezuniyet hakkını elde edebilmesi için, programda almakla yükümlü olduğu zorunlu ve seçimlik derslerin (toplam 240 AKTS karşılığı) tümünü başarıyla tamamlaması (DD ve üzerinde not almaları), zorunlu stajlarından (60 iş günlük) başarılı olması, kredisiz derslerden (YE) alması ve genel not ortalamasının 4.00 üzerinden en az 2.00 ağırlıklı not ortalaması elde etmesi gerekmektedir. GNO'su 2.00 ve üzerinde olan öğrenciler koşullu başarılı derslerden de başarılı kabul edilirler. Bir öğrencinin GNO'su aynı zamanda mezuniyet not ortalamasıdır.

Mezuniyet aşamasına gelen öğrencilere mezuniyet onayı verilmeden önce, ÇOMÜ Mühendislik Fakültesi Mezun Öğrenciler için Bölüm Onay Formunun öğrenci tarafından doldurulması ve danışmanların OBS üzerinden transkriptleri kontrol ederek öğrencinin mezuniyeti için yukarıda belirtilen asgari şartları sağlayıp sağlamadığı tespit edilmesi gerekmektedir. Bölüm Onay Formunda öğrencinin yapmış olduğu stajlarla ilgili bir kısım da bulunmaktadır. Bu kısımdaki bilgiler Bölüm Staj Komisyonu tarafından doldurulup onaylanmaktadır. Bölüm Onay Formu, en son şekliyle Öğrenci Danışmanı tarafından onaylandıktan sonra Bölüm Kurul kararıyla Bölüm Başkanlığı tarafından Dekanlığa iletilmektedir. Akademik danışmanlar ve öğrenci işleri tarafından mezun olmak için tüm koşulları yerine getirdiği anlaşılan öğrencilere Mühendislik Fakültesi Yönetim Kurulu kararıyla mezuniyet onayı verilmektedir. Ayrıca mezun olan öğrencilerimize 'Mezuniyet Aşaması Öğrenci Memnuniyet Anketi' doldurtularak bölüm ve üniversite sosyal, kültürel ve bilimsel imkanlarının değerlendirilmesi istenmektedir.

Tablo 1.1 Lisans Öğrencilerinin ÖSYS Derecelerine İlişkin Bilgi

Eğitim-öğretim Yılı(1)	Kontenjan	Kayıt Yaptıran Öğrenci Sayısı	ÖSYS Puanı		ÖSYS Başarı Sırası	
			En yüksek	En düşük	En yüksek	En düşük
[İçinde bulunulan eğitim-öğretim yılı]	20	19	369.12	337.72		
2022-2023	20	15	351.03	308.3		
2021-2022	20	8	368.33	297.26		
2020-2021	20	3	347.42	308.69		
2019-2020	40	8	306.12	289.29		

Notlar:

(1) İçinde bulunulan yıl dahil, son beş yıl için veriniz.

(2) Kurum ziyareti başlangıcından en geç dört hafta önce bu tablonun güncellenmiş sürümü, BBO'da İstenilen Ek Bilgi ve Belgeler dizini altında sunulmalıdır.

Tablo 1.2 Yatay Geçiş, Dikey Geçiş ve Çift Anadal Bilgileri

Eğitim-öğretim Yılı(1), (2)	Programa Yatay Geçiş Yapan Öğrenci Sayısı	Programa Dikey Geçiş Yapan Öğrenci Sayısı	Programda Çift Anadala Başlamış Olan Başka Bölümün Öğrenci Sayısı	Başka Bölümlerde Çift Anadala Başlamış Olan Program Öğrenci Sayısı

[İçinde bulunulan eğitim-öğretim yılı]				
[1 önceki yıl]				
[2 önceki yıl]				
[3 önceki yıl]				
[4 önceki yıl]				

Notlar:

(1) İçinde bulunulan yıl dahil, son beş yıl için veriniz.
(2) Sayılar ilgili eğitim-öğretim yılında geçiş yapmış ya da çift anadala başlamış olan öğrenci sayılarıdır.
(3) Kurum ziyareti başlangıcından en geç dört hafta önce bu tablonun güncellenmiş sürümü, BBO'da İstenilen Ek Bilgi ve Belgeler dizini altında sunulmalıdır.

Tablo 1.3 Öğrenci ve Mezun Sayıları

Eğitim-öğretim Yılı(1)	Hazırlık	Sınıf (2)				Öğrenci Sayıları (3)			Mezun Sayıları (3)		
		1.	2.	3.	4.	L	YL	D	L	YL	D
2023-204									9	2	1
2022-2023									51		0
[2 önceki yıl]											
[3 önceki yıl]											
[4 önceki yıl]											

Notlar:

(1) İçinde bulunulan yıl dahil, son beş yıl için veriniz.
(2) Kurumca tanımlanan "sınıf" kavramını burada açıklayınız.
(3) L: Lisans, YL: Yüksek Lisans, D: Doktora
(4) Kurum ziyareti başlangıcından en geç dört hafta önce bu tablonun güncellenmiş sürümü, BBO'da İstenilen Ek Bilgi ve Belgeler dizini altında sunulmalıdır.

Ölçüt 2. Program Eğitim Amaçları

Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümü'nün program eğitim amaçları, iç ve dış paydaşlardan alınan geri bildirimler, anketler ve mezun izleme sisteminde elde edilen veriler doğrultusunda belirlenmiş ve bölümümüz internet sayfasında (http://cevre.muhendislik.comu.edu.tr/bolum-hakkinda/egitim-amaclari-ve-program-ciktilari.html) yayınlanmıştır.
Mezunlara uygulanan anketler (http://cevre.muhendislik.comu.edu.tr/kaliteguvencesi/anket-dosyasi.html) ve Çevre Mühendisliği İngilizce program mezunlarının bilgilerinin toplandığı mezun öğrenci veri tabanına dayanarak Program Eğitim Amaçları ölçülebilir kavramları içerecek şekilde eğitim amaçları belirlenmiştir. Eğitim amaçları; Bölüm Kurullarında alınan kararlar (Toplantı no 2019/5; 29.03.2019 tarihli), iç ve dış paydaşların katılımıyla gerçekleştirilen 02.04.2019 tarihli Program Güncelleme ve Geliştirme Komisyonu (http://cevre.muhendislik.comu.edu.tr/kaliteguvencesi/program-guncelleme-ve-gelistirme-komisyonu.html) toplantısında (2019/2 nolu toplantı) alınan kararlar doğrultusunda belirlenmiştir.
EA1. Lisans seviyesinde öğrendiği bilgi ve beceriyi başarılı bir şekilde çevre mühendisliği veya ilgili alanlarda profesyonel iş yaşamına ve/veya lisansüstü eğitimine uygulayabilen,
EA2. Kamu ve özel sektörde; katı atık, atıksu, su arıtımı, hava kirliliği, tehlikeli atıkların kontrolü, enerji vb. alanlarda tesis tasarımı, tesis işletimi, danışmanlık, laboratuvar analizi, ölçüm hizmetleri ve çevre yönetimi konuları başta olmak üzere kariyerlerini Çevre Mühendisliği ve ilgili alanlarda devam ettiren,
EA3. Uluslararası platformlarda akademik ve mesleki kariyerlerini sürdüren,
Çevre Mühendislerinin yetiştirilmesidir.

Çağımızın değişen şartlarına adapte olabilme, hayat boyu öğrenmeyi ve gelişmeyi kendine ilke edinen ÇOMÜ Çevre Mühendisliği Bölümü; Program Eğitim Amaçlarının belirlenmesi ve güncellenmesinde gerek ülkemizde gerek dünyada hızlı değişen bilimsel, teknolojik ve ekonomik gelişmeleri, Çevre Mühendisliği alanındaki yenilikleri ile iç ve dış paydaşlarımızın ihtiyaçlarını dikkate almaktadır. Hazırladığımız anketler (Mezun Öğrenci-Eğitim Amaçları Değerlendirme Anketi, İşveren/Yönetici Görüş ve Değerlendirme Anketi) ve yapılan özel toplantılar vasıtasıyla işveren ve mezunlarımızın görüşleri alınıp, bu görüşler önce bölüm kurul ve komisyonlarında değerlendirilmektedir. Yapılan bu ön değerlendirmeler sonucu şekillenen Program Eğitim-Amaçları nihai olarak Program Güncelleme ve Geliştirme Komisyonunda tartışıldıktan sonra yürürlüğe girmektedir.
Program Eğitim Amaçlarında EA1; ‘Lisans seviyesinde öğrendiği bilgi ve beceriyi başarılı bir şekilde çevre mühendisliği veya ilgili alanlarda profesyonel iş yaşamına ve/veya lisansüstü eğitimine uygulayabilen Çevre Mühendislerinin yetiştirilmesidir.’ olarak tanımlanmıştır. Bölümümüz mezunlarından elde ettiğimiz veriler doğrultusunda, mezunlarımızın %38’i çevre mühendisi olarak çalışmakta, %10’u Yüksek Lisans programlarına devam etmekte, % 6’sı ise diğer işlerde çalışmaktadır
Program Eğitim Amaçlarında EA2; ‘Kamu ve özel sektörde; katı atık, atıksu, su arıtımı, hava kirliliği, tehlikeli atıkların kontrolü, enerji vb. alanlarda tesis tasarımı, tesis işletimi, danışmanlık, laboratuvar analizi, ölçüm hizmetleri ve çevre yönetimi konuları başta olmak üzere kariyerlerini Çevre Mühendisliği ve ilgili alanlarda devam ettiren Çevre Mühendislerinin yetiştirilmesidir.’ olarak tanımlanmıştır. Son iki yılda çevre mühendisliği bölümü İngilizce programı mezunlarından elde ettiğimiz veriler doğrultusunda, çevre mühendisi olarak çalışan mezunlarımızın %23’ü danışman, %23’ü çevre yönetiminde, %17’si tehlikeli madde ve güvenlik danışmanlığında, %23’ü belediyelerde, %5’i enerji alanında, %5’i şantiyelerde, %5’i katı atık tesislerinde, %5’i çevre laboratuvarlarında çevre mühendisi olarak profesyonel meslek yaşamlarını sürdürmektedir.

Bu veri ile EA2''de önerdiğimiz eğitim amaçlarının karşılandığı kanıtlanmaktadır. Mezun Memnuniyet Anketi sonuçlarına göre bölümümüz mezunlarının %10'u lisansüstü eğitimlerini tamamlamış veya halen devam etmektedirler. Lisansüstü çalışmalar yürüten mezunlarımız, tez kapsamında yaptıkları çalışmaları ulusal/uluslararası saygın dergilerde makaleye dönüştürmektedirler.
Program Eğitim Amaçlarında EA3; 'Uluslararası platformlarda akademik ve mesleki kariyerlerini sürdüren, Çevre Mühendislerinin yetiştirilmesidir.' olarak tanımlanmıştır. Oluşturulan mezun öğrenci veri bankası doğrultusunda, mezunlarımızın kariyerlerini gerek yurt içinde gerek yurt dışında sürdürdükleri belirlenmiştir. Çalışan mezunlarımızın %78'i yurt içinde, %22'si yurt dışında profesyonel meslek yaşamlarını sürdürmektedir. Bu veri ile EA2''de önerdiğimiz eğitim amaçlarının karşılandığı kanıtlanmaktadır.

2.1 Tanımlanan Program Eğitim Amaçları

EA1. Lisans seviyesinde öğrendiği bilgi ve beceriyi başarılı bir şekilde çevre mühendisliği veya ilgili alanlarda profesyonel iş yaşamına ve/veya lisansüstü eğitimine uygulayabilen,
EA2. Kamu ve özel sektörde; katı atık, atıksu, su arıtımı, hava kirliliği, tehlikeli atıkların kontrolü, enerji vb. alanlarda tesis tasarımı, tesis işletimi, danışmanlık, laboratuvar analizi, ölçüm hizmetleri ve çevre yönetimi konuları başta olmak üzere kariyerlerini Çevre Mühendisliği ve ilgili alanlarda devam ettiren,
EA3. Uluslararası platformlarda akademik ve mesleki kariyerlerini sürdüren,
Çevre Mühendislerinin yetiştirilmesidir.

2.2a Program Eğitim Amaçlarının MÜDEK Tanımına Uyması

Hazırladığımız anketler (Mezun Öğrenci-Eğitim Amaçları Değerlendirme Anketi, İşveren/Yönetici Görüş ve Değerlendirme Anketi) ve yapılan özel toplantılar vasıtasıyla işveren ve mezunlarımızın görüşleri alınıp, bu görüşler önce bölüm kurul ve komisyonlarında değerlendirilmektedir. Yapılan bu ön değerlendirmeler sonucu şekillenen Program Eğitim-Amaçları nihai olarak Program Güncelleme ve Geliştirme Komisyonunda tartışıldıktan sonra yürürlüğe girmektedir ve MÜDEK tanımına uymaktadır.

2.2b Kurum Özgörevleriyle Tutarlılık

Çevre Mühendisliği Program Eğitim Amaçları; iç ve dış paydaşlarımızın görüşleri, bölüm kurul/komisyon kararları, anket sonuçları (İşveren/Yönetici Görüş ve Değerlendirme Anketi ve Mezun Öğrenci Eğitim Amaçlarını Değerlendirme Anketi) ve dekanlık ile rektörlüğün aldığı kararlar doğrultusunda güncellenmektedir.
Çanakkale Onsekiz Mart Üniversitesi, Mühendislik Fakültesi ve Çevre Mühendisliği Bölümünün Özgörev (Misyon) ve Vizyonu Tablo 2.1'de verilmiştir Ayrıca bu özgörevler üniversitenin internet sayfasında yayımlanmıştır.
Çanakkale Onsekiz Mart Üniversitesi Özgörev ve Vizyonu; http://www.comu.edu.tr/misyon-vizyon
Mühendislik Fakültesi Özgörev ve Vizyonu; http://muhendislik.comu.edu.tr/kalite/misyon-ve-vizyon.html
Çevre Mühendisliği Özgörev ve Vizyonu; http://cevre.muhendislik.comu.edu.tr/ adresinde yayımlanmıştır.
Ayrıca, Çevre Mühendisliği Bölüm ofislerinin ve dersliklerin olduğu katta çerçeveli olarak duvarlara asılmıştır.

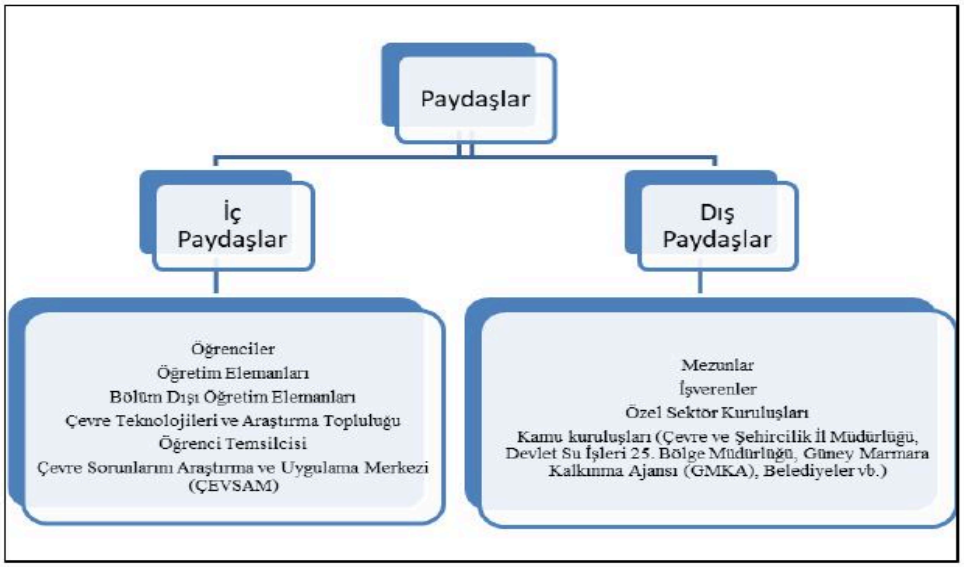
Tablo 2.1. Çanakkale Onsekiz Mart Üniversitesi, Mühendislik Fakültesi ve Çevre Mühendisliği Bölümü Özgörev ve Vizyonu

	Çanakkale Onsekiz Mart Üniversitesi (ÇOMÜ)	**ÇOMÜ Mühendislik Fakültesi**	**ÇOMÜ Çevre Mühendisliği Bölümü**
Özgörev (ÖG)	Eğitim ve öğretimde bilgili, donanımlı, kültürlü ve özgüveni yüksek bireyler yetiştirmeyi hedefleyen (**ÖG1**); bilimsel çalışmalarda uygulamaya dönük, proje odaklı ve çok disiplinli araştırmalar yapma anlayışını benimsemiş (**ÖG2**); paydaşlarıyla sürdürülebilir ilişkileri gözeten; bilgiyi, sevgiyi ve saygıyı Çanakkale'nin tarihi ve zengin dokusuyla harmanlayan(**ÖG3**); **"kalite odaklı, yenilikçi ve girişimci bir üniversite olmak (ÖG4).**	Fakültemiz; Bilgisayar, Gıda, Jeoloji, Jeofizik, Çevre, Harita, Maden ve İnşaat Mühendisliği Bölümleriyle eğitim-öğretim, araştırma ve toplum hizmetleri gibi etkinlikleri gerçekleştirmeyi (**ÖG1**); evrensel ölçekte bilgi üretmeyi ve bölgesel/ulusal ihtiyaçlar doğrultusunda üretilen bilgiyi paylaşmayı (**ÖG2**); güncel pratiğe dayalı mühendislik uygulama becerisine sahip (**ÖG3**); profesyonel ve etik sorumluluklarının farkında olan etkin bir biçimde iletişim kurabilen bireyler yetiştirmeyi amaç edinmiştir (**ÖG4**).	Çevre Mühendisliği Bölümünden aldığı bilgi birikimi ve yenilikçi bakış açısı ile kamu, sanayi ve hizmet sektörlerinde çevre sorunlarının kalıcı çözümü ve yönetimi aşamasında görev alabilecek (**ÖG1**); bilimselliği esas alan, sosyal sorumluluk taşıyan, ulusal ve uluslararası düzeyde iletişim kurabilen (**ÖG2**); girişimci, mesleki etiğe saygılı, ülke ekonomisine katkı sağlayan yetkin mühendisler yetiştirmektir **ÖG3).**

Uzgörüş (Vizyon)	Genç ve dinamik insan varlığıyla; özgürlükçü, yenilikçi ve sürdürülebilir yapısıyla; kurumsal kültüre değer veren ve kalite odaklı gelişmeyi hedef alan yönetim anlayışıyla; bilimsel araştırma, eğitim-öğretim, sanat ve sportif faaliyetleriyle; **"bölgenin en iyi üniversitesi olmak, ülkesinin ve dünyanın güçlü bir bilim kurumu haline gelmek"**	Çanakkale Onsekiz Mart Üniversitesinin temel vizyonu ve Yükseköğretimde yer alan politika ve hedefler doğrultusunda misyonunu başarıyla yerine getiren, nitelikli eğitim gerçekleştiren, uluslararası düzeyde bilgi üreten, bölgesinde öncü ve tercih edilen bir fakülte olmaktır.	Çevre Mühendisliği Bölümünün vizyonu, evrensel değerler ışığında günümüzün bilim ve teknoloji altyapısından yararlanarak toplumun ve endüstrinin ihtiyaçlarına mühendislik prensipleri ışığında cevap veren sürdürülebilir ekonomi perspektifinde lisans ve lisansüstü eğitimi vermek, gerçekleştirdiği araştırma ve uygulama çalışmaları neticesinde ulusal ve uluslararası literatürde yer almak, bilimsel toplantılara katılmak ve bu toplantıları düzenlemektir.

2.2c Program Eğitim Amaçlarını Belirleme Yöntemi

Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümü'nün "Eğitim Amaçları" Bölüm Kurullarında alınan kararlar, iç ve dış paydaşların katılımıyla gerçekleştirilen toplantılar ve Çevre Mühendisliği Bölüm Başkanlığı yönetiminde yapılan anketlerden 'İşveren/Yönetici Görüş ve Değerlendirme Anketi' ve 'Mezun Öğrenci Eğitim Amaçları Değerlendirme Anketleri' vasıtasıyla Program Eğitim Amaçları belirlenmiştir. Çevre Mühendisliği Bölümümüzün iç ve dış paydaşları Şekil 2.1'de gösterilmektedir



Şekil 2.1. ÇOMÜ Çevre Mühendisliği Bölümü İç ve Dış Paydaşlar

i) İç paydaşlar
-Çevre Mühendisliği Bölümü öğretim elemanları
-Programa katkısı olan Çanakkale Onsekiz Mart Üniversitesi öğretim elemanları (Genişletilmiş akademik kurul toplantıları vasıtasıyla)
-Halen lisans düzeyinde öğrenim görmekte olan öğrenciler
-Öğrenci temsilcisi/Öğrenciler
ii) Dış paydaşlar
-Mezun olmuş öğrenciler
-Lisans öğrencilerinin staj yaptıkları firmalar ve kurumlar
-Mezun olan öğrencilerin çalışmakta oldukları kamu ve özel sektör işverenleri Danışma Kurulu üyeleri
(Çevre ve Şehircilik İl Müdürlüğü, Devlet Su İşleri, Güney Marmara Kalkınma Ajansı, Çanakkale Belediyesi, İÇDAŞ) Bölüm Akademik Genel Kurulu (bölümde ders veren bütün öğretim elemanlarının katılımı ile) her dönemin sonunda toplanmakta ve geçen bir dönemin kritiği ile birlikte eksiklikler ve programda yapılması gereken güncellemeler hakkındaki görüşlerini ortaya koymaktadırlar.

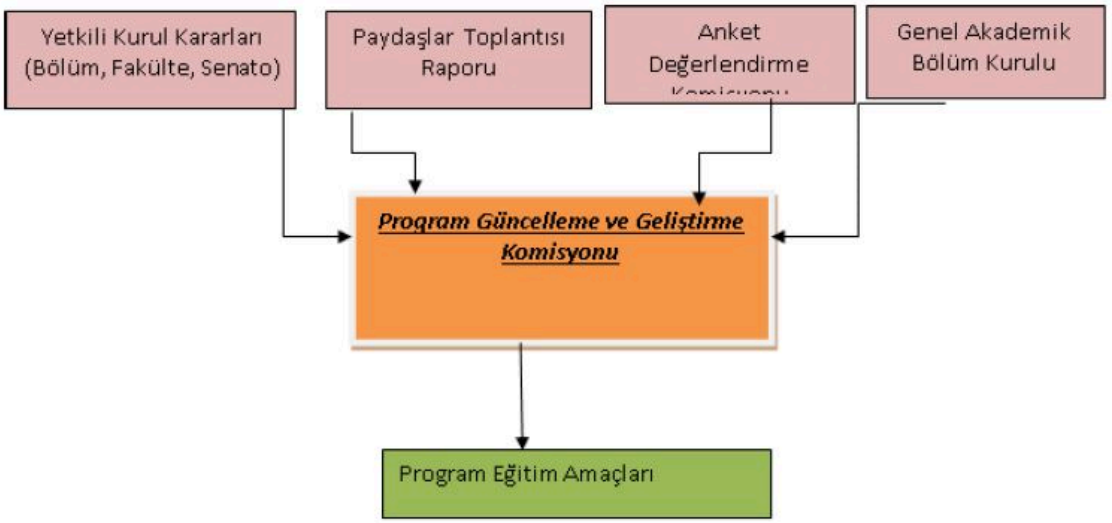
2.2d Program Eğitim Amaçlarının Yayımlanması

Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümü eğitim amaçlarına aşağıda verilen internet adresinde ve öğrenci laboratuvar ve dersliklere geçişlerin sağlandığı Mühendislik Fakültesi A Blok koridorlarında poster halinde İngilizce ve Türkçe olarak sergilenmektedir. Bölüm internet sayfasında Eğitim Amaçlarına erişim adresi aşağıda verilmiştir.
http://cevre.muhendislik.comu.edu.tr/bolum-hakkinda/egitim-amaclari-ve-program ciktilari.html
Ayrıca, Bölümümüz İngilizce Eğitim verdiği için Program Eğitim Amaçları İngilizce olarak Bölüm sayfasında aşağıda verilen bağlantıda verilmektedir.
http://cevre.muhendislik.comu.edu.tr/undergraduate-program/program-educational-objectives-and program-learnin.html

2.2e Program Eğitim Amaçlarının Güncellenme Yöntemi

Çevre Mühendisliği Program Eğitim Amaçları; iç ve dış paydaşlarımızın görüşleri, bölüm kurul/komisyon kararları, anket sonuçları (İşveren/Yönetici Görüş ve Değerlendirme Anketi ve Mezun Öğrenci Eğitim Amaçlarını Değerlendirme Anketi) ve dekanlık ile rektörlüğün aldığı kararlar doğrultusunda güncellenmektedir. Eğitim amaçları güncelleme iş-akım şeması ise Şekil

2.2' de verilmektedir. İlgili birim ve kurul/komisyonlardan gelen kararlar Program Güncelleme ve Geliştirme Komisyonunda görüşüldükten sonra nihai bir karara varılmakta ve Akademik Bölüm Kurul kararıyla Dekanlık vasıtasıyla Rektörlüğe gönderilmektedir. Görüleceği üzere eğitim amaçları için karar alma mekanizması tamamıyla PUKO çevrimi içerisinde gerçekleşmektedir. Yaptığımız anketler ve birebir toplantılar vasıtasıyla eğitim amaçlarına erişim derecesi tespit edilmekte ve herhangi bir eksiklik ile karşılaşıldığında ise sorunu gidermek amacıyla gerekli önlemler alınmaktadır. Eğitim amaçları her beş yılda bir aynı prosedür kullanılarak güncellenecektir.

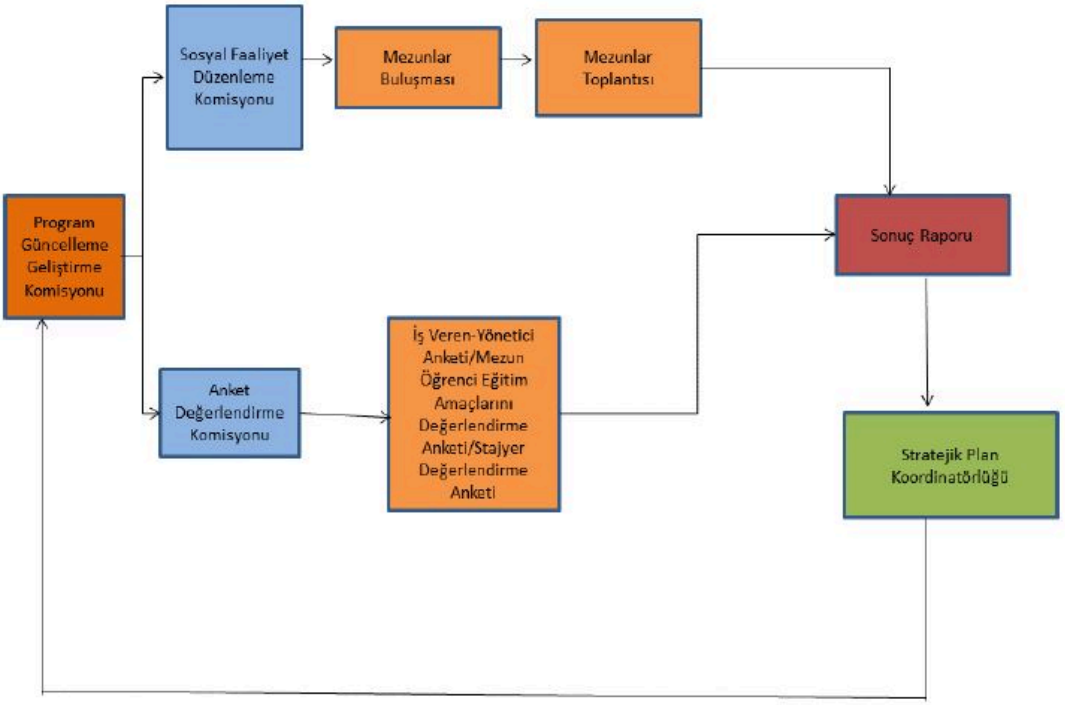


Şekil 2.2. Eğitim amaçları güncelleme iş-akım şeması

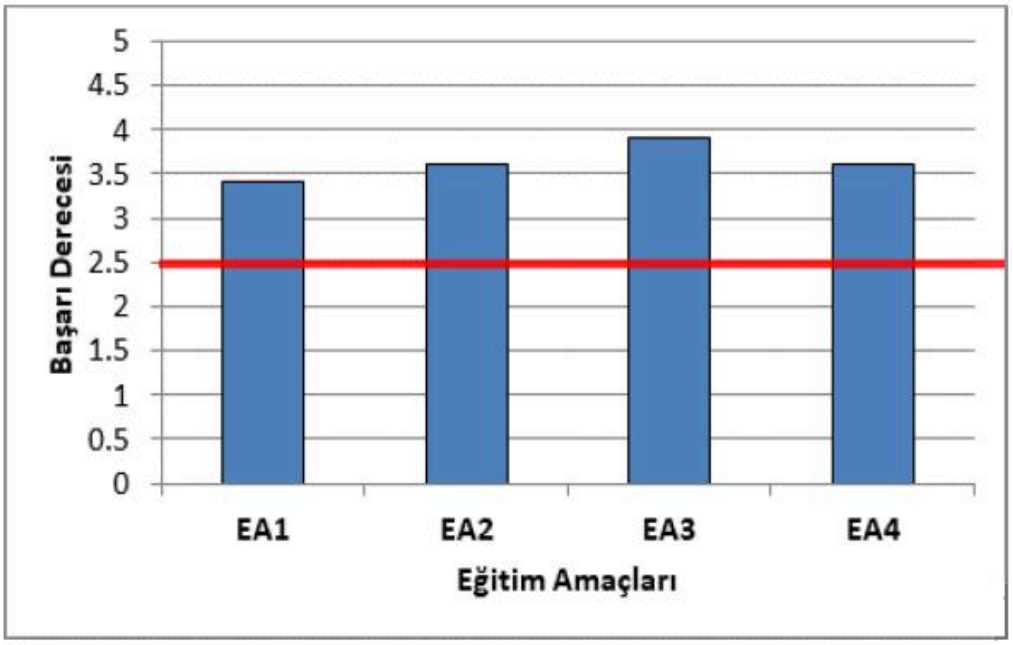
2.3 Program Eğitim Amaçlarına Ulaşma

Program eğitim amaçlarına ulaşım derecesini test etmek için her sene düzenli yaptığımız "İşveren/Yönetici Görüş ve Değerlendirme", "İşveren Stajyer Değerlendirme" ve "Mezun Öğrenci Eğitim Amaçlarını Değerlendirme" anketleri büyük rol oynamaktadır. Anketlere (http://cevre.muhendislik.comu.edu.tr/kalite-guvencesi/anket-dosyasi.html) ilaveten her yıl düzenlediğimiz Mezunlar Buluşması-Mezunlar Toplantısında (http://cevre.muhendislik.comu.edu.tr/galeriler/2024-mezunlar-bulusmasil) mezunlarımızın Program Eğitim Amaçları hakkındaki görüşüne başvurulmaktadır. Gerek anket sonuçları gerekse de Bölüm Kurul/Komisyon görüşleri harmanlanarak program eğitim amaçlarına ulaşma konusundaki başarı derecesi tespit edilmektedir. Eğitim amaçları değerlendirme iş-akım şeması aşağıdaki Şekil 2.3'de verilmiştir. Şekilden de görüleceği üzere mezunlar toplantısı ve anket verileri değerlendirildikten sonra ortak bir sonuç raporu hazırlanarak Program Güncelleme ve Geliştirme Komisyonuna havale edilmektedir.

Şekil 2.3.Eğitim amaçları değerlendirme iş-akım şeması

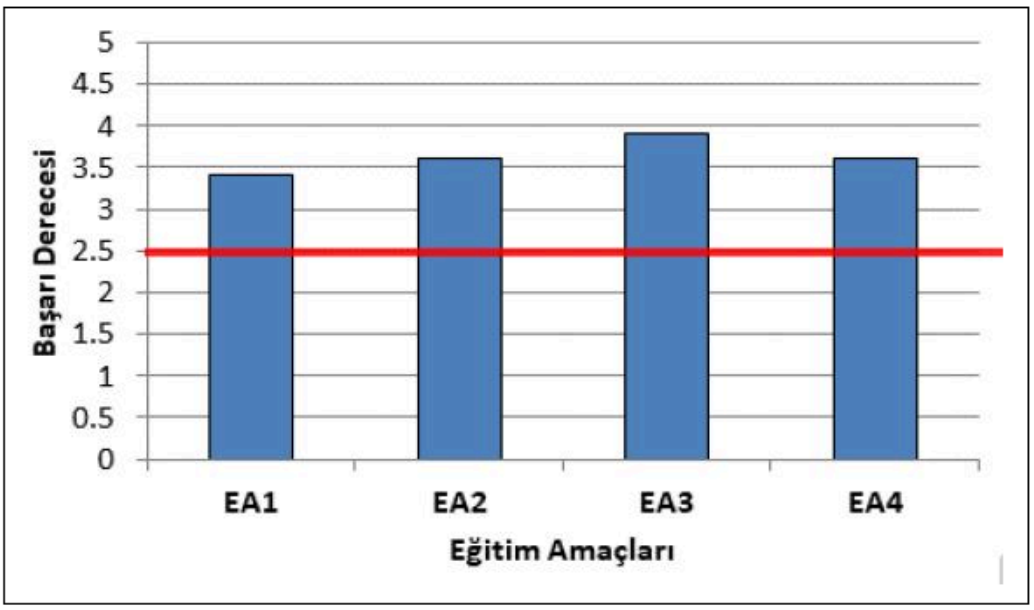


Yukarıda belirtildiği gibi program eğitim amaçlarına ulaşma düzeyini belirlemek amacıyla, belli aralıklarla anketler düzenlenmektedir. Bu anketlerden bir tanesi de Mezun Öğrenci-Eğitim Amaçları Değerlendirme Anketidir. Bu anket; bölümümüzden mezun olmuş ve çevre mühendisliği veya ilgili alanlarda istihdam edilen mezunlarımız tarafından doldurmaktadır. Aşağıdaki Şekil 2.4'de bu anketten elde edilmiş verilerin analiz sonucu verilmiştir. Şekilden görüleceği üzere mezunlarımız tarafından eğitim amaçlarının çok büyük bir oranda karşılandığı ifade edilmektedir. Bu ankette program eğitim amaçlarını karşılama dereceleri 1 ile 5 arasında sıralanmakta olup 1 en düşük ve 5 ise en yüksek karşılama derecesine karşılık gelmektedir. Kırmızıçizgi orta derecede karşılama seviyesini ifade etmektedir. Eğitim amaçları içerisinde en fazla karşılanma derecesi EA3'te görülmektedir. Bu sonuç mezun istihdam sonuçları ile birebir örtüşmektedir. Şekilden görüleceği üzere ÇOMÜ Çevre Mühendisliği Bölümü mezunları sektörün farklı alanlarında istihdam edilmekte ve mesleğin üretken bir üyesi olarak çalışma hayatlarına devam etmektedirler. Gelecekte hedefimiz; hem bölüm laboratuvar alt yapılarını daha iyi konuma getirerek hem de bölüm öğretim elemanı sayısını arttırarak derslerin çeşitliliğini artırmak ve dolayısıyla program eğitim amaçlarına erişim seviyesini en üst seviyelere çekmektir. Benzer şekilde yıllık gerçekleştirdiğimiz ÇOMÜ Mezunlar Buluşması etkinliğinde yapılan toplantıda doğrudan mezunlarımız tarafından program eğitim amaçlarını karşılama konusunda görüşleri alınarak, geliştirilmesi konusunda yararlanılmaktadır.



Şekil 2.4. Mezun Öğrenci Eğitim Amaçları Değerlendirme Anketi Sonuçları

Program Eğitim Amaçlarına erişimi belirlemede kullandığımız başka bir yöntem ise İşveren/Yönetici Görüş ve Değerlendirme Anketidir. Bu anket; mezunlarımızı istihdam eden kurum/kuruluş yöneticileri tarafından doldurulmakta ve eğitim amaçları açısından mezunlarımızın eğitim amaçlarına erişim derecelerini test etmektedir. Bu anketten elde edilen sonuçlar, Şekil 2.5'de verilmiştir. Bu ankette program eğitim amaçlarını karşılama dereceleri 1 ile 3 arasında sıralanmakta olup 1 en düşük ve 3 ise en yüksek karşılama derecesine karşılık gelmektedir. Kırmızıçizgi orta derecede karşılama seviyesini ifade etmektedir. Anketten görüleceği üzere mezunlarımızı istihdam eden kurum/kuruluş yöneticileri eğitim amaçları açısından mezunlarımızın performansından oldukça memnun görünmektedirler. Mezun Öğrenci Eğitim Amaçları Değerlendirme Anketinde olduğu gibi en çok başarı EA3'te görülmektedir.
Ayrıca, farklı kurum/kuruluşlarda staj gören öğrencilerimizin başarı derecelerini test etmek için "İşveren Stajyer Değerlendirme" anketi düzenlenmektedir. Bu anketi, ilgili kurum/kuruluş yöneticileri doldurmakta ve öğrencilerimizin öğrencilik aşamasında eğitim amaçlarını ne derece karşıladıkları test edilmektedir.



Şekil 2.5. İşveren/Yönetici Görüş ve Değerlendirme Anketi Sonuçları

Ölçüt 3. Program Çıktıları

3.1 Tanımlanan Program Çıktıları

Program çıktıları, program eğitim amaçlarına ulaşabilmek için gerekli bilgi, beceri ve davranış bileşenlerinin tümünü kapsamalı ve ilgili (MÜDEK,FEDEK,SABAK,EPDAD vb. gibi) Değerlendirme Çıktılarını da içerecek biçimde tanımlanmalıdır. Programlar, program eğitim amaçlarıyla tutarlı olmak koşuluyla, kendilerine özgü ek program çıktıları tanımlayabilirler.
Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümü lisans ve lisansüstü seviyesinde, eğitim ve öğretimini ulusal ve uluslararası standartlarda yerine getirmeyi misyon olarak görmektedir. Lisans seviyesinde öğrencilerin, öğrendiği bilgi ve kazandıkları becerileri başarılı bir şekilde çevre mühendisliği veya ilgili alanlarda profesyonel iş yaşamına ve/veya lisansüstü eğitimine uygulayabilen mühendisler olarak yetiştirilmelerini sağlamak bölümümüz tarafından amaç edinilmiştir. Ayrıca öğrencilerin bölümde aldığı temel eğitim sayesinde, hayatlarının daha sonraki aşamalarında değişen sosyal ve teknolojik gelişmelere uyumlarını daha kolay sağlayabilmeleri hedeflenmiştir.
Öğrencilerin programdan mezun oluncaya kadar kazanmaları gereken bilgi, beceri ve yetkinlikleri tanımlayan Çevre Mühendisliği Bölümü program çıktıları ve bu program çıktılarının MÜDEK Program çıktıları ile ilişkisi Tablo 3.1'de gösterilmiştir.
Tablo 3.1. ÇOMÜ Çevre Mühendisliği Bölümü Program Çıktıları (PÇ) ve Buna Karşılık Gelen MÜDEK Kriterleri

Çıktı No	Program Çıktı (PÇ) Tanımlaması	MÜDEK Kriteri
PÇ1	**Matematik, fen bilimleri ve ilgili mühendislik disiplinine özgü konularda yeterli bilgi birikimi; bu alanlardaki kurumsal ve uygulamalı bilgileri, karmaşık mühendislik problemlerinde kullanabilme becerisi**	MÜDEK (i)
PÇ2	**Karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi**	MÜDEK (ii)
PÇ3	**Karmaşık bir mühendislik ve doğal sistemi, sistem bileşenini ya da süreci analiz etme ve istenen gereksinimleri karşılamak üzere gerçekçi kısıtlar altında tasarlama becerisi; bu doğrultuda modern tasarım yöntemlerin uygulama becerisi**	MÜDEK (iii)

PÇ4	**Çevre mühendisliği uygulamalarında karşılaşılan karmaşık problemlerin analizi ve çözümü için gerekli olan modern ve teknik araçları seçme ve kullanma becerisi; bilişim teknolojilerini etkin kullanma becerisi**	**MÜDEK (iv)**
PÇ5	**Karmaşık çevre mühendisliği problemlerinin veya disipline özgü araştırma konularının incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi**	**MÜDEK (v)**
PÇ6	**Bireysel olarak ve çok disiplinli takımlarda etkin çalışabilme becerisi, sorumluluk alma özgüveni**	**MÜDEK (vi)**
PÇ7	**Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi; etkin rapor yazma ve yazılı raporları anlama, tasarım ve üretim raporları hazırlayabilme, etkin sunum yapabilme, açık ve anlaşılır talimat verme ve alma becerisi**	**MÜDEK (vii)**
PÇ8	**Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme ve bilim ve teknolojideki gelişmeleri izleme ve kendisi sürekli yenileme becerisi**	**MÜDEK (viii)**
PÇ9	**Etik ilkelerine uygun davranma, mesleki ve etik sorumluluk bilinci; mühendislik uygulamalarında kullanılan standartlar hakkında bilgi**	**MÜDEK (ix)**
PÇ10	**Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürülebilir kalkınma hakkında farkındalık**	**MÜDEK (x)**
PÇ11	**Mühendislik uygulamalarının evrensel ve toplumsal boyutlardaki sağlık, çevre ve güvenlik üzerinde etkileri ile**	**MÜDEK (xi)**

	çağın sorunları hakkında bilgi, mühendislik çözümlerinin hukuksal sonuçları hakkında farkındalık	

3.2 Program Çıktılarının Ölçme ve Değerlendirme Süreci

Çevre Mühendisliği Lisans Programı, Bölümün kurulduğu 2007-2008 Eğitim-Öğretim yılından itibaren, ulusal ve uluslararası programlarla uyumlu bir program izlemiştir. Kuruluşundan itibaren bölümün akademik kadrosunun niteliklerini, program gereksinimlerini sağlayacak şekilde kurgulamıştır. Çevre Mühendisliği programlarının disiplinler arası niteliğinden dolayı farklı bölümlerden görevlendirilen öğretim elemanları ile servis niteliğindeki derslerin verilmesi sağlanmıştır. Program çıktılarının belirlenmesi ile ilgili çalışmalar ise Çanakkale Onsekiz Mart Üniversitesi'nde 2012 yılında başlatılan Bologna ölçütlerine uyum çerçevesinde Diploma etiketi belgesine sahip olmak için başlattığı sürece dayanmaktadır. Bologna süreci kapsamında eğitim programlarındaki derslerin program çıktıları ile derslerin öğrenim kazanımları (çıktıları) arasındaki ilişkiler güncellenmiş; her dersin içerikleri, ilgili dersten sorumlu öğretim üyesi tarafından hazırlanarak, Çanakkale Onsekiz Mart Üniversitesi Bologna bilgilerinin bulunduğu internet sayfası üzerinden yayınlanmıştır:
ubys.comu.edu.tr/AIS/OutcomeBasedLearning/Home/Index?culture=tr-TR

Bölümümüzde, program çıktılarının sağlama düzeyini dönemsel olarak belirlemek ve belgelemek için kullanılan bir ölçme ve değerlendirme süreci bölümümüzün kalite çalışmalarına başladığı tarihten itibaren oluşturulmuş ve işletilmiştir. Bu kapsamda, program çıktıları doğrudan derslerde uygulanan sınav, ödev, proje, labaratuvar rapor vb. ile dolaylı olarak ise anket sonuçları ile ölçülmüştür. Program çıktılarını doğrudan ölçmeye yönelik olarak sınav kağıdı formatı oluşturulmuş, her dersin sorumlusu tarafından dersin değerlendirilebilmesi için Excel'de bir ders değerlendirme programı yazılmış ve proje, laboratuvar, final gibi ders değerlendirme kriterlerinin program çıktılarını karşılama düzeyi doğrudan ölçülmüştür. Derslerden gelen bilgiler Excel'de oluşturulan ders değerlendirme programı vasıtasıyla dersin sorumluları tarafından değerlendirilmiş, sonuçlar toplu olarak genel matrise aktarılarak ders bazında program çıktılarının doğrudan karşılama düzeyi tespit edilmiştir. Aşağıda ki Tablolar da görüleceği üzere derslerde verilen ödev/proje ve sınavlar vasıtasıyla program çıktılarının %60'ın üzerinde karşılandığı anlaşılmaktadır.

Tablo 3.1. Program Çıktılarının (PÇ) 1. Sınıf Dersleri (1. YY) ile Karşılanma Durumuna Ait Ders Değerlendirme Anket Sonuçları

PÇ	Atatürk İlkeleri ve İnkılap Tarihi I	Beden Eğitimi I	Resim I	Türk Dili I	Matematik I	Genel Fizik I	Genel Kimya I	Çevre Mühendisliğine Giriş	Temel Bilgi Teknolojileri	Okuma ve Yazma Yeteneklerinin Geliştirilmesi I
PÇ1	3,5	4,3	5	4,3	3,7	3,7	3,6	4,5	3,1	4
PÇ2	3,3	4,3	5	4,3	3,7	3,7	3,8	4,3	2,8	3,8

PÇ3	3,4	4,3	5	4,3	3,5	3,6	3,7	4,5	2,6	3,8
PÇ4	3,2	4,3	5	4,3	3,4	3,5	3,5	4,3	2,9	3,8
PÇ5	3,3	4,3	5	4,3	3,4	3,6	3,5	4,5	2,7	3,8
PÇ6	3,5	4,3	5	4,3	3,9	3,9	3,8	4,3	2,9	4,2
PÇ7	3,1	4,3	5	4,3	3,5	3,7	4	4,5	2,9	4
PÇ8	3,7	4,3	5	4,3	4,1	3,8	3,9	4,7	3,1	4,2
PÇ9	3,7	4,3	5	4,3	3,7	3,7	3,6	4,5	2,9	4,2
PÇ10	3,5	4,3	5	4,3	3,6	3,6	3,6	4,5	2,6	3,8
PÇ11	3,5	4,3	5	4,3	3,4	3,6	3,8	4,5	2,8	4

Tablo 3.2. Program Çıktılarının (PÇ) 2. Sınıf Dersleri (3. YY) ile Karşılanma Durumuna Ait Ders Değerlendirme Anket Sonuçları

PÇ	Statik ve Dinamik	Çevre Kimyası I	Çevre Kimyası Laboratuvarı I	Akışkanlar Mekaniği	Çevre Mühendisliği Hidrolojisi	Çevre Ekolojisi	Çevre Mühendisliğinde Güncel Konular
PÇ1	3,5	3,3	3,3	3,4	3	3,6	3,2
PÇ2	3,4	3,3	3,4	3,5	2,9	3,4	3,1
PÇ3	3,3	3,2	3,3	3,6	2,8	3,5	3,2

PÇ4	3,5	3,3	3,4	3,6	3	3,5	3,2
PÇ5	3,6	3,3	3,4	3,4	3,1	3,4	3,2
PÇ6	3,7	3,7	3,4	3,7	3,1	3,4	3,4
PÇ7	3,2	3,3	3,5	3,5	3,1	3,5	3,4
PÇ8	3,4	3,5	3,5	3,6	3	3,5	3,5
PÇ9	3,5	3,4	3,4	3,5	3,2	3,4	3,3
PÇ10	3,5	3,3	3,5	3,5	3	3,4	3,4
PÇ11	3,5	3,5	3,4	3,8	3	3,5	3,3

Tablo 3.3. Program Çıktılarının (PÇ) 3. Sınıf Dersleri (5. YY.) ile Karşılanma Durumuna Ait Ders Değerlendirme Anket Sonuçları

PÇ	Temel İşlemler I	Temel İşlemler Laboratuvarı I	Toprak ve Yeraltı Suyu Kirliliği	Su Temini	İş ve İş Sağlı Güvenliği	Çevresel Etki Değerlendirmesi	Kirlilik Önleme
PÇ1	3,6	3,9	3,3	4,3	3,6	3,1	4,3
PÇ2	3,7	3,9	3,2	4	3,6	3,1	4,4
PÇ3	3,6	3,9	3,3	4,1	3,5	3,1	4,1

PÇ4	3,8	4	3,3	3,9	3,6	3,1	4,3
PÇ5	3,7	3,8	3,4	3,7	4,1	3,2	4,3
PÇ6	3,7	4,1	3,4	4	4,3	3,2	4,4
PÇ7	3,6	3,9	3,1	3,8	4,3	3	4,3
PÇ8	4,1	3,9	3,6	4,1	4,1	3,1	4,5
PÇ9	3,9	4,1	3,5	4,3	4,4	3,1	4,4
PÇ10	3,8	4	3,4	4,2	4,3	3,2	4,4
PÇ11	3,4	4,1	3,5	3,9	4,4	3,3	4,3

Tablo 3.4. Program Çıktılarının (PÇ) 4. Sınıf Dersleri (7. YY.) ile Karşılanma Durumuna Ait Ders Değerlendirme Anket Sonuçları

PÇ	Atıksuların Arıtılması	Hava Kirliliği ve Kontrolü	Katı Atık Yönetimi	Bitirme Ödevi I	Çevre Yönetim Sistemleri	Doğal Kaynaklar ve Çevre Planlama	İç Ortam Hava Kalitesi	Su Kirliliği Kontrolü
PÇ1	4,1	3,8	4,5	4,4	3,4	3,2	4,1	4,1
PÇ2	3,9	3,8	4,5	4,4	3,5	3,3	4	4,2
PÇ3	3,9	3,8	4,4	4,4	3,5	3,3	4	4
PÇ4	4,1	4,1	4,4	4,4	3,4	3,2	4	4,1

PÇ5	4,1	4	4,5	4,6	3,5	3,2	4,1	4
PÇ6	4,4	4,2	4,6	4,6	3,7	3,3	4,2	4,2
PÇ7	4	4,2	4,3	4,4	3,7	3	4,1	4,2
PÇ8	4,1	4,2	4,5	4,6	3,8	3,1	4,1	4,2
PÇ9	4,2	4,4	4,6	4,6	3,7	3	4,1	4
PÇ10	3,5	4,1	4,5	4,6	3,8	3,2	4,1	4
PÇ11	4	4,1	4,5	4,4	3,8	3,2	4,1	4

Bu veriler doğrultusunda mevcut program kapsamında okutulan dersler vasıtasıyla disipline özgün ölçütlerde dahil olmak üzere bütün program çıktıları başarılı bir şekilde karşılanmaktadır. Çevre Mühendisliği Bölümü olarak programa yeni eklediğimiz Proje Yönetimi ve Girişimcilik, Mühendislik Etiği, Arıtma Tesisi Hidroliği, Katı Atık Laboratuvarı, Bilimsel Araştırma Metotları gibi derslerin ilgili dönemlerde okutulmasıyla birlikte program çıktılarını sağlama düzeylerini artırmayı hedeflemekteyiz.

Öğretim üyeleri, sorumlu oldukları derslerin planlarını hazırlarken, ders amaçlarını ve derslerin öğrenim çıktılarını belirlemektedir. Öğretim üyeleri her dönem başında hazırladıkları ders planlarını gözden geçirerek; edindikleri tecrübeler, gözlemler ve güncel ihtiyaçlar doğrultusunda gerekli güncellemeleri yapmaktadırlar. Bölümde başlatılan akreditasyon çalışmaları kapsamında 2017–2018 Eğitim-Öğretim yılında her ders için "Öğrenci Ders Değerlendirme Anketi" yapılmış), komisyon tarafından değerlendirilen anket sonuçları ilgili öğretim üyesine ulaştırılmıştır. Ayrıca program çıktılarının bazı dersler ile karşılanma durumu anketlerle sorgulanmıştır. Ancak öğrencilerin her program çıktısına aynı değerleri vermesi nedeniyle dersin program çıktılarına katkısının belirlenmesinde kullanılması mümkün görünmemektedir. Bu nedenle, dersten sorumlu öğretim elemanının dersin program çıktısına katkısını değerlendirdiği veriler dikkate alınmıştır

Ders formlarında program çıktıları için kullanılan ölçeğe göre:

Boş / 0: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkısı yok

1: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkı düzeyi çok düşük

2: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkı düzeyi düşük

3: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkı düzeyi orta

4: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkı düzeyi yüksek

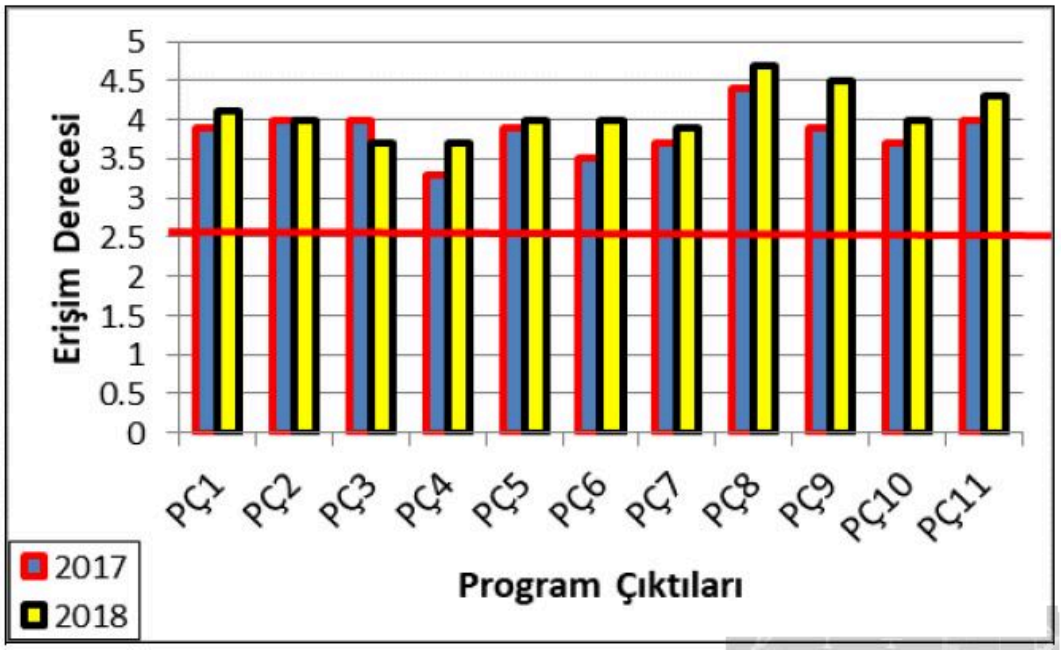
5: Dersin öğrenim kazanımının, program çıktısına erişilmesinde katkı düzeyi çok yüksek

3.3 Program Çıktılarına Ulaşma

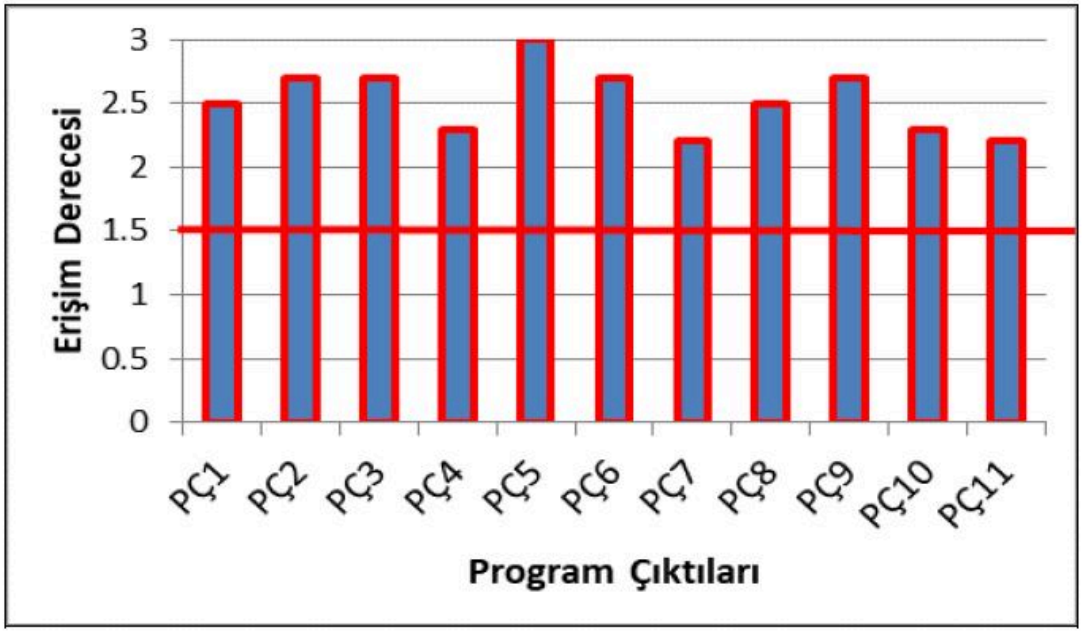
Programlar mezuniyet aşamasına gelmiş olan öğrencilerinin program çıktılarını sağladıklarını kanıtlamalıdır.
Program çıktılarının değerlendirilmesi amacıyla kullanılan ölçüm araçları aşağıda sıralanmıştır.
A. Ders Başarımı
B. Anketler
C. Komisyonlar

A. Ders Başarımı: Öğrencilerin dersi aldığı dönemde verilen ödev, proje ve sınavlarda gösterdiği bilgi ve beceri kazanımını dersin öğretim elemanı tarafından verilen notlarla değerlendirmesi ders başarımı olarak tanımlanmıştır. Bu başarım durumunu program çıktıları bazında değerlendiren öğretim elemanının görüşleri üzerine kurulu bir ölçüm aracıdır. Başarı notlarının sınıf düzeyinde ortalama değerlerinin analizi ile bireysel örnekler üzerinden dokümantasyonu esas alınır.
Ders Dosyası: Derslerle ilgili tüm verilerin toplandığı ders dosyaları arşiv odasında fiziki olarak mevcuttur. Ders dosyasında derslerin program çıktı değerlendirmesini içeren ders planı ve içeriği başta olmak üzere ödev, proje ve sınavlardan en az iyi, kötü ve orta örnekleri mevcuttur. Bu örnekler dersin açıldığı güz veya bahar yarıyıllarında 2017-2018 Eğitim-Öğretim yılları için bölüm öğretim elemanlarının dersleri için belirlenen format dahilinde tutulmaya başlanmıştır.
B. Anketler
Bologna Süreci için yapılan çalışmalarla bölümün var olan ders programı ve program çıktıları güncellenmiş ve belli dönemlerde tekrar gözden geçirilmiştir. Bölümümüzde 2017 yılı itibariyle başlatılan kalite çalışmaları için derslerde yapılacak güncellemelerde, Bölüm Öğretim Üyelerinin deneyimleri, öğrencilerin görüşleri ve dış paydaşlarla yapılan toplantılar sonucu sek törel ihtiyaçlar ve mezun öğrencilerin görüşlerinin dikkate alınması benimsenmiş ve 2017-2018 Eğitim-Öğretim yılından itibaren gerekli düzenlemeler yapılarak uygulamaya geçilmiştir. Bu kapsamda veriler elde etmek için 2017-2018 Eğitim-Öğretim döneminde "Öğrenci Ders Değerlendirme Anketi", "Mezuniyet Aşaması Program Çıktıları Değerlendirme Anketi" ve "İşveren/Yönetici Görüş ve Değerlendirme Anketi" uygulanmıştır.
Mezuniyet aşamasına gelen öğrenciler son sınıfta daha önce gördükleri bilgileri kullanabilecekleri ve karmaşık çevre mühendisliği sorunlarına çözüm üretebilecekleri dersleri almaktadırlar. Genel olarak son sınıf derslerinin birçok program çıktısını içermesi nedeniyle bu derslerde kazanılan başarıların program çıktılarına ulaşma seviyelerine katkısı büyüktür. Çevre Mühendisliği Bölümünden mezun duruma gelen öğrencilere "Mezuniyet Aşaması Program Çıktıları Değerlendirme Anketi" uygulanarak, öğrencilere her bir Program Çıktısına ne düzeyde ulaşabildikleri sorulmuştur. 2017 ve 2018 yılları mezunları ile yapılan program çıktı değerlendirme anketinin değerlendirme sonuçları Şekil3.1'de verilmiştir. Anketlerden elde edilen sonuçlar incelendiğinde, mezuniyet aşamasına gelen öğrenciler, eğitim programının program çıktılarını yüksek oranda karşıladığını belirtmektedirler. 2017 yılı ile karşılaştırıldığında 2018 yılı mezunlarının program çıktılarını karşılamada az da olsa bir artışın olduğu göze çarpmaktadır. Bu ankette program çıktılarını karşılama dereceleri 1 ile 5 arasında sıralanmakta olup, 1 en düşük ve 5 ise en yüksek karşılama derecesini göstermektedir. Şekil üzerindeki kırmızıçizgi ise orta derecede karşılama seviyesini ifade etmektedir. Mezunların, işverenler tarafından program çıktılarını sağlama düzeylerinin sorgulandığı İşveren / Yönetici Görüş ve Değerlendirme Anketi sonuçları ise Şekil 3.2'de verilmiştir. Bu ankette program çıktılarını amaçlarını karşılama dereceleri 1 ile 3 arasında sıralanmakta olup 1 en düşük, 3 ise en yüksek karşılama derecesine karşılık gelmektedir. Kırmızıçizgi orta derecede karşılama seviyesini ifade etmektedir. Bu anketlerden elde edilen sonuçlar incelendiğinde, mezunların eğitim programının program çıktılarını genel olarak ortalama düzeyinin üzerinde karşıladıkları görülmektedir. Ders

programlarında yapılan yeni değişikler ile birlikte Program Çıktılarını sağlama derecelerini arttırılması Bölümümüz tarafından hedeflenmektedir.



Şekil 3.1. Program çıktı hedeflerine erişebilirlik

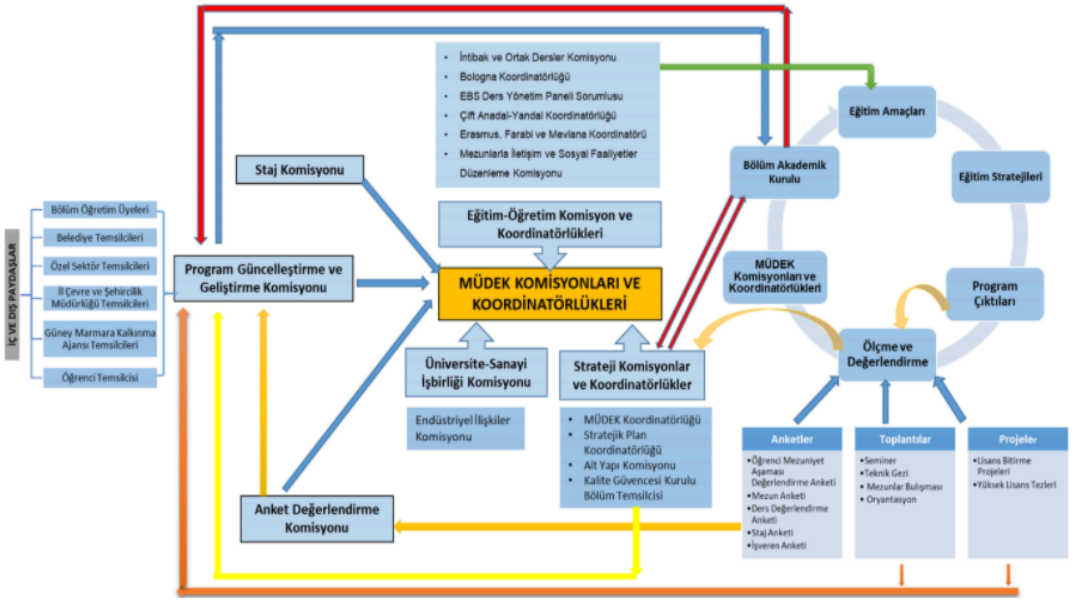


Şekil 3.2. Program çıktı hedeflerine erişebilirlik (İşveren / Yönetici Görüş ve Değerlendirme Anketi sonuçlar)

Ölçüt 4. Sürekli İyileştirme

Program çıktılarının ve eğitim amaçlarının başarılmasında temel unsur lisans ders programında yer alan derslerdir. Ders programıyla, program kazanımları arasındaki ilişki sürekli şekilde kontrol edilerek, Çevre Mühendisliği programının başarısı veya eksiklikleri, alınması gereken önlemlerin belirlendiği sürekli bir iyileştirme süreci tasarlanmıştır. Bölümümüz kalite güvence çalışmaları kapsamında sürekli iyileştirme faaliyetinin daha sistematik hale getirilmesi amacıyla, Kaizen (sürekli bir iyileştirme ve gelişim) felsefesinin en önemli prensiplerinden süreç bazlı Planla, Uygula, Kontrol Et, Önlem Al (PUKO) döngüsü esas alınarak Şekil 4.1'de görülen

sürekli iyileştirme çevrimi hazırlanmıştır. Sürekli iyileştirme çalışmalarında; mezunlardan, öğrencilerden, işverenlerden anketler vasıtasıyla elde edilen bilgiler de kullanılmaktadır. Şekil 4.4.1'de görülen çevrim, eğitim amaçlarının belirlenmesi/ gözden geçirilmesi (ölçme ve değerlendirme) ile birlikte program çıktılarının belirlenmesi/ gözden geçirilmesi (ölçme ve değerlendirme) ile ilgilidir. Bölüm kalite-güvence komisyonlarının önerileri doğrultusunda iyileştirme çalışmaları ile de sürekli iyileştirme sağlanmaktadır. Komisyonlardan gelen iyileştirme önerileri her yıl en az iki defa yapılan Bölüm Akademik Genel Kurulu toplantılarında gözden geçirilmekte ve hem eğitim planının güncellenmesi, hem de Gıda Mühendisliği programı faaliyetleri doğrultusunda çeşitli iyileştirmeler yapılmasına karar verilmektedir. İyileştirme faaliyetleri eğitim amaçlarını ve bu amaçların gerçekleştirilmesinde belirlenen program çıktılarının sağlanma düzeylerinin iyileştirilmesini kapsadığı gibi fiziki altyapı (derslikler ve laboratuvarlar) ve fiziki altyapının sürdürülebilirliğine ilişkin hususları da kapsamaktadır.



Şekil 4.1. ÇOMÜ Çevre Mühendisliği lisans programı sürekli iyileştirme süreci

Ölçüt 5. Eğitim Planı

5.1 Eğitim Planı (Müfredat)

Öğrencilerimizi iyi birer Çevre Mühendisi olarak mesleki kariyerlerine hazırlamayı hedef alan eğitim planımız, aynı zamanda programımızın eğitim amaçlarına ve program çıktılarına da ulaşmayı amaçlamaktadır. Bu kapsamda, Çevre Mühendisliği eğitim planında yer verilmiş olan derslerimizi, matematik ve temel bilimler, mesleki konular, genel eğitim ve diğer olmak üzere 4 kategoride sınıflandırmak mümkündür..

Bir sonraki eğitim yılında uygulanacak eğitim planı (hangi seçmeli derslerin açılacağı, ders içeriklerinde hangi konulara değinileceği vs), gerçekleştirilen Akademik Bölüm Kurulu Toplantısında tüm öğretim elemanlarıyla görüş alışverişi yapılarak belirlenmektedir. Bölümümüz Lisans Eğitim Planı'nın belirlenmesinde ve bunun düzenli olarak değerlendirilmesinde, bölüm öğretim elemanlarının yanı sıra, bölüm öğrencilerinin, mezunlarımızın ve işverenlerin (Kamu kurum ve kuruluşları, yerel yönetimler, özel sektör kuruluşları vb.) de içinde bulunduğu program paydaşlarının görüş ve önerileri dikkate alınmaktadır. Ayrıca program çıktılarının değerlendirilmesi amacıyla uygulanan ders değerlendirme ve mezun anketleri ile birlikte, öğrencilerimizle öğretim elemanları arasında gerçekleşen değerlendirme toplantıları sonucu elde edilen çıktılar da özellikle göz önünde bulundurulmaktadır. Bununla birlikte, sınav, proje ve ödevlerde program çıktılarına karşılık gelen sorulara verilen cevapların başarı/doğruluk

oranlarının ilgili öğretim üyesi tarafından analiz edilerek kullanılması daha sonraki dönemlerde Bölümümüz tarafından hedeflenmektedir.
Eğitim planımızın öğrencilerimizi meslek kariyerlerine nasıl hazırladığı değerlendirilirken, eğitim planımızda yer almakta olan her bir dersin, dersi veren öğretim elemanınca hazırlanmış olan ders içeriklerinden yararlanılmaktadır. Eğitim planımızın ders içerikleri Ek I'de sunulmuştur. Ayrıca ders içerikleri, ders eğitim amaçları, program çıktılarına katkıları, kaynaklar, ders değerlendirme kriterleri herbir ders için üniversitemiz Eğitim Bilgi Sistemi'ndehttps://ubys.comu.edu.tr/AIS/OutcomeBasedLearning/Home/Index?id=null&culture=tr-TR) yayınlanmaktadır.
Dersi veren öğretim üyesi tarafından hazırlanmış olan ders içerikleri ve ders ile ilgili diğer bilgiler, eğitim döneminin başladığı ilk hafta öğrencilere sunulmakta ve öğrencilerin ders kapsamı, işlenişi, değerlendirilmesi ve öğrenciden beklentiler konusunda bilgi sahibi olmaları sağlanmaktadır.
Bölümümüzde matematik ve temel bilimler alanlarında eğitim ilk iki yarıyılda verilirken, temel mühendislik bilimleri eğitimi kısmen ilk iki yarıyılda başlamakta, üçüncü ve dördüncü yarı yıllarda yoğunlaşmaktadır. Çevre Mühendisliği alanında verilmesi gereken mesleki tasarım dersleri V. yarıyılda başlamakta ve eğitim planının sonuna kadar sürmektedir.
Eğitim planımızda YÖK zorunlu dersleri olarak I. yarıyılda Türk Dili I (2+0), Atatürk İlkeleri ve İnkılap Tarihi I (2+0) ve Temel Bilgi Teknolojileri (2+2) yer almaktadır. Belirtilen derslerin devamı olarak II. yarıyılda Türk Dili II (2+0), Atatürk İlkeleri ve İnkılap Tarihi II (2+0) dersleri verilmektedir. Bölümümüzün İngilizce eğitim veriyor olması nedeniyle eğitim planımızda İngilizce I ve İngilizce II dersleri yerine, hazırlık sınıfından geçip birinci sınıfa başlayan öğrencilerimizin İngilizce okuma ve yazma becerilerinin artırılması amacıyla I. ve II. Yarıyıllarda "İngilizce Okuma ve Yazma Yeteneklerinin Geliştirilmesi I ve II" dersleri yer almaktadır. Eğitim planımızda yer alan bu derslerle, öğrencilerimizin sözlü ve yazılı olarak kendilerini ve bilgilerini başkalarına aktarabilme becerileri arttırılmaktadır.
Bölümümüz eğitim planı kapsamında temel matematik eğitimi, ilk iki yarıyılda ENV-1013 Matematik I ve ENV-1012 Matematik II dersleri ile verilmektedir. Ancak bu derslerin mühendislik eğitimi açısından yeterliliği son yapılan Bölüm Akademik Genel Kurulu Toplantısında sorgulanmış, eğitim planına 'Diferansiyel Denklemler' dersinin eklenmesi önerilmiştir. Bu öneri, 18.06.2018 tarihinde yapılan Program Güncelleme ve Geliştirme Komisyonunda görüşülmüş ve 2019-2020 eğitim-öğretim yılından itibaren lisans programına seçmeli olarak eklenmesi uygun bulunmuştur.
Bölümümüzde matematik derslerinin yanı sıra, Çevre Mühendisliği eğitiminin gerekleri arasında görülen diğer temel bilim dersleri eğitim planımızın I ve II. yarı yılında yer almaktadır. ENV-1015 Genel Fizik I ve ENV-1017 Genel Kimya I dersleri I. yarı yılda, ENV-1014 Genel Fizik II ve ENV-1016 Genel Kimya II dersleri ise takip eden yarıyılda verilmektedir. Genel Kimya dersleri öğrencilerimizin eğitim hayatları boyunca alacakları derslerde yeterli kimya bilgisine sahip olabilmeleri amacıyla verilmektedir. Ayrıca 2019-2020 eğitim öğretim yılından itibaren birinci yarıyılda Fizik Laboratuvarı, ikinci yarıyılında Kimya Laboratuvarı derslerinin zorunlu ders olarak eklenmesi önerilerek, ilgili komisyon tarafından uygun bulunmuştur.
Özellikle bölümümüz öğrencilerinin ihtiyaç duyduğu, çevresel problemlerin tanımlanması ve çözümünde son derece önemli olan ENV-2003 Çevre Kimyası I (2+2) ve ENV2008 Çevre Kimyası II (2+2) derslerinde teorik ve sayısal olarak Çevre Kimyası bilgileri öğrencilerimize aktarılırken, ENV2003 Çevre Kimyası Laboratuvarı I ve ENV-2008 Çevre Kimyası Laboratuvarı II derslerinde öğrencilerimiz uygulama yeteneklerini geliştirmektedir. Laboratuvar dersi kapsamında öğrencilerimize laboratuvar ortamının tanıtılması ve temel laboratuvar bilgilerinin verilmesinin yanında, analizlerin yapılışı, deney sonuçlarının değerlendirilmesi ve yorumlanması gibi yetenekler de kazandırılmaktadır.
Öğrencilerimizin ihtiyaç duyacağı biyoloji bilgisi ise ENV-2004 Çevre Mikrobiyolojisi ve ENV-2006 Çevre Mikrobiyolojisi Laboratuvarı dersleri ile verilmektedir. Öğrencilerimiz ENV-2004 Çevre Mikrobiyolojisi dersi kapsamında temel kavramları öğreniyorken, paralel

olarak ENV-2006 Çevre Mikrobiyolojisi Laboratuvarı dersi ile analizlerin yapılışı, deney sonuçlarının değerlendirilmesi ve yorumlanması konusunda ihtiyaç duyacakları temel becerileri kazanmaktadırlar. ENV-2015 Çevre Ekolojisi dersi kapsamında ise canlı ve cansız varlıkların birbirleri ve karşılıklı ilişkileri, ekolojik bütünlük, çevre kalitesindeki bozulmanın ekosistem üzerindeki etkisi, hızla artan insan nüfusunun çevre kalitesine olumsuz etkileri, ekosistemde enerji akışı ve madde döngüleri hakkında bilgi edinmektedirler.

Eğitim planımızın ilk iki yılında öğrencilerimiz, Çevre Mühendisliği disiplinine uygun temel bilimler derslerinin yanı sıra, kendilerini 3 ve 4. sınıflarda alacakları meslek derslerine hazırlayan temel mühendislik derslerini de almaktadırlar. Bu dersler sayesinde öğrencilerimiz, meslek derslerini alırken ihtiyaç duyacakları temel bilgileri edinmekte ve kendilerini pek çok mesleki probleme çözüm bulma konusunda geliştirecek olan mühendislik bakış açısı ve yaklaşımı yeteneklerini kazanmaktadırlar. Bu amaçla verilen temel mühendislik derslerinin bir kısmı bölümümüz öğretim üyeleri tarafından verilirken, bir kısmı ise konunun uzmanı Mühendislik Fakültesi veya diğer fakültelerin ilgili bölümlerinin öğretim üyeleri tarafından verilmektedir. Bu dersler arasında ENV-1022 Bilgisayar Destekli Teknik Resim, ENV-2001 Statik ve Dinamik, ENV-2007 Akışkanlar Mekaniği, ENV-2011 Çevre Mühendisliği Hidrolojisi, ENV-2002 Kemodinamik, ENV-2012 Hidrolik, ENV-2018 Bilgisayar Programlama, ENV-2020 Zemin Mekaniği dersleri yer almaktadır. Adı geçen dersler takip eden yıllarda verilen mesleki derslere altyapı oluşturmakla birlikte, özellikle bölümün eğitim amaçları ve program çıktıklarının gerçekleştirilmesine olanak sağlamaktadır. Bu dersler sayesinde öğrencilerimiz matematik, fen bilimleri ve ilgili mühendislik disiplinine özgü konularda yeterli bilgi birikimi kazanmakta, bu alanlardaki kuramsal ve uygulamalı bilgileri, karmaşık mühendislik problemlerinde kullanabilme becerilerini geliştirmektedirler. Ayrıca karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi kazanırken, bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisini de edinmektedirler. ENV-2018 Bilgisayar Programlama ile çevre mühendisliği uygulamalarında karşılaşılan karmaşık problemlerin analizi ve çözümü için gerekli olan modern ve teknik araçları seçme ve kullanma becerisi ve bilişim teknolojilerini etkin kullanma becerisi elde etmektedirler.

Çevre Mühendisliği Bölümü dışında görevli olup, bölümümüzde ders vermekte olan öğretim elemanlarının ders müfredatlarını hazırlamalarından önce, kendileri Çevre Mühendisliği mesleğinin gereksinimleri konularında bilgilendirilip, bu noktaları göz önüne almaları konusunda yönlendirilmektedirler. Diğer yandan, öğrencilerimizin farklı meslek gruplarını, disiplinlerini tanıyabilmeleri için, bahse konu öğretim elemanlarının kendi bölümlerinde esas aldıkları yöntem ve düzenlerinin aynı kalması istenmektedir. Böylelikle öğrencilerimizin farklı disiplinlerin matematik, fen ve mühendislik bilimleri bilgilerinin uygulanmasındaki beklentilerinin neler olduğunu gözlemleyip, bilgi sahibi olması amaçlanmaktadır.

Bölümümüzde I. ve II. yarıyıllarda verilmekte olan Beden Eğitimi, Müzik ve Resim dersleri ile öğrencilerin yoğun eğitim programları içinde sanat veya sporla da ilgilenerek kişisel gelişimlerine farklı bir boyut katmaları amaçlanmaktadır.

Bölümümüz öğrencilerinin temel mühendislik eğitimi kapsamında I. yarıyılda verilen ENV-1019 Çevre Mühendisliğine Giriş dersi ile Çevre Mühendisliği mesleği ile tanışmaları sağlanmaktadır. Bu dersin ilk haftasında, bölüme yeni katılmış olan öğrencilerimize üniversite, fakülte ortamı tanıtılmakta, aynı zamanda öğrencilerimiz Çevre Mühendisliği mesleği ve eğitimleri boyunca kendilerini bekleyen hususlar hakkında bilgilendirilmektedirler. Ders kapsamında öncelikle Çevre Mühendisliği'nde önemli olan döngüler, kirlilik tanımı, kaynakları verilerek öğrencilerin temel kavramları edinmesi sağlanmakta ve ilerleyen haftalarda temel çalışma konuları olan su temini, arıtımı, atıksuların uzaklaştırılması, atıksu arıtımı, toprak kirliliği, hava kirliliği ve katı atık yöntemi konularında kısa bilgiler verilerek öğrencilerin mesleği tanımaları sağlanmaktadır.

Bölümümüzde I. yarıyılda verilen ENV-1009 Temel Bilgi Teknolojileri dersi ile öğrencilerimize Çevre Mühendisliği uygulamalarında karşılaşılan karmaşık problemlerin analizi ve çözümü için gerekli olan modern ve teknik araçları seçme ve kullanma becerisi ile bilişim teknolojilerini etkin kullanma becerisi kazandırılmaktadır. IV. yarıyılda verilmekte olan ENV-2018 Bilgisayar

Programlama dersi ile öğrencilerin karşılaşacakları ve tekrar eden problemlerin çözümünü basitleştirmek için program yazma yeteneği edinmeleri sağlanmakta ve meslek hayatlarında bilgisayar programlarıyla ilgili gereksinim duyabilecekleri temel bilgileri edinmeleri hedeflenmektedir. Yine II. yarıyılda verilmekte olan ENV1022 Bilgisayar Destekli Teknik Resim dersi ile mühendislik çizimlerinin yapılması, plan-kesit görüntülerinin hazırlanması ve ölçeklendirilmesi konularında öğrencilere bilgi verilmektedir.

Mezunlarımızın edindikleri karmaşık bir mühendislik ve doğal sistemi, sistem bileşenini ya da süreci analiz etme ve istenen gereksinimleri karşılamak üzere gerçekçi kısıtlar altında tasarlama becerisi; bu doğrultuda modern tasarım yöntemlerin uygulama becerisi; karmaşık Çevre Mühendisliği problemlerinin veya disipline özgü araştırma konularının incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi; etik ilkelerine uygun davranma, mesleki ve etik sorumluluk bilinci; mühendislik uygulamalarında kullanılan standartlar hakkında bilgi; proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürülebilir kalkınma hakkında farkındalık ise üçüncü yarıyıldan itibaren verilen mesleki dersler ile sağlanmaktadır.

Bölümümüzde V. yarıyılda verilen ENV-3001 Temel İşlemler I, ENV-3003 Temel İşlemler Laboratuvarı I dersleri ve VI. Yarıyılda verilen ENV-3002 Temel İşlemler II dersleri ile temel olarak su ve atıksu arıtımında kullanılan mekanik ve kimyasal süreçler öğretilmekte ve teorik olarak anlatılan konuların laboratuvar ortamında gözlemlenmesi sağlanmaktadır. VI. yarıyılda verilmekte olan ENV-3004 Biyolojik Prosesler dersi ile öğrencilerin son sınıfta alacakları ENV401 Atıksuların Arıtılması, ENV-4002 Endüstriyel Atıksuların Arıtılması, ENV-4020 Arıtma Çamurları Yönetimi derslerinde ihtiyaç duyacakları biyolojik arıtma prosesleri konusunda bilgilendirilmeleri sağlanmaktadır.

Çevre Mühendislerinin bilgi sahibi olmasının zorunlu olduğu içme suyu arıtımı, atıksu arıtımı, hava kirliliği kontrolü, katı atık yönetimi, iş sağlığı ve güvenliği, mevzuatlar ve çevre yönetimi konularındaki dersler 3 ve 4. Sınıf öğrencilerimize mesleki zorunlu dersler ile verilmektedir. ENV-3007 Su Temini, ENV-3010 Kanalizasyon Sistemlerinin Tasarımı, ENV-4001 Atıksuların Arıtılması, ENV-4002 Endüstriyel Atıksuların Arıtımı, ENV-4006 İçme Sularının Arıtılması zorunlu dersleri ile su temini, atıksu uzaklaştırma, su ve atıksu arıtımında uygulanan sistemlerin teorileri anlatıldığı gibi, bu sistemlerin uygulama ve tasarım esasları ile ilgili mevzuatlar da verilmektedir. Adı geçen derslerle birlikte ENV-3020 Deniz Deşarjı, ENV-4021 Su Kirliliği Kontrolü, ENV-4023 Anaerobik Arıtma ve Biyoenerji, ENV-4012 Havza Planlama, ENV-4018 İleri Arıtma Teknolojileri ve ENV-4020 Arıtma Çamurları Yönetimi seçmeli dersleri ile öğrencilerin su ve atıksu yönetimi konusundaki bilgi birikimlerinin arttırılması sağlanmaktadır.

Hava kirliliği konusunda öğrencilerimizin kazanması gereken bilgilerin temeli, zorunlu olarak verilmekte olan ENV-3008 Atmosfer Kimyası ve Hava Kalitesi dersinde verilmektedir. Zorunlu olan ENV-4003 Hava Kirliliği ve Kontrolü dersi ile özellikle sanayi ve taşıtlardan kaynaklanan hava kirliliğinin kontrolü, arıtımı ve azaltılmasına dönük bilgiler edinen öğrencilerimiz, seçmeli olarak sunulan ENV-4019 İç Ortam Hava Kalitesi dersi ile özellikle konut ve sanayilerde yaşam ve çalışma ortamlarındaki hava kalitesinin insan sağlığı üzerine olan etkilerini ve alınabilecek tedbirleri öğrenmektedir.

Atık yönetimi (katı ve tehlikeli) konusunda bölümümüz eğitim planında yer alan iki zorunlu ders bulunmaktadır. ENV-4005 Katı Atık Yönetimi dersi ile özellikle kentlerden kaynaklanan evsel nitelikli katı atıkların toplanması, taşınması ve bertarafı konusunda temel bilgiler verilmekte ve temel ünitelerin tasarım esasları verilerek örnekler çözülmektedir. Ders kapsamında verilen ödevler ile öğrencilerin bilgi birikimi geliştirilmektedir. ENV-4004 Tehlikeli Atık Yönetimi dersi ile ise özellikle sanayilerden kaynaklanan tehlikeli atıkların geçici depolanması, taşınması ve bertarafı konusunda öğrencilerimiz bilgilendirilmektedir. ENV-4014 Katı Atık Geri Dönüşüm Teknolojileri dersini seçmeli olarak alan öğrencilerimiz ise geri dönüştürülebilir atıkların toplanması, materyal geri kazanım tesisleri, bu tesisler için kütle denkliklerinin oluşturulması, cam, kâğıt, plastik ve metallerin geri dönüşümleri konusunda bilgi sahibi olmaktadırlar.

Yukarıda adı geçen derslerin bazılarında proje hazırlayan öğrencilerimiz, bireysel ve grup halinde çalışma yapma becerisi kazanabildikleri gibi, hazırladıkları ödev ve projelerin sunumunu gerçekleştirerek, görüşlerini ifade edebilme ve savunma yeteneği de kazanmaktadırlar. Yine bu derslerin bir kısmında Çanakkale ve yakın çevresinde mevcut olan tesislere teknik geziler düzenlenmekte ve öğrencilerin derslerde aldıkları bilgilerin, tesislerdeki uygulamalarını sahada görme şansı sunulmaktadır.

Çevre yönetimi konusundaki verilmesi gereken temel bilgiler, farklı dönemlere konulmuş derslerle öğrencilere aktarılmaktadır. Eğitim planımızda yer alan seçmeli derslerden ENV-3013 Çevresel Etki Değerlendirmesi, ENV-3012 Çevre Hukuku, ENV-3016 Çevresel Modelleme, ENV-4011 Çevre Yönetim Sistemleri, ENV-4013 Çevre Ekonomisi, ENV-4017 Doğal Kaynaklar ve Çevre Planlama derslerinin temel konusu çevre yönetimidir. Özellikle ENV-4011 Çevre Yönetim Sistemleri, ENV-3013 Çevresel Etki Değerlendirmesi ve ENV-4017 Doğal Kaynaklar ve Çevre Planlama dersleri seçmeli olmalarına rağmen, bölümümüzün ilk kurulduğu ve Türkçe eğitim verilen dönemden beri öğrencilerimiz tarafından sürekli olarak seçilen derslerdir.

ENV-3015 Gürültü Kontrolü, ENV-3017 Kirlilik Önleme, ENV-3014 Çevre Sağlığı, ENV-3018 Sürdürülebilir Kalkınma, ENV-4015 Endüstriyel Ekoloji, ENV-4016 Enerji, Sürdürülebilirlik ve Çevre isimli seçmeli dersler ile öğrencilerimizin, çevreye zarar vermeden endüstriyel açıdan gelişimin nasıl olabileceği konusunda bilgilendirilmeleri sağlanmaktadır.

Yukarıda adı geçen seçmeli derslerin yanı sıra 2. sınıftan itibaren eğitim planımızda yer alan diğer seçmeli dersler ile öğrencilerimizin ilgi alanları doğrultusunda kendilerini geliştirebilmeleri amaçlanmaktadır. Bu seçmeli dersler arasında ENV-2017 Çevre Mühendisliğinde Güncel Konular, ENV-2019 Kentsel Gelişme ve Çevre, ENV-2020 Zemin Mekaniği, ENV-4010 Maruziyet ve Risk Değerlendirme dersleri yer almaktadır.

Ayrıca duyulan lüzum üzerine eğitim planımızda yapılan güncelleme ile Proje Yönetimi ve Girişimcilik dersi eğitim planımıza eklenmiş ve eğitim planımızda yer alan İş Sağlığı ve Güvenliği dersi iki dönem zorunlu okutulmak üzere yeniden düzenlenmiştir.

Eğitim planımızda, öğrencilerimizin Çevre Mühendisliği problemlerini inceleyip çözebilmeleri için, deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi kazandırmak amacıyla konmuş dersler yer almaktadır. Temel derslerin yanı sıra ders planımızda yer alan ENV-2005 Çevre Kimyası Laboratuvarı I, ENV-2010 Çevre Kimyası Laboratuvarı II, ENV-2006 Çevre Mikrobiyolojisi Laboratuvarı ve ENV-3003 Temel İşlemler Laboratuvarı dersleri ile öğrencilerimizin deney tasarlama, deney yapma becerileri geliştirilmekte, ayrıca elde ettikleri sonuçları analiz etme ve yorumlama becerisi kazandırılmaktadır. Yukarıda açıklandığı üzere 2019-2020 eğitim-öğretim yılından itibaren programa eklenmesi planlanan Fizik ve Kimya Laboratuvarı dersleri öğrencilerin uygulama alanında beceri düzeyinin artmasına katkı sağlayacaktır. ENV306 İstatistik dersi ile ise öğrencilerimizin çeşitli yollardan topladıkları verileri, istatistiksel olarak analiz etme ve yorumlama becerisi kazanmaları ödevlerle sağlanmaktadır. Bahse konu derslerde, öğrencilerin başarı durumlarının değerlendirilmesinde deneylere katılım, deney raporlarının hazırlanması, kısa sınavlar benzeri uygulama esaslı yöntemler dikkate alınarak öğrencilerin derse olan ilgilerinin ve katılımlarının en üst düzeyde olması temin edilmektedir.

Eğitim planımız incelendiğinde pek çok dersin sayısal içerikli olduğu ve derslerde uygulamaya yeterli zamanın ayrıldığı görülebilir. ENV-2001 Statik ve Dinamik, ENV-2003 Çevre Kimyası I, ENV-2007 Akışkanlar Mekaniği, ENV-2013 Çevre Ekolojisi, ENV-2002 Kemodinamik, ENV-2004 Çevre Mikrobiyolojisi, ENV-2008 Çevre Kimyası II, ENV-2012 Hidrolik, ENV-3001 Temel İşlemler I, ENV-3005 Toprak ve Yeraltı Suyu Kirliliği, ENV-3007 Su Temini, ENV-3002 Temel İşlemler II, ENV-3004 Biyolojik Prosesler, ENV-3006 İstatistik, ENV-3008 Atmosfer Kimyası ve Hava Kalitesi, ENV-3010 Kanalizasyon Sistemlerinin Tasarımı gibi derslerin kredileri incelendiğinde derslerin (1+2) veya (2+2) olarak düzenlendiği ve derslerde sayısal uygulamalara fazlasıyla yer verildiği görülecektir.

Ayrıca üçüncü sınıfta okutulmakta olan ENV-3007 Su Temini ve ENV-3010 Kanalizasyon Sistemlerinin Tasarımı dersleri ile son sınıfta okutulmakta olan ENV-4001 Atıksuların Arıtılması

ve ENV-4006 İçme Sularının Arıtılması dersleri kapsamında öğrencilerin uygulama projesi hazırlaması istenmektedir. Bu derslerin yanında ENV-4007 Bitirme Ödevi I ve ENV-4008 Bitirme Ödevi II dersleri ile öğrencilerimizin kazandıkları tasarım becerilerinin uygulamaya konulması sağlanmakta, aynı zamanda yazılı etkin iletişim kurma, etkin rapor yazma, yazılı raporları anlama, tasarım ve üretim raporları hazırlayabilme becerilerinin gelişmesi sağlanmaktadır.
Eğitim planımızda yer alan bütün derslerde öğrencimize kazandırılan bilgi, beceri ve deneyimlerin ortaya konabilmesi amacıyla ENV-4007 Bitirme Ödevi I ve ENV-4008 Bitirme Ödevi II dersleri kapsamında öğrencilerimiz bir bitirme ödevi hazırlayarak danışman öğretim üyesine sunmaktadır. Önümüzdeki yıllarda, bitirme ödevlerinin jüri önünde sunulması veya poster sunumlarla değerlendirilmesi şeklinde bir uygulamaya geçilmesi planlanmaktadır. Bitirme Ödevi dersinin temel amacı, öğrenciye gerçek problemleri tanımlama, çözüm yöntemlerini belirleme, alternatif çözümler üretme, son sınıfa kadar edindiği bilgi ve deneyimleri kullanma ve bunları verilen formatlara uygun olarak yazılı sunma becerilerinin kazandırılmasıdır.

5.2 Eğitim Planını Uygulama Yöntemi

ÇOMÜ Çevre Mühendisliği Bölümü eğitim planında yer almakta olan derslerin uygulamasında farklı eğitim yöntemleri kullanılmaktadır. Teorik dersler sınıfta yüz yüze ders anlatımı şeklinde yapılıyorken, laboratuvar içerikli olan dersler ise laboratuvarlarda uygulamalı olarak yapılmaktadır. Bunun yanı sıra Temel İşlemler I dersi benzeri derslerde, laboratuvar ortamında kurulu model ölçekli sistemler üzerinde uygulamalar yapılmaktadır. Temel İşlemler II dersinde ise sayısal veriler kullanılarak, reaktörlerin modellemesine yönelik uygulamalar yapılmaktadır.

Eğitim planımızda uygulama (problem çözme) ağırlıklı olarak işlenen dersler Matematik I, Genel Fizik I, Genel Kimya I, Matematik II, Genel Fizik II, Genel Kimya II, Statik ve Dinamik, Çevre Kimyası I, Akışkanlar Mekaniği, Çevre Ekolojisi, Kemodinamik, Çevre Mikrobiyolojisi, Çevre Kimyası II, Temel İşlemler I, Toprak ve Yeraltı Suyu Kirliliği, Su Temini, Temel İşlemler II, Biyolojik Prosesler, İstatistik, Atmosfer Kimyası ve Hava Kalitesi, Kanalizasyon Sistemlerinin Tasarımı, Atıksuların Arıtılması, Hava Kirliliği Kontrolü, Katı Atık Yönetimi, Endüstriyel Atıksuların Arıtılması, Tehlikeli Atık Yönetimi, İçme Sularının Arıtılması gibi derslerdir. Bu derslerin problem çözme için ayrılan süreleri toplam ders saatinin en az %50'lik (Atıksu Arıtımı için %40) kısmına denk gelmektedir.

Bölümümüz eğitim planında yer alan Genel Kimya I ve Genel Kimya II dersleri kapsamında öğrencilerimiz gelecek dönemlerde alacakları Çevre Kimyası I, Çevre Kimyası II, Çevre Kimyası Laboratuvarı I, Çevre Kimyası Laboratuvarı II, Kemodinamik, Temel İşlemler II gibi derslerde ihtiyaç duyacakları temel kimya bilgisini edinmektedirler. Genel Kimya dersleri kapsamında su kimyası, reaksiyonlar, gaz kimyası ve organik kimya gibi konular ele alınmaktadır. Genel Kimya I ve Genel Kimya II dersleri 2 saat teorik ve 2 saat uygulama şeklinde işlenmekte ve derslerin başarı değerlendirmesi bir ara sınav, final - bütünleme sınavı sonuçları kullanılarak yapılmaktadır.

Öğrencilerimize son sınıfta alacakları içme suyu, atıksu ve endüstriyel atıksuların arıtımı derslerine hazırlayan Temel İşlemler I ve Temel İşlemler II dersleri sırasıyla üçüncü sınıf güz ve bahar dönemlerinde verilmektedir. Temel İşlemler I dersi kapsamında reaksiyon kinetiği, reaktör türleri, karıştırma, koagülasyon-flokülasyon, çökeltim, havalandırma, flotasyon, filtrasyon gibi fiziksel arıtma prosesleri gibi konular işlenmektedir. Temel İşlemler I dersinde elde edilmiş olan konuların pekiştirilmesi amacıyla eğitim programımıza konmuş olan Temel İşlemler Laboratuvarı dersi kapsamında ise sürekli akımlı tam karışımlı ve piston akımlı reaktörlerde iz maddelerin izlenmesi, jar testi (koagülasyon-flokülasyon), çökeltim, elek analizi ve filtrasyon deneyleri yapılmaktadır. Temel İşlemler II dersi kapsamında ise daha çok kimyasal arıtmanın temelleri olan nötralizasyon, kimyasal çökeltim, yumuşatma, sorpsiyon ve izotermler, tat ve koku kontrolü, aktif karbon sistemleri, havalandırma, demir-mangan giderimi gibi konular işlenmektedir. Temel İşlemler I ve II derslerinin değerlendirmesi bir arasınav, ödev ve

final-bütünleme sınavı üzerinden yapılırken, Temel İşlemler Laboratuvarı dersinin değerlendirilmesi bir arasınav, laboratuvar raporları ve final-bütünleme ile yapılmaktadır. Temel İşlemler Laboratuvarı dersi kapsamında öğrencilerin laboratuvar uygulamalarına ait raporları bireysel olarak hazırlaması istenmekte ve rapor yazma becerilerini geliştirmeleri sağlanmaktadır.

Altyapı tesisleri hakkında öğrencilerimizin bilgilendirildiği ve tasarım yeteneklerinin geliştirildiği Su Temini ile Kanalizasyon Sistemlerinin Tasarımı derslerinde öğrencilerimizin ihtiyaç duyacağı temel bilgiler, Akışkanlar Mekaniği ile Hidrolik dersleri kapsamında öğrencilerimize verilmektedir. İkinci sınıfın güz (Akışkanlar Mekaniği) ve bahar (Hidrolik) yarı yıllarında 1 teorik ve 2 uygulama şeklinde işlenen bu derslerde bir arasınav, bir ödev ve final-bütünleme sınavı uygulanarak öğrencilerin başarı seviyesi değerlendirilmektedir. Akışkanlar Mekaniği dersinde birim sistemleri, akışkanların özellikleri, ideal gaz denklemi, viskozite, hidrostatik, kaldırma kuvveti, süreklilik denklemi, Bernouilli denklemi gibi konular işlenmektedir. Hidrolik dersi kapsamında ise akım türleri, enerji kayıpları ve ilgili formüller, seri bağlı boru sistemleri, paralel bağlı boru sistemleri, çok hazneli sistemler, açık kanallar, açık kanallarda akım türleri, kanal dizaynı, en uygun kesit tanımı, hidrolik sıçrama ve enerji kayıpları gibi konular öğrencilere aktarılmaktadır.

Bölümümüz öğrencilerine tasarım becerisi kazandırılması amacıyla, eğitim programımızda 4 adet tasarım ağırlıklı zorunlu derse yer verilmiştir. Bu dersler, öğrencilerimizin III. Sınıf güz ve bahar dönemlerinde aldıkları Su Temini ve Kanalizasyon Sistemlerinin Tasarımı dersleri ile IV. Sınıf güz ve bahar dönemlerinde aldıkları Atıksuların Arıtılması ve İçme Sularının Arıtılması dersleridir.

Öğrencilerimizin tasarım becerilerinin gelişmesi sadece yukarıda adı geçen dersler ile sağlanmamakta, üçüncü sınıftan itibaren aldıkları diğer bazı dersler ile de desteklenmektedir. Temel İşlemler I ve II dersleri kapsamında Çevre Mühendisliği'nde uygulanan temel işlemler anlatılırken, reaktör veya benzeri ünitelerde gerçekleştirilen işlemlerde kullanılan reaktör türlerinin basit tasarımları da anlatılmaktadır. Son sınıf öğrencilerimizin aldığı Katı Atık Yönetimi dersi basit tasarım uygulamaları içeren diğer bir derstir. Bu ders kapsamında öğrenciler bir kentin katı atık toplama sisteminde ihtiyaç duyulacak konteyner ve atık toplama araçlarının sayısını belirledikleri gibi, yığın ve reaktör tipi kompostlaştırma reaktörlerinin tasarımını yapıp alan ve ekipman ihtiyaçlarını belirleyebilmektedirler. Ayrıca depolanması gereken atıklar için yer seçimi kritelerine uygun olacak alanlar belirleyip, ihtiyaç duyulacak alan büyüklüğünü ve oluşacak deponi gazı miktarını hesaplayabilmektedirler. Bu dersin devamı niteliğinde olan Katı Atık Geri Dönüşüm Teknolojileri dersinde ise bir materyal geri dönüşüm tesisi için kütle denkliği oluşturup, gerekli üniteleri seçebilmektedirler. İleri Arıtma Teknolojileri dersinde ise öğrencilere hava ile sıyırma, membran teknolojileri ve adsorpsiyon sistemleri gibi arıtma sistemlerinin tasarımı ders içeriğinde verilmektedir. Benzer şekilde Endüstriyel Atıksuların Arıtılması dersinde yağ tutucu, flotasyon, dengeleme, anaerobik reaktörler gibi arıtma ünitelerin tasarım uygulamaları yapılmaktadır. Arıtma Çamurlarının Yönetimi dersinde ise yoğunlaştırıcı, kurutma yatağı, aerobik ve anaerobik çürütücü tasarımlarının nasıl yapılacağı öğrencilere verilmektedir. Tüm bu derslerde tasarım becerisinin kazandırılıp kazandırılamadığı verilen ödevlerle veya sınavlarda sorulan tasarım soruları ile denetlenmektedir.

Eğitim programımızda bulunan dört tasarım esaslı ders ve diğer tasarım içeren derslerin yanısıra, öğrencilerimizin almakta olduğu Teknik Resim ve Bilgisayar Destekli Tasarım dersleri, öğrencilerin üç boyutlu düşünme yeteneklerini geliştirmekle birlikte, tasarladıkları ünitelerin teknik çizimini yapma yeteneği de kazandırmaktadır. Tasarım esaslı derslerin proje aşamasında öğrenciler, tasarımını yaptıkları ünitelerin çizimini bilgisayar ortamında yapmaları hususunda teşvik edilmektedirler.

Eğitimlerinin son sınıfında öğrencilerimiz güz ve bahar döneminde birbirini tamamlayacak şekilde Bitirme Ödevi I ve Bitirme Ödevi II derslerini almaktadırlar. Bitirme ödevlerini tasarım esaslı hazırlayan öğrencilerimiz de teknik çizimlerini AUTO-CAD benzeri modern çizim

programlarıyla yapmaları konusunda yönlendirilmektedirler. Bitirme ödevlerini bitirme ödevi danışmanları gözetiminde hazırlayan öğrencilerimiz, güz dönemi sonunda ödevlerini ciltlenmiş olarak teslim etmektedirler. Bitirme ödevinin değerlendirmesi danışman öğretim üyesi tarafından öğrencinin dönem içi performansı ve teslim ettiği ödev üzerinden yapılmaktadır.

Çevresel Etki Değerlendirmesi (ÇED) dersi öğrencilerimizin çevre konusundaki kanun ve yönetmeliklerle ilk tanıştığı derstir. Bu ders kapsamında; anayasa ve yasalarda çevre ve çevresel etki değerlendirme, ÇED'in tarihsel gelişimi, çevresel sorumluluk, fayda-maliyet analizi, basit kontrol çizelgeleri, ağırlıklı matrisler, çevresel hasarlar ve ekosistem fonksiyon kaybı, Leopold matrisi, karayolları ve ulaştırma sektöründe, üretim ve enerji tesislerinde, tarımsal projelerde ÇED raporlarının hazırlanması ve doğal alanların korunması konuları işlenmektedir. Bu ders kapsamında öğrenciler kendilerinin seçtiği bir ÇED raporunu inceleyip, değerlendirmesini yapmakta ve dönem sonunda sunumunu gerçekleştirmektedir. Bu uygulama ile öğrenciler kritik yapma becerisi kazanırken, hazırladıkları raporları toplum önünde sunarak özgüvenlerini de geliştirme şansı elde etmektedirler. Dersin başarı değerlendirmesi bir ara sınav, vaka incelemesi (rapor incelemesi ve sunum) ve final-bütünleme sınavı ile yapılmaktadır.

Meslek hayatlarında özel mühendislik bürolarında çalışıp çeşitli projelerin içinde yer alması muhtemel öğrencilerimizin, her ne kadar tasarım esaslı dersler alıyor olsalar dahi proje yönetimi konusunda yeterli oranda bilgilendirilmediği belirlenmiştir. Aynı zamanda kendi şirketini kurmak isteyen öğrencilerimizin, içlerindeki heyecanı hayata geçirebilmek için girişimcilik konusunda bilgilendirilmeleri ve teşvik edilmeleri gerektiği sonucuna varılmıştır. Bu sebeple eğitim programımızda 2017 yılında yapılan güncelleme ile Proje Yönetimi ve Girişimcilik dersi eğitim programımıza eklenmiştir ve bu ders 2019-2020 Eğitim-Öğretim yılında ilk defa verilecektir. Bu ders ile öğrencilerin proje yönetimi ve girişimcilik konusunda temel bilgileri edinmesi, projelerin zaman planlamasının yapılması, süreçlerinin düzenlenmesi, proje ekibine liderlik yapılması gibi becerileri kazanmasının yanı sıra meslekleri ile ilgili yenilikleri tanımlayabilme, iş kurma ve yatırım süreçlerinin temel aşamalarını belirleyebilme becerilerinin kazandırılması amaçlanmaktadır.

Öğrencilerimizin mezuniyetleri sonrasında çalışacakları yerlerde yaşayabilecekleri, meslek kökenli sağlık problemleri ve güvenlik sorunları hakkında bilgi sahibi olmaları için eğitim programımızda İş Sağlığı ve Güvenliği dersi yer almaktadır. Ders kapsamında Türkiye'deki İş sağlığı ve güvenliği yönetmeliği, yasal yükümlülükler ve yönetmeliklerin uygulanması, iş kazaları ve meslek hastalıkları, kişisel koruyucu ekipmanlar ve önlemler, fiziksel, kimyasal, biyolojik faktörler, tehlikeli kimyasallar, laboratuvar güvenliği, yangın ve patlamalar, OHSAS 18001 standartı, risk ve risk yönetimi, ergonomi, inşaat alanları için güvenlik, gürültü ve titreşim, arıtma tesislerinde ve katı atık yönetiminde iş güvenliği konuları işlenmektedir. Yönetmeliklerde yapılan yeni düzenlemeler ve mezun olan öğrencilerimizin iş sağlığı ve güvenliği alanında çalışabilme potansiyeli düşünülerek, programımızda yer alan İş Sağlığı ve Güvenliği dersi 2017 yılında yapılan program güncellemesi ile 2. Sınıf güz ve bahar dönemlerinde 2 kredi olarak verilecek şekilde düzenlenmiştir. Bu düzenleme ile öğrencilerimizin iş hayatlarında faydalanabilecekleri daha detaylı bilgi edinmeleri ve girecekleri sınavlar sonucunda "İş Güvenliği Uzmanlığı Belgesi" almalarının kolaylaştırılması amaçlanmaktadır.

Eğitim programımızda yer alan derslerin yapılabilmesi amacıyla bölümümüze tahsis edilmiş 3 dersliğimiz bulunmaktadır. Ders saatlerinde çakışma olması durumunda, dekanlığımıza başvuru yaparak, fakültemizdeki kullanıma uygun olan dersliklerin belirtilen saatler için tarafımıza tahsis edilmesi istenebilmektedir. Bununla birlikte bölümümüzde mevcut 7 laboratuvarın 2 tanesi laboratuvar uygulamalı dersler için kullanılmaktadır. İhtiyaç duyulması durumunda ve özellikle Bitirme Ödevlerinin hazırlanması sırasında öğrencilerimiz imkanlar doğrultusunda diğer laboratuvarlardan da faydalanabilmektedirler. Bilgisayar uygulamalı derslerimiz (Temel Bilgi Teknolojileri ve Bilgisayar Destekli Tasarım gibi) fakültemiz bünyesinde mevcut olan bilgisayar laboratuvarlarında gerçekleştirilmektedir.

Öğrencilerimizin mezuniyete hak kazanabilmesi için toplamda 60 iş günü olan stajlarını tamamlaması gerekmektedir. Bu stajın 20 veya 30 günü 4. yarıyılı tamamladıktan sonra yapılmakta ve öğrencilerimizin özellikle Çevre Kimyası dersleri kapsamında öğrendiklerini geliştirmeleri amacıyla, çevresel parametrelerin ölçüldüğü laboratuvarda yapılması istenmektedir. Bu laboratuvarların özellikle içmesuyu ve atıksu arıtma tesislerinin laboratuvarları, üniversitelerin Çevre Mühendisliği Bölümlerinin laboratuvarları veya akredite olmuş özel laboratuvarlar olması gerekmektedir. Stajın geri kalan kısmının ise (laboratuvar stajının süresine göre 30 veya 40 iş günü) Çevre Mühendisliği ile ilgili kurum ve kuruluşlar ile özel şirketlerde yapılması istenmektedir. Öğrencilerimiz bölüm staj komisyonundan alacakları onaylı staj başvuru belgesi ile staj başvuruları yapmakta, kabul almaları durumunda öğrencilerimizin sigorta girişleri fakültemiz tarafından yapılmaktadır. Stajını tamamlayan öğrencilerimiz staj yaptıkları yerden getirdikleri başarı belgeleri dikkate alınarak staj komisyonu tarafından sözlü mülakata alınmakta ve bu iki değerlendirme sonucuyla başarı durumları belirlenmektedir. Staj, ders programımızda kredisiz iki ayrı ders olarak görünmekte ve başarı durumu YETERLİ/YETERSİZ olarak değerlendirilmektedir.

5.3 Eğitim Planı Yönetim Sistemi

Bölümümüz eğitim planı dört temel unsur dikkate alınarak yönetilmektedir. Bu unsurlar; dersi veren öğretim üyesinin tespit ettiği eksiklikler, dönem sonlarında öğrencilere uygulanan ders değerlendirme anketlerinin sonuçları, mezun öğrencilerimizden gelen geri dönüşler ve dış paydaşlarla yapılan görüşmelerden elde edilen geri dönüşlerdir. Öğretim üyesinin tespit ettiği eksiklikler, öğrenci anketlerinden gelen sonuçlar ve mezunlarımızdan elde ettiğimiz geri dönüşler Bölüm Akademik Genel Kurulu'nda bölümümüzde ders veren bütün öğretim üyeleri ile tartışıldıktan sonra, Eğitim-Öğretim Programı Güncelleme ve Geliştirme Komisyonu'nda dış paydaşlar ile paylaşılmakta ve dış paydaşların görüşleri de dikkate alınarak eğitim planında gerekli değişiklikler yapılmaktadır. Bölümümüz Eğitim-Öğretim Programı Güncelleme ve Geliştirme Komisyonu'nda öğretim üyeleri ve elemanları dışında, Çanakkale Belediyesi, Çanakkale Çevre ve Şehircilik İl Müdürlüğü ve Güney Marmara Kalkınma Ajansı'ndan ikişer temsilci, DSİ 252. Şube Müdürlüğü ve Özel Sektörden (İÇDAŞ) birer temsilci, bir bölüm mezunu (ODAŞ şirketinde görevli) ve bölümümüz öğrenci temsilcisi yer almaktadır.

Yapılan değişikliklerin uygulamaya geçebilmesi için, eğitim planında yapılan değişikliklerle ilgili Bölüm Kurul Kararı alınmakta, alınan karar Mühendislik Fakültesi Dekanlığı'na sunulmaktadır. Fakülte Kurulunda değerlendirilen değişiklikler ise Fakülte Yönetim Kurulu Kararı ile rektörlük makamına iletilmektedir. Bu kararın Üniversite Senatosu'nca onaylanması sonucunda eğitim planında yapılan değişiklikler yürürlüğe girmektedir.

5.4 Eğitim Planının Bileşenleri

Eğitim planımızdaki dersler kategorilerine göre incelendiğinde; plan 66 AKTS (%27,5) olmak üzere matematik ve temel bilimler eğitimini içermektedir.

1.sınıflarda bulunan Genel Fizik laboratuvarı ve genel kimya laboratuvarı ile 1. Sınıf öğrencilerimiz laboratuvar ile tanışmaktadırlar. 2. Sınıflarda bulunan Çevre Kimyası laboratuvarı 1 ve 2 ile ve Çevre Mikrobiyolojisi laboratuvarı ile Çevre Mühendisliğinin temellerini oluşturan parametrelerin ölçülmesini öğrenmektedirler. 3. Sınıflarda bulunan Temel İşlemler1 laboratuvarında Çevre mühendisliği uygulamalarını laboratuvar ölçeğinde yapabilmektedirler. 4. Sınıfta bulunan Katı Atık Laboratuvarında katı atıklara yönelik laboratuvar ölçümleri yapılmaktadır. Bu laboratuvar dersleri zorunlu derslerdir.

5.5 Ana Tasarım Deneyimi

Öğrencilerin, önceki derslerde edindikleri bilgi ve becerileri kullandığı, mühendislik standartlarını ve gerçekçi koşulları/kısıtları içeren bir ana tasarım deneyimini nasıl kazandığını

kanıtlarıyla açıklayınız. Tümüyle literatür araştırması ve/veya sadece analiz içeren çalışmalar veya kuramsal/uygulamalı bir derste yapılan kısmi tasarım uygulamaları ve/veya mühendislik standartları ve gerçekçi koşulları/kısıtları yeterince içermeyen tasarım çalışmaları ana tasarım deneyimi olarak kabul edilmemektedir.

Bölümümüz öğrencilerine ana tasarım deneyiminin kazandırılması, eğitim programımızda yer alan tasarım ağırlıklı 4 zorunlu dersle sağlanmaktadır. Bu dersler, altyapı tesislerinin tasarımına dönük olan ve Akışkanlar Mekaniği ile Hidrolik derslerini takiben sırasıyla III. Sınıf güz ve bahar dönemlerinde aldıkları Su Temini, Kanalizasyon Sistemlerinin Tasarımı dersleri ile Çevre Mühendisliği'nin temel konularından olan içme suyu ve atıksu arıtımı konularındaki IV. Sınıf güz ve bahar dönemlerinde aldıkları Atıksuların Arıtılması ve İçme Sularının Arıtılması dersleridir.

Su Temini dersi bölümümüz eğitim programı 5. yarıyılında verilen, 1 saat teorik ve 2 saat uygulama olmak üzere toplam 3 saatlik bir derstir. Ders kapsamında öğrencilerimiz özellikle Hidrolik dersinden aldıkları temel bilgileri kullanarak su temini yapılarının tasarımını gerçekleştirmektedirler. Ders kapsamında öğrencilere tasarımını yapacakları kentin isale hattının geçirileceği arazinin profili, kentin bir bölümünün planı ve nüfus bilgileri verilmektedir. Öğrenciler proje konusu olan yerleşimlerinin su kaynaklarını belirleyip, kuyu, isale hattı, su deposu ve su dağıtım şebekelerinin tasarımını yapmaktadırlar. Öğrencilerin öğrendikleri konularla ilgili çalışmalarını hafta hafta yapmaları, problem yaşadıkları noktalarda dersi veren öğretim üyesi ile irtibata geçmeleri istenmektedir. Öğrenciler gerçekleştirdikleri tasarım çalışmalarını, dönem sonunda bir proje dosyası olarak dersi veren öğretim üyesine teslim etmektedirler. Dersin başarı değerlendirmesi, proje çalışması, bir ara sınav ve final-bütünleme sınavı üzerinden yapılmaktadır. Su Temini ders içeriği aşağıda kısaca özetlenmiştir;

- Gelecek nüfusunun hesaplanması
- Gelecek su ihtiyaçlarının hesaplanması
- Su alma yapıları
- Kuyu tasarımı ve hidrolik hesapları
- Cazibeli ve terfili isale hatlarının tasarımı
- Su depolarının tasarımı
- Su şebekelerinin ölü noktalar yöntemine göre tasarımı
- Pompa istasyonları

Kanalizasyon Sistemlerinin Tasarımı dersi bölümümüz eğitim programı 6. yarıyılında verilen, 1 saat teorik ve 2 saat uygulama olmak üzere toplam 3 saatlik bir derstir. Su Temini dersinin devamı niteliğinde olan bu ders kapsamında öğrencilerimiz, Su Temini dersinde su temini projesini hazırladıkları kentin, atıksularının ve yağmur sularının toplanması için gerekli kanalizasyon sistemlerinin tasarımını yapmaktadırlar. Su Temini dersine benzer şekilde öğrencilerimiz tasarım çalışmalarını dönem sonunda ilgili öğretim üyesine teslim etmektedirler. Dersin başarı değerlendirmesi, proje çalışması, bir ara sınav ve final-bütünleme sınavı üzerinden yapılmaktadır. Ders başarı değerlendirmesine katılmamakla birlikte öğrencilerin bilgi ve görgülerinin arttırılması amacıyla kanalizasyon sistemleri ile ilgili videolar izlemeleri istenmekte, kanalizasyon boru tipleri, teknik özellikleri, maliyetleri hakkında bilgi sahibi olmaları için boru üreten şirketlerin kataloglarını incelemeleri ödev olarak verilmektedir.

Öğrencilerin ilgilerinin arttırılıp, emeklerinin ödüllendirilmesi için verilen bu ödevler ara sınav veya final sınavlarında soru olarak sorulmaktadır. Kanalizasyon Sistemlerinin Tasarımı ders içeriği aşağıda kısaca özetlenmiştir;

- Atıksu debilerinin hesaplanması

- Kanalizasyon tipleri (Ayrık, bileşik, yağmur suyu)
- Kanalizasyon sistemlerinde kulllanılan yapılar (bacalar, borular, pompalar)
- Cadde eğimlerine bağlı olarak boru eğimlerinin belirlenmesi
- Akım derinlikleri ve hızlarının belirlenmesi
- Yüksek eğimli caddelerde düşüler
- Atıksuların pompajı
- Atıksu toplama sistemlerinin tasarımı
- Yağmur suyu debilerinin hesaplanması
- Yağmur suyu kanallarının hidrolik tasarımı
- Kanalizasyon boru tipleri

Atıksu arıtma tesisleri tasarımı için gerekli tasarım esasları ve kriterlerinin verilmesinin amaçlandığı Atıksuların Arıtılması dersi eğitim programımızın son sınıfında 7. yarıyılında verilmekte olan bir derstir. Bu ders kapsamında öğrencilerimiz, 2. sınıfta aldıkları Hidrolik ve Akışkanlar Mekaniği, 3. sınıfta almış oldukları Temel İşlemler dersleri ile Biyolojik Prosesler dersinden edindikleri bilgilerin üzerine, evsel ve kentsel nitelikli atıksuların arıtılması amacıyla inşa edilen atıksu arıtma tesislerinin tasarımı konusunda detaylı bilgiler edinmektedir. Ders kapsamında öğrenciler, kendilerine verilen atıksu parametreleri ve nüfus bilgilerini kullanarak bir atıksu arıtma tesisinin tasarımını yapmaktadırlar. Dönem sonunda hazırladıkları projenin tesliminde öğrenciler projelerinin kısa bir sunumunu yapmakta ve soru-cevap şeklinde değerlendirme yapılmaktadır. Ayrıca dönem içerisinde her işlenen konu ile ilgili problem ağırlıklı sorularla öğrencilerin bilgilerinin pekişmesi ve tasarım yeteneklerinin gelişmesi sağlanmaktadır. Dersin başarı değerlendirmesi proje çalışması, ödevler, bir ara sınav ve final-bütünleme sınavı üzerinden yapılmaktadır. Atıksuların Arıtılması dersinin içeriği aşağıda verilmiştir;

- Atıksu arıtımının amacı, atıksu su özellikleri, arıtım yöntemleri ve akım şemaları
- Debi hesaplamaları (iterasyon)
- Debi hesaplamaları/dengeleme tankı tasarımı; örnek dengeleme tankı tasarımı
- Elek/ızgara çeşitleri ve tasarım esasları; ünite giriş/çıkış yapılarının tasarımı ve hidrolik profil oluşturulması; örnek ızgara tasarımı
- Kum tutucu çeşitleri ve tasarım esasları; ünite giriş/çıkış yapılarının tasarımı ve hidrolik profil oluşturulması; örnek kum tutucu tasarımı
- Çöktürme tankı çeşitleri ve tasarım esasları; ünite giriş/çıkış yapılarını tasarımı
- Çöktürme tankı tasarımı/hidrolik profil oluşturulması; örnek çöktürme tankı tasarımı
- Biyolojik arıtım ve arıtım esasları (amaç, biyolojik arıtım yöntemleri, tasarım kriterleri)
- Havalandırmalı lagünler/damlatmalı filtreler/stabilizasyon havuzları ve tasarım esasları
- Aktif çamur yöntemi ve uygulama yöntemleri; havalandırma yöntemleri; örnek aktif çamur prosesi tasarımı
- Aktif çamur yöntemi ve uygulama yöntemleri; havalandırma yöntemleri; örnek aktif çamur prosesi tasarımı
- Anaerobik atıksu arıtma (reaktör tipleri, biyolojik besin madde giderimi (BNR))
- Son çöktürme tankı ve tasarım kriterleri

- Dönem sonu projeleri, tartışma ve kısa sunumlar

Bölümümüz eğitim programında öğrencilere tasarım becerisi kazandıran bir diğer ders İçme Sularının Arıtımı dersidir. İçme suyu arıtma tesisleri tasarımı için gerekli tasarım esasları ve kriterlerinin verilmesinin amaçlandığı bu ders son sınıf 8. yarıyılda okutulan bir derstir. Ders kapsamında öğrencilerimiz kendilerine verilen su kalite parametrelerini ve nüfus verilerini dikkate alarak bir içme suyu arıtma tesisinin tasarımını yapmaktadırlar. Atıksuların Arıtılması dersine benzer şekilde konuların daha iyi anlaşılması ve tasarım yeteneklerinin gelişmesi amacıyla öğrencilere sayısal problemler içeren ödevler verilmektedir. Dönem sonunda proje teslimi sırasında öğrencilerin kısa bir sunum yapması istenmekte, bu şekilde öğrencilerin yaptıkları çalışmayı sunma ve savunma becerilerinin gelişmesine katkıda bulunulmaktadır. Dersin başarı değerlendirmesi proje çalışması, ödevler, bir ara sınav ve final-bütünleme sınavı üzerinden yapılmaktadır. İçme Sularının Arıtımı dersinin içeriği aşağıda özetlenmiştir;

- İçme suyu arıtımı (amacı, özellikleri, standartları), arıtım metodunun seçimi (kaynak seçimi, korunması tesis seçimi, amacı, akım şemaları)
- Havalandırma üniteleri, çeşitleri, tasarım esasları ve örnek havalandırma ünite tasarımı
- Hızlı karıştırma (hızlı karıştırma çeşitleri, kullanılan kimyasallar ve uygulama sıraları, tasarım esasları, örnek hızlı karıştırma ünite tasarımı)
- Flokulasyon (flokulasyon alternatifleri, tasarım esasları, temel hidrolik hesaplamalar, örnek flokulasyon ünite tasarımı)
- Çöktürme tankı tasarımı (amaç, tank çeşitleri ve özellikleri, tasarım esasları, temel hidrolik esaslar, örnek çöktürme tank tasarımı)
- Filtrasyon üniteleri (amaç ve çeşitleri, tasarım esasları, hidrolik hesaplamalar, örnek filtrasyon ünite tasarımı)
- Dezenfksiyon tankı tasarımı (tasarım esasları, hidrolik profil)

Tablo 5.1 Lisans Eğitim Planı

[Programın Adı]

Ders Kodu	Ders Adı(1)	Öğretim Dili (2)	Kategori (Yerel Kredi/AKTS Kredisi(10)) (3),(4),(5)			
			Matematik ve Temel Bilimler (6)	Mesleki Konular (7) *Önemli düzeyde tasarım içerenlere (√) koyunuz*	Genel Eğitim (8)	Diğer (9)
1. Yarıyıl						
ATA-1001	Atatürk İlkeleri ve Modern Tarih1	İngilizce		( )	1	
ENV-1011	Okuma ve Yazma Becerilerinin Geliştirilmesi 1	İngilizce		( )		
ENV-1013	Matematik 1	İngilizce	5	( )		
ENV-1015	Genel Fizik 1	İngilizce	5	( )		
ENV-1017	Genel Kimya 1	İngilizce	5	( )		
ENV-1019	Çevre Mühendisliğine Giriş	İngilizce		( )		
ENV-1021	Genel Fizik Laboratuvarı	İngilizce		( )		
ENV-1025	Bilgi Teknolojileri	İngilizce				
TDİ-1005	Türk Dili 1	İngilizce			1	
2. Yarıyıl						
ATA-1002	Atatürk İlkeleri ve Modern Tarih2	İngilizce		( )	1	
ENV-1012	Matematik II	İngilizce	5	( )		
ENV-1014	Genel Fizik II	İngilizce	5	( )		
ENV-1016	Genel Kimya II	İngilizce	5	( )		
ENV-1018	Bilimsel Araştırma Metodları	İngilizce		( )		
ENV-1020	Genel Kimya Laboratuvarı	İngilizce		( )		
ENV-1022	Bilgisayar Destekli Teknik Resim	İngilizce		( )		
ENV-1028	Okuma ve Yazma Becerilerinin Geliştirilmesi II	İngilizce				
TDİ-1002	Türk Dili II	İngilizce			1	
3. Yarıyıl						
ENV-2001	Statik ve Dinamik	İngilizce		( )		
ENV-2003	Çevre Kimyası I	İngilizce	6	( )		
ENV-2005	Çevre Kimyası Laboratuvarı I	İngilizce	2	( )		
ENV-2007	Akışkanlar Mekaniği	İngilizce	5	( )		

ENV-2009	İş Sağlığı ve Güvenliği I	İngilizce		( )		
SEC-2001	Mesleki Seçmeli Ders Grubu	İngilizce		( )		
				( )		
4. Yarıyıl						
ENV-2002	Kemodinamik	İngilizce				
ENV-2004	Çevre Mikrobiyolojisi	İngilizce	4			
ENV-2006	Çevre Mikrobiyolojisi Laboratuvarı	İngilizce	2			
ENV-2008	Çevre Kimyası II	İngilizce	5			
ENV-2010	Çevre Kimyası Laboratuvarı II	İngilizce	2			
ENV-2012	Hidrolik	İngilizce				
ENV-2014	İş Sağlığı ve Güvenliği II	İngilizce		( )		
SEC-2002	Mesleki Seçmeli Ders Grubu	İngilizce				
5. Yarıyıl						
ENV-3001	Temel İşlemler I	İngilizce	5	( )		
ENV-3005	Toprak ve Yeraltısuyu Kirliliği	İngilizce	5	( )		
ENV-3007	Su Temini	İngilizce	5	(√)		
ENV-3009	Proje Yönetimi ve Girişimcilik	İngilizce		( )		
ENV-3021	Temel İşlemler Laboratuvarı I	İngilizce	2	( )		
ENV-3023	Staj I	İngilizce		( )		
SEC-3001	Mesleki Seçmeli Ders Grubu	İngilizce				

Ders Kodu	Ders Adı(1)	Öğretim Dili (2)	Kategori (Yerel Kredi/AKTS(10)) (3),(4),(5)			
			Matematik ve Temel Bilimler (6)	Mesleki Konular (7) *Önemli düzeyde tasarım içerenlere (√) koyunuz*	Genel Eğitim (8)	Diğer (9)
6. Yarıyıl						
ENV-3002	Temel İşlemler II	İngilizce	4	( )		
ENV-3004	Biyolojik Prosesler	İngilizce	5	( )		
ENV-3006	İstatistik	İngilizce	4	( )		
ENV-3008	Atmosfer Kimyası ve Hava Kalitesi	İngilizce	5	( )		
ENV-3010	Kanalizasyon Sistem Tasarımı	İngilizce	3	(√)		
SEC-3002	Mesleki Seçmeli Ders Grubu	İngilizce		( )		

7. Yarıyıl						
ENV-4001	Atıksu Arıtımı	İngilizce	5	(√)		
ENV-4003	Hava Kirliliği Kontrol Teknolojileri	İngilizce	4	( )		
ENV-4005	Katı Atık Yönetimi	İngilizce	4	( )		
ENV-4007	Bitirme Ödevi I	İngilizce	3	( )		
ENV-4009	Staj II	İngilizce		( )		
SEC-4001	Mesleki Seçmeli Ders Grubu	İngilizce		( )		
8. Yarıyıl						
ENV-4002	Endüstriyel Atıksu Arıtımı	İngilizce	3	( )		
ENV-4004	Tehlikeli Atıkların Yönetimi	İngilizce	5	( )		
ENV-4006	Su Arıtımı	İngilizce	5	(√)		
ENV-4008	Bitirme Ödevi II	İngilizce	3	( )		
ENV-4026	Katı Atık Laboratuvarı	İngilizce	2			
SEC-4001	Mesleki Seçmeli Ders Grubu	İngilizce		( )		
				( )		
PROGRAMDAKİ KATEGORİ TOPLAMLARI(10)						
Mezuniyet için Toplam Yerel Kredi/AKTS						
TOPLAMLARIN GENEL TOPLAMDAKİ YÜZDESİ						
Toplamlar bu satırlardan en az birini sağlamalıdır	En düşük yerel kredi/AKTS kredisi					
	En düşük yüzde					

Notlar:

(1) Öğretim dili Türkçe olmasa bile ders adını Türkçe yazınız.
(2) Öğretim dilini yazınız.
(3) Yukarıdaki kategoriler için derslerin MÜDEK Ölçütlerini sağlama kontrolü MÜDEK değerlendiricisi tarafından ÖDR'de yer alan ders izlenceleri ve kurum ziyareti sırasında eğitim malzemeleri ve öğrenci çalışmaları incelenerek yapılacaktır.
(4) Bir ders birden fazla kategori ile ilgili ise, dersin toplam kredisi bu kategoriler arasında tam sayılar kullanılarak dağıtılabilir.
(5) Temel bilimlere örnekler: Fizik, Kimya, Biyoloji, Yer Bilimleri, vb.
(6) Mesleki Konulara örnekler: Temel mühendislik bilimleri (Mühendislik Mekaniği, Termodinamik, Isı ve Kütle Aktarımı, Akışkanlar Mekaniği, Elektrik ve Elektronik Devreler, Malzeme Bilimi, Bilgisayar Bilimi, vb.) ve disipline özgü mühendislik alanlarıyla ilgili konular.
(7) Genel Eğitime örnekler: Sosyal ve Beşeri Bilimler, İktisadi ve İdari Bilimler, vb.
(8) Diğer: Yukarıdaki 3 kategoriye girmeyen konular. Örnekler: Temel bilgisayar kullanımı ve programlama, bireysel beceri geliştirmeye yönelik spor ve müzik, vb.
(9) Toplamlar hesaplanırken zorunlu derslerin hepsi, seçmeli derslerin ise, yalnızca eğitim planında yer aldığı sayı kadarı kullanılmalıdır.
(10) Kurum tarafından kullanılan yerel kredi ve/veya AKTS kredi değerleri verilmelidir.

Tablo 5.2 Ders ve Sınıf Büyüklükleri

[Programın Adı]

Dersin Kodu	Dersin Adı	Son İki Yarıyılda Açılan Şube Sayısı	En Kalabalık Şubedeki Öğrenci Sayısı	Dersin Türü(1)			
				Sınıf Dersi	Laboratuvar	Problem Saati	Diğer

***Not**: (1) Her dersin oluştuğu türleri yüzde olarak veriniz (%75 sınıf dersi, %25 laboratuvar gibi).*

Ölçüt 6. Öğretim Kadrosu

6.1 Öğretim Kadrosunun Sayıca Yeterliliği

Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümünde Çevre Teknolojisi ve Çevre Bilimleri Anabilim Dalı olmak üzere iki anabilim dalı bulunmaktadır. Bölümümüzde 5 profesör, 1 Dr. Öğr.Üyesi ve 1 Dr. araştırma görevlisi ve 2 araştırma görevlisi olmak üzere toplamda 9 öğretim elemanı görev yapmaktadır (http://cevre.muhendislik.comu.edu.tr/bolumhakkinda/akademik-kadro.html).
Bölüm öğretim üyelerinin tamamı tam zamanlı olarak ÇOMÜ Çevre Mühendisliği Bölümünde görev almaktadırlar. Lisans düzeyinde bakıldığında 8 öğretim üyesinin Çevre Mühendisliği Bölümünden, 1 öğretim üyesinin ise Maden Mühendisliği bölümünden mezun olduğu görülmektedir.
Anabilim Dallarına Göre Öğretim Üyeleri
Çevre Teknolojisi Anabilim Dalı
· Prof. Dr. Önder AYYILDIZ
· Prof.Dr. Nilgün AYMAN ÖZ
· Prof.Dr. Sibel MENTEŞE
· Dr. Öğr. Üyesi Akın ALTEN
· Arş. Gör. Kaan DİNÇER
Çevre Bilimleri Anabilim Dalı
· Prof. Dr. Çetin KANTAR
· Prof.Dr. Hasan Göksel ÖZDİLEK
· Dr. Arş. Gör. Çiğdem Öz YAŞAR
· Arş. Gör. Ersin ORAK

Öğretim elemanı sayımızın az olduğu gözükmektedir.

6.2 Öğretim Kadrosunun Nitelikleri

Çevre Mühendisliği Bölümü akademik kadrosu Çevre Bilimleri ve Çevre Teknolojisi olmak üzere iki anabilim dalına bağlıdır. Bölümümüzde yapılan eğitim ve araştırmalar bu anabilim dallarını kapsamakta ve bölümümüzde görevli öğretim üyeleri bu anabilim dallarında görev yapmaktadır. Öğretim üyelerinin verdikleri dersler ve yürüttükleri tez çalışmaları, sahip oldukları uzmanlık alanları ile örtüşmektedir.
Yukarıda da belirtildiği üzere Lisans düzeyinde bakıldığında 8 öğretim üyesinin Çevre Mühendisliği Bölümünden, diğer öğretim üyesi Maden Mühendisliği bölümünden mezun olduğu görülmektedir. Profesör öğretim üyelerimiz ünvanlarını Çevre Mühendisliği alanında almıştır. Ders vermekle yükümlü olan öğretim üyelerinin özgeçmişlerine
http://cevre.muhendislik.comu.edu.tr/bolum-hakkinda/akademik-kadro.html
İnternet adresinden ulaşılabilir.

6.3 Atama ve Yükseltme

Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümündeki öğretim üyelerinin atama ve yükseltme kriterleri, YÖK tarafından belirlenen akademik şartları sağladıktan sonra Çanakkale Onsekiz Mart Üniversitesi Senatosu tarafından onaylanan 'Öğretim Üyeliği Kadrolarına Atama İlkeleri ve Uygulama Esaslarına göre gerçekleştirilmektedir. Çanakkale Onsekiz Mart Üniversitesi atanma ilkeleri ve akademik etkinlikler puanlama sistemine ilişkin tüm detaylar üniversite internet sayfasında (http://www.comu.edu.tr/atama-kriterleri) verilmiştir.
Öndeğerlendirme aşağıda verilen adımlarda gerçekleştirilir:

a. Adayların başvuru dosyaları, başvurduğu Fakülte/Enstitü/Yüksekokul tarafından seçilen üç kişilik bir Komisyon tarafından, Üniversitemiz Senatosunca kabul edilmiş Yükseltme ve Atama İlkelerine göre uygunluk yönünden bir ön değerlendirmeye alınır.
b. İlgili komisyon Öndeğerlendirme sırasında adayın imzaladığı belgenin doğruluğunu inceler.
c. Öndeğerlendirme Komisyonu bir hafta içinde adaylar hakkında bir Öndeğerlendirme Raporu hazırlar.
Dr. Öğr. Üyesi kadroları için
Fakülte/Enstitü/Yüksekokula; Doçent ve Profesör kadroları için hazırladığı raporu başvuru dosyası ile birlikte Rektörlüğe arz eder.
d. Çanakkale Onsekiz Mart Üniversitesi Senatosu tarafından kabul edilmiş asgari koşulları sağlamayan başvurular değerlendirmeye alınmaz. Gerekli durumlarda itirazlar Rektörlük Makamına yapılır.
e. Öğretim üyelerinin atama ve yükseltilmeleri, belirlenen ilkeler kapsamında öğretim üyelerinin bilimsel aktivitelerinin en önemli ölçüsü olarak kabul edilen, ağırlıklı olarak SCI, SCI-Expanded kapsamındaki dergilerde, yurt dışındaki hakemli dergilerde yayımlanmış yayınlar ile Üniversite Yönetim Kurulu tarafından kabul edilmiş listelerde yer alan dergilerde yayımlanmış yurt içi yayınlardan elde edilen puanlar temel alınarak gerçekleştirilmektedir. Bunlara ek olarak lisans üstü tez yönetimi, kitap veya kitap içi bölüm yazarlığı, yurtiçi ve yurt dışı sempozyum veya kongrelere katılmak, yurtiçi ve yurt dışı sempozyum veya kongre düzenlemek, uluslararası hakemli dergilerde editörlük veya hakemlik yapmak ve yayınlanan makalelere yapılan atıflar da puanlamaya katkı sunan başlıca çalışmalar arasında yer almaktadır.

Tablo 6.1 Öğretim Kadrosu Yük Özeti

[Programın Adı]

Öğretim Elemanının Adı ve Soyadı	TZ, YZ, EG[1]	Son İki Dönemde Verdiği Tüm Dersler (Dersin Kodu/Kredisi/Dönemi/Yılı)[2]	Toplam Etkinlik Dağılımı[3]		
			Öğretim	Araştırma	Diğer[4]
Prof.Dr.Çetin KANTAR	TZ	ENV-3002/4/6/2024, ENV-3005/5/5/2024, ENV-4006/5/8/2024, SEC Dersleri, Term Projects			
Prof.Dr.Önder AYYILDIZ	TZ	ENV-2003/6/3/2024, ENV-2005/2/3/2024, ENV-2002/4/4/2024, ENV-2008/5/4/2024, ENV-2010/2/4/2024, SEC Dersleri, Term Projects			
Prof.Dr.Hasan Göksel ÖZDİLEK	TZ	ENV-1025/1/2/2024, ENV-4004/5/8/2024, SEC Dersleri, Term Projects			
Prof.Dr.Nilgün Ayman ÖZ	TZ	ENV-3009/3/5/2024, ENV-3004/5/6/2024, ENV-4002/3/8/2024, ENV-4026/2/8/2024, SEC Dersleri, Term Projects			
Prof.Dr.Sibel MENTEŞE	TZ	ENV-3006/4/6/2024, ENV-3008/5/6/2024, ENV-4003/4/7/2024, SEC Dersleri, Term Projects			
Dr.Öğrt.Üyesi Akın ALTEN	TZ	ENV-1019/3/1/2024, ENV-2007/5/2/2024, ENV-2012/4/4/2024, ENV-3007/5/5/2024, ENV-3010/3/6/2024, ENV-4005/4/7/2024, SEC Dersleri, Term Projects			
Dr.Arş.Gör Çiğdem Öz YAŞAR	TZ	ENV-2009/2/3/2024, ENV-2004/4/4/2024, ENV-2006/2/4/2024, ENV-2014/2/4/2024, ENV-3001/5/5/2024, ENV-3021/2/5/2024			

Notlar:

(1) TZ: Tam zamanlı, YZ: Yarı zamanlı, EG: Ek görevli

(2) Her öğretim elemanı için son iki dönemde verdiği tüm dersleri (lisansüstü ve başka programlarda verilen dersler dahil) sıralayınız. Gerektiğinde satır ekleyiniz.
(3) Etkinlik dağılımını, her bir öğretim elemanının toplam etkinliği %100 olacak biçimde yüzde olarak veriniz.
(4) Uzun süreli izinleri "Diğer" sütununda gösteriniz.

Tablo 6.2 Öğretim Kadrosunun Analizi

[Programın Adı]

Öğretim Elemanının Adı ve Soyadı(1)	Unvanı	TZ YZ EG (2)	Aldığı Son Derece ve Alanı	Mezun Olduğu Son Kurum ve Mezuniyet Yılı	Deneyim Süresi, Yıl			Etkinlik Düzeyi (yüksek, orta, düşük, yok)		
					Kamu/ Sanayi Deneyimi	Öğretim Deneyimi	Bu Kurumdaki Deneyimi	Mesleki Kuruluşlarda	Araştırmada	Sanayiye Verilen Danışmanlıkta
Prof.Dr.Çetin KANTAR	Prof.Dr	TZ								
Prof.Dr.Önder AYYILDIZ	Prof.Dr	TZ								
Prof.Dr.Hasan Göksel ÖZDİLEK	Prof.Dr	TZ								
Prof.Dr.Nilgün Ayman ÖZ	Prof.Dr	TZ								
Prof.Dr.Sibel MENTEŞE	Prof.Dr	TZ								
Dr.Öğrt.Üyesi Akın ALTEN	Dr.Öğr. Üyesi	TZ								
Dr.Arş.Gör Çiğdem Öz YAŞAR	Dr.Arş. Gör	TZ								
Arş.Gör Kaan DİNÇER	Arş.Gör	TZ								
Arş.Gör Ersin ORAK	Arş.Gör	TZ								

Notlar:

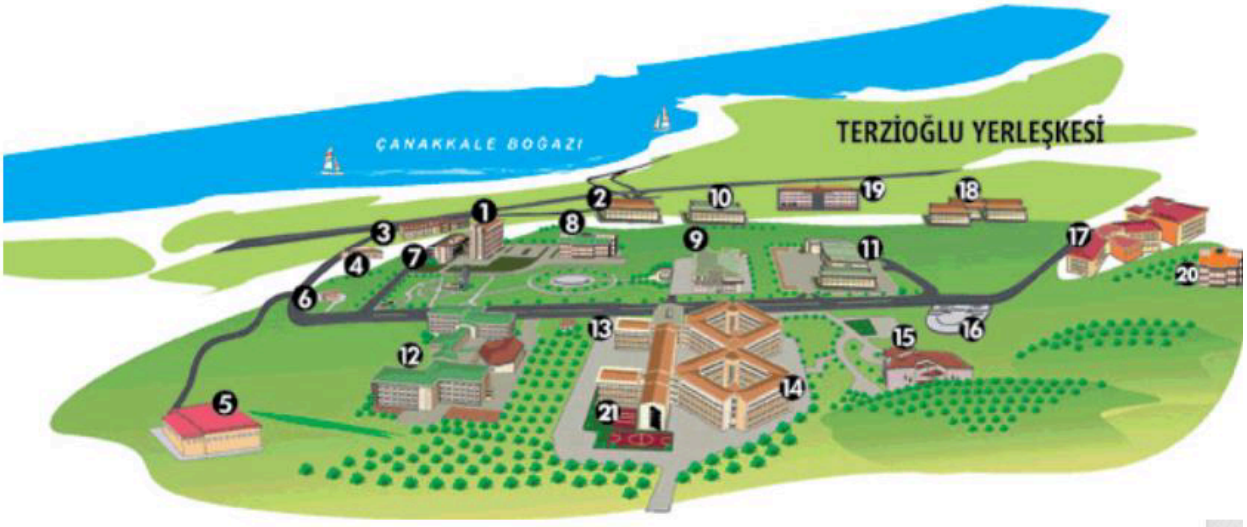
(1) Tabloyu programdaki her öğretim üyesi için doldurunuz. Gerekiyorsa ek sayfa kullanabilirsiniz.
(2) TZ: Tam zamanlı,YZ: Yarı zamanlı, EG: Ek görevli

(3) Etkinlik düzeyi son 3 yılın ortalamasını yansıtmalıdır.

Ölçüt 7. Altyapı

7.1 Eğitim için Kullanılan Alanlar ve Donanım

Çevre Mühendisliği Bölümü, Çanakkale Onsekiz Mart Üniversitesi Mühendislik Fakültesi Terzioğlu Yerleşkesi'nde eğitim-öğretim yapmaktadır. Üniversitemizin pek çok Fakülte birimi Terzioğlu Yerleşkesi'nde bulunmaktadır. Yerleşke yaklaşık 3 hektarlık bir alan üzerinde, denize sadece birkaç yüz metre uzaklığında, sırtını Radar Tepesi'ne vermiş, ormanların içine gömülü çok ayrıcalıklı doğal güzelliğe sahip bir konumdadır.



1 - Ana Giriş
2 - Çanakkale Teknik ve Sosyal Bilimler Meslek Yüksekokulları , İlahiyat Fakültesi
3 - Tıp Fakültesi
4 - Çocuklar Evi (Kreş)
5 - Besyo & Kapalı Spor Salonu
6 - Yamaç Kafe
7 - Rektörlük - Daire Başkanlıkları
8 - Kütüphane
9 - Öğrenci Sosyal Etkinlik Merkezi (ÖSEM)
10 - Fen Bilimleri Enstitüsü, Sosyal Bilimler Enstitüsü.
11 - Deniz Bilimleri ve Teknolojisi Fakültesi
12 - Ziraat Fakültesi
13 - ATM Alanı
14 - Fen Edebiyat Fakültesi
15 - Troia Kültür Merkezi
16 - Açık Anfi
17 - Mühendislik Fakültesi
18- Yabancı Diller Yüksekokulu, Sağlık Bilimleri Enstitüsü, Sağlık YO
19 - Güzel Sanatlar Fakültesi
20 - Öğrenci Yurdu
21 - Mediko

Mühendislik Bölümü Şekil 'de 17 numara ile gösterilen konumda bulunmaktadır. Bölüm binası sınıflar, laboratuvarlar ve idari kısım olmak üzere üç kısımdan oluşmaktadır.

8.1 Eğitim için Kullanılan Alanlar ve Teçhizat

i) Sınıflar

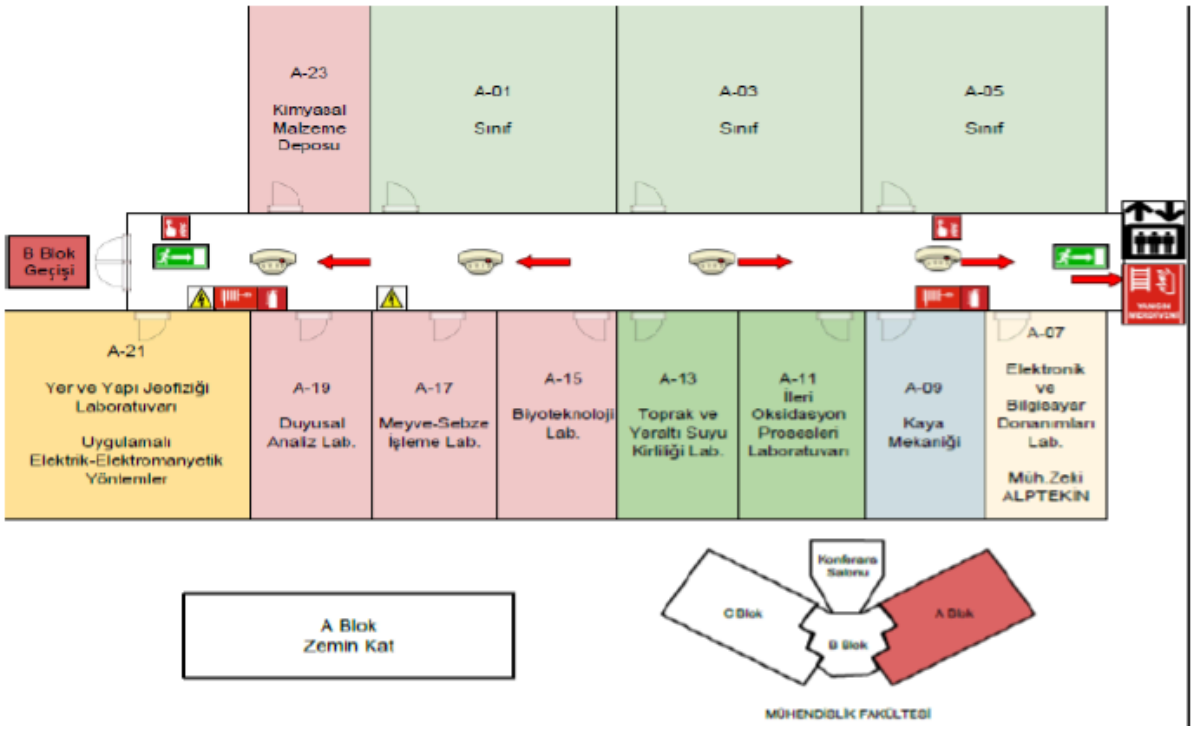
Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümü sınıfları Mühendislik Fakültesi A Blokta yer almaktadır. Bölümün kullanmakta olduğu 3 adet derslik bulunmaktadır. MF101 No'lu derslik 77 kişi kapasiteli, MF103 ve MF105 No'lu derslikler ise 42 kişi kapasitelidir. Bütün sınıflar pencereli olup bilgisayar ve ona bağlı projeksiyon cihazı bulunmaktadır.

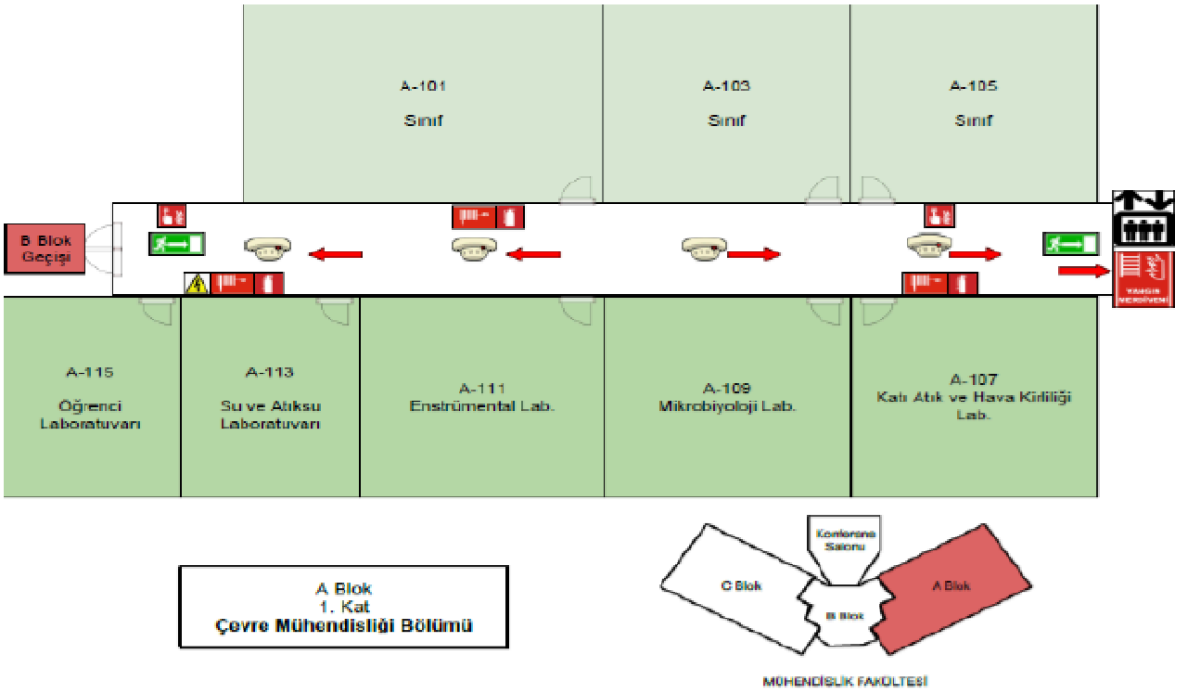
ii) Laboratuvarlar

Bölümde 3 adet derslik ve 7 adet laboratuvar bulunmaktadır. Dersliklerin ve laboratuvarların listesi:

DERSLİK	A 101
	A 103
	A105
LABORATUVAR	A 11 İleri Oksidasyon Prosesleri Laboratuvarı
	A 13 Toprak ve Yeraltısuyu Kirliliği Laboratuvarı
	A 107 Katı Atık ve Hava Kirliliği Laboratuvarı
	A 109 Mikrobiyoloji Laboratuvarı
	A 111 Enstrümental Laboratuvarı
	A 113 Su ve Atıksu Laboratuvarı
	A 115 Öğrenci Laboratuvarı

Labaratuvarların Mühendislik Fakültesi Binasında yerleşimi:





Bölümümüz öğrencilerinin dersleri uygulamalı olarak görüp ve deney yapabilmeleri için 1 adet öğrenci laboratuvarı bulunmaktadır. Bunun dışında bilimsel araştırmalarda kullanılan Su-Atıksu, Enstrümental, Mikrobiyoloji, Hava Kirliliği-Katı Atık, Toprak-Yeraltı Suyu ve İleri Oksidasyon Laboratuvarları bulunmaktadır. Laboratuvarlarımızda bulunan cihazların cihaz listesi aşağıda verilmektedir:

Öğrenci Laboratuvarı

- Toplam Kjeldahl Azotu Cihazı
- Distilasyon Cihazı
- Kimyasal Oksijen İhtiyacı Yakma Ünitesi
- Yağ-Gres Cihazı
- Çalkalamalı Su Banyosu
- Çalkalamalı Orbital Sallayıcı
- Etüv
- Kül Fırını
- Çoklu Ölçüm Cihazı (pH, EC, ORP ve ÇO)
- Termostatlı Kabin
- Isıtmalı Tabla
- pH Metre, Elektriksel İletkenlik Ölçüm Cihazı
- Çeker Ocak
- Bulanıklık Cihazı
- Hassas Terazi
- Isıtmalı Manyetik Karıştırıcı
- Manyetik Karıştırıcı
- Santrifüj
- DR 5000 Spektrofotometre
- Çözünmüş Oksijen Cihazı
- Jar Test Düzeneği
- Elek Sallayıcı
- Nem Tayin Cihazı
- Saf Su Cihazı
- Buzdolabı

Su-Atıksu Laboratuvarı

- Etüv
- Sıcaklık Kontrollü Karıştırıcılı Su Banyosu
- Ultrasonik Banyo
- Termoreaktör
- Isıtıcılı Mantetik Karıştırıcı
- Hassas Terazi
- Gaz Ölçer

Enstrümental Laboratuvarı

- Toplam Organik Karbon-Toplam Azot Cihazı
- Gaz Kromatografi Cihazı
- Atomik Absorpsiyon Cihazı

Hava Kirliliği Laboratuvarı

- Gaz Kromatografi-Alev İyonlaşma Dedektörü
- Thermal Desorber Ve Otomatik Analizörü
- Düşük Hacimli Hava Gazı Ölçüm Pompası
- İnkübatör
- Havadaki CO2 Ölçüm Cihazı
- Partikül Ölçüm Cihazı
- Thermohygrometre
- Dijital Rotametre
- Havadaki Ozon Ölçüm Cihazı
- Biyoimpaktör Seti
- Solunum Fonksiyon Test Cihazı

Mikrobiyoloji Laboratuvarı

- Ultrasonik Homojenizatör
- Otoklav (2 adet)
- Alev Sanitasyon Sistemi
- İnkubatör
- Süzme Seti
- Koloni Sayıcı
- Sterilizasyon Kabini
- Mikroskop
- Santrifüj
- Klor Dioksit Jeneratörü
- Ultrasaf Su Cihazı
- Buzdolabı
- Gerçek Zamanlı PZR
- Homojenizatör
- Mikrosantrifüj

Toprak-Yeraltı Suyu Laboratuvarı

- Spektrofotometre
- BiyoReaktör

- Manyetik Karıştırıcı
- Orbital Çalkalayıcı
- Santrifüj
- Pompa (2 adet)
- Çoklu Ölçüm Cihazı
- Fraksiyon Toplayıcı

İleri Oksidasyon Laboratuvarı

- Ultrases Cihazı (20 kHz)
- Ultrasonik Banyo (40 kHz)
- Yüksek Frekanslı Ultrases Cihazı (583, 864 ve 1144 kHz)
- Çoklu Ölçüm Cihazı (pH, EC, ORP ve ÇO)
- Orbital Çalkalayıcı (2 adet)
- Soğutmalı Su Banyosu
- DR 2800 Spektrofotometre
- Manyetik Karıştırıcı
- Vorteks

7.2 Diğer Alanlar ve Altyapı

Çevre Mühendisliği Bölümü idari ve akademik personelin görev yaptığı, Mühendislik E Binasının 1. katında bulunmaktadır. 8 Akademik personele ait oda, 1 arşiv odası, bir toplantı salonu ve bölüm sekreterinin bulunduğu sekreterlik odası mevcuttur. Mühendislik Fakültesinin alt katında öğrencilerin sosyal ihtiyaçlarını ve boş zamanlarını geçirdiği bir adet kantin bulunmaktadır. Üniversitemizin Terzioğlu Yerleşkesi'nde (Bölümümüzün bulunduğu yerleşke) Ocak 2005 tarihinden itibaren hizmette olan Öğrenci Sosyal Etkinlik Merkezi (ÖSEM); toplam kapalı kullanım alanı 9.000 m2'den oluşan 3 katlı bir bina öğrencilerimizin sosyal yaşamı ve yemekhane olarak hizmet vermektedir. Giriş katında kafeterya, seyahat acentaları, Engelliler Koordinasyon Birimi, market bulunurken birinci katta kırtasiye, kafeler, Öğrenci Bilgisayar Laboratuvarı ve kuaför bulunmaktadır. İkinci katta ise ÇOMÜ İletişim Fakültesi Uygulama Radyosu ve Televizyonu ve personel ve öğrenci yemekhaneleri bulunmaktadır. Üniversitemiz Terzioğlu Yerleşkesinde bulunan Gençlik ve Spor Bakanlığı'na bağlı Mehmet Akif Ersoy Gençlik Merkezi; üniversitemiz öğrencilerine boş zamanlarını değerlendirebilecekleri ve kişisel gelişimlerine katkı sunabilecekleri sosyal ve kültürel faaliyetlere ve gönüllülük faaliyetlerine katılım imkanı sunmaktadır.

Terzioğlu Yerleşkesi içerisinde, öğrencilerimizin yemek yiyebilme ve sosyal ihtiyaçları için 'Ardes Çanakkale Öğrenci Yurdu'nun üç katlı sosyal tesisi bulunmaktadır. Bu tesiste yemek salonu, kafe, dinlenme salonu, oyun salonu, spor salonu ve misafirhane ile öğrencilerimiz, akademik ve idari personele hizmet vermektedir.

Terzioğlu Yerleşkesi içerisinde Rektörlük Beden Eğitimi ve Spor Bölümüne bağlı "Hasan Mevsuf Spor Salonu" bulunmaktadır. Tesisin içerisinde, 1500 kişilik yenilenmiş çok amaçlı spor salonu, Sinan Şamil Sam Boks Eğitim Salonu, Halil Mutlu Halter Eğitim Salonu, 900 m2 fitness salonu, okçuluk salonu, satranç merkezi, masa tenisi alanları, dövüş sporları merkezi, plates salonu, sauna ve kafeterya bulunmaktadır.

Ayrıca yerleşke içerisinde tenis kortları bulunmaktadır. Tüm imkanlardan öğrenciler, akademik ve idari personel ile üniversite dışından gelen kişiler de faydalanabilmektedir.

7.3 Modern Mühendislik Araçları, Bilgisayar ve Bilişim Altyapısı

Öğrencilerimize uygulamalı derslerde cihazların kullanımı ve çalışma prensipleri anlatılarak, kendi başlarına deney yapabilme ve değerlendirme becerileri kazandırılmaktadır. Bilgisayar

dersleri (Temel Bilgi Teknolojileri) için Mühendislik C blok binasında bulunan, 70 bilgisayar kapasiteli C010 dersliği kullanılmaktadır. Bilgisayar Destekli Tasarım dersi için Mühendislik A blok 2. Katta bulunan A311 nolu 48 bilgisayar kapasiteli derslik kullanılmaktadır.
Üniversitemiz yerleşke içerisinde, tüm akademik ve idari personel ile öğrencilerin faydalanabileceği, her noktada kablosuz internet bağlantısı mevcuttur. Ayrıca ofislerde ve laboratuvarlarda, toplantı odası ve sınıflarda kablolu internet erişimi vardır.
Öğrencilerimiz yerleşke içinde değişik yerlerde bulunan kırtasiye veya kafelerden de fotokopi ihtiyaçlarını karşılayabilmektedirler.

7.4 Kütüphane

Üniversite Kütüphaneleri, eğitim-öğretim ve araştırma faaliyetlerini desteklemek, personel, öğrenci ve öğretim elemanlarının akademik program ve bilimsel araştırmalarından doğan bilgi ihtiyaçlarını karşılamak ve bulundukları bölgedeki halkın da bilgi donanımının artmasına katkıda bulunmak amacıyla kurulurlar. Çanakkale Onsekiz Mart Üniversitesi Kütüphane ve Dokümantasyon Daire Başkanlığı 20.10.1993 tarihinde Anafartalar Yerleşkesi içerisinde faaliyete başlamış ve 2005–2006 eğitim öğretim yılından itibaren Terzioğlu Yerleşkesindeki 5000 m² kapalı alana sahip mevcut binasına taşınmıştır. 2014 yılında kullanıma açılan ek binası ile birlikte şu an 8000 m2 kapalı alanda 1000 kişilik oturma alanı 17 km raf uzunluğuna sahip zengin basılı ve elektronik koleksiyonu ile kullanıcılarına hizmet vermeye devam etmektedir.
ÇOMÜ Kütüphanesi gerek zengin basılı ve elektronik koleksiyonu gerekse fiziksel donanım ve imkanları ile Türkiye'nin sayılı araştırma kütüphaneleri arasında yer almaktadır. ÇOMÜ kütüphaneleri 1 merkez kütüphane, 3 Fakülte kütüphanesi ve 9 kitaplıktan oluşmaktadır:
Merkez Kütüphane (Terzioğlu Yerleşkesi)
ÇOMÜ Biga Kütüphanesi (Ağaköy, Biga)
Eğitim Kütüphanesi (Anafartalar Yerleşkesi)
ÇOMÜ İlahiyat Kütüphanesi (Şekerpınar Yerleşkesi)
Tıp Fakültesi Kütüphanesi (Geçici olarak Merkez Kütüphane'de)
İlçe kütüphaneleri (Yenice, Ezine, Bayramiç, Gökçeada, Ayvacık, Lapseki, Gelibolu, Çan, Bozcada)
Ayrıca Çanakkale-Tübingen Troia Vakfı M. Osman Kütüphanesi ile Üniversitemiz kütüphanesi arasında yapılan işbirliği antlaşması ile 10.000 cildin üzerindeki özel koleksiyon üniversitemiz kullanıcılarının hizmetine sunulmuştur. ÇOMÜ Kütüphanesi, gösterdiği dikkat çekici performansıyla Türkiye'nin en hızlı büyüyen Üniversite kütüphanesi olmuştur. ÇOMÜ Kütüphanesi açık raf sistemi ve Dewey Decimal Classification konusal sınıflama sistemi ile kullanıcılarına hizmet vererek araştırmacıların kolaylıkla aradıkları yayınlara ulaşabilmesini amaçlamaktadır. Kütüphanede bulunan yayınlara ait künye bilgilerine, kütüphane internet sitesinde yer alan katalog tarama sorgulamasından erişilebilir.
Kütüphanede Verilen Hizmetler:

- Başvuru ve Enformasyon Hizmeti
- Elektronik Yayınlar (Veritabanları, e-Dergiler, e-Kitaplar)
- Kütüphane Otomasyonu
- Kataloglama
- Basılı Süreli Yayınlar
- e-Yayınlar Tarama Salonu ve Diğer İnternet Hizmetleri
- Multimedya Salonu
- Ödünç Verme ve Koleksiyon
- Kütüphanelerarası İşbirliği
- Seminer Salonu ve Grup Çalışma Odaları
- Akıllı Sınıf
- Tezler
- Fotokopi Hizmeti
- Kafeterya

Çanakkale Onsekiz Mart Üniversitesi'nde Fen Edebiyat, Eğitim, Güzel Sanatlar Fakülteleri başta olmak üzere birçok fakültesinde 50 engelli öğrenci eğitim görmektedir. Engelli öğrencilerin sorunlarını belirlemek, tespit edilen problemleri çözmek ve değerlendirmek üzere 2008 yılında kurulan "Çanakkale Onsekiz Mart Üniversitesi Engelliler Koordinasyon Birimi" üniversitenin her biriminden belirlenen temsilciler ile bir araya gelerek engelli öğrencilerin sorunları tartışılmaktadır.
Engelliler Koordinasyon Biriminin amaçları aşağıda verilmektedir:
Çanakkale Onsekiz Mart Üniversitesi'nde öğrenim gören engelli öğrencilerin öğrenimleri sırasında fiziksel ve psikolojik ihtiyaçlarını karşılamak, Öğrencilerin akademik ve sosyal yaşamlarını engellemeyecek biçimde öğretim programları düzenlemek,
Eğitim ortamlarının engelli öğrencilerin ihtiyaçlarına uygun olarak düzenlenmesini sağlamak,
Karşılaşılabilecek engelleri ve bunlara karşı alınması gereken önlemleri tespit etmek ve sorunlara uzlaşmacı şekilde çözüm önerileri oluşturmak,
Engellilere yönelik araç gereç temini, özel ders materyallerinin hazırlanması, engellilere uygun eğitim, araştırma ve barınma ortamlarının hazırlanması konusunda çalışmalar yapmak,
ÇOMÜ'de görev yapan idari ve akademik personeli engellilik konusunda bilgilendirmek, bu konuda farkındalık oluşturmak ve en önemlisi de ÇOMÜ'yü engelli öğrenciler için tercih sebebi haline getirmekten oluşmaktadır.

Ölçüt 8. Kurum Desteği ve Parasal Kaynaklar

8.1 Kurumsal Destek ve Bütçe Süreci

Çanakkale Onsekiz Mart Üniversitesi bir kamu üniversitesidir. Bu nedenle çalışanlarının maaşlarını da kapsayan bütçesinin büyük bir kısmı devlet tarafından tahsis edilmektedir. Bütçenin devlet desteği dışındaki diğer başlıca kaynağını, döner sermaye gelirleri oluşturmaktadır. Program amaçlarının yerine getirilmesi ve sürdürülmesi için gerekli olan parasal kaynaklar, katma bütçeden ve döner sermaye gelirlerinden sağlanmaktadır. Bütçe kanunuyla Üniversiteye verilen fasıllar, ihtiyaçlara göre Rektörlük Makamı tarafından fakültelere dağıtılmaktadır. Mühendislik Fakültesi'ne ayrılan tahsisat da Dekanlık Makamı tarafından bölümler ve dekanlık birimleri arasında dağıtılmakta ve Fakülte Yönetim Kurulu kararı ile uygulanmaktadır. Genel harcamalar, doğrudan Fakülte bütçesinden karşılanmaktadır.
Yapılan harcamalar bölümlerin ihtiyaçları dikkate alınarak fakülte tarafından hazırlanan bütçe, Rektörlük kanalıyla Maliye Bakanlığı tarafından bir yıl önceden üniversitelerden gelen öneriler dikkate alınarak düzenlenmekte ve yılbaşında üniversitelere tahsis edilmektedir. Rektörlük yetkisinde, fakültelere yapılan dağılımda bütçenin hangi harcamalar için kullanılabileceği belirlenmektedir. Bütçenin, bölümlere ve dekanlık merkezi için dağılımı dekanlık tarafından yapılmaktadır.
Bilimsel Araştırma Projeleri Birimi, birimlerde yürütülen lisansüstü tezler ve araştırma projelerine destek vermektedir. Projeler üniversite içinden ve dışından seçilen hakemler tarafından değerlendirilmektedir. Bu projeler arasında bölüm altyapısına yönelik başvurular da kabul görmekte ve uygulamaya alınmaktadır. BAP dışında öğretim üyelerinin TÜBİTAK destekli projeler ve projelerden gelen fonları da bulunmaktadır. Diğer yandan, Üniversite tarafından kapsamlı Altyapı Projelerine de önemli destekler verilmektedir. Çevre Mühendisliği Bölümü tarafından 2017 yılı içinde hazırlanan yaklaşık 200.000 TL bütçeli bir altyapı projesine Üniversite yönetimi tarafından destek verilmiştir.
BAP projesi kapsamında sarf malzeme ve sempozyum katılım için destek alınmaktadır.

8.2 Bütçenin Öğretim Kadrosu Açısından Yeterliliği

Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümü'nün akademik kadrosu hâlihazırda 5 Profesör, 1 Dr. Öğr. Üyesi ve 1 Dr. Araştırma Görevlisi ve 2 Araştırma Görevlisinden oluşmaktadır. Bütçe ve döner sermaye gibi kaynaklar yanında, Çevre Mühendisliği Bölümünde yürütülmekte olan ÇOMÜ Bilimsel Araştırma Projesi (BAP) ve Altyapı Projelerinden önemli destekler sağlanmaktadır. Yüksek Lisans öğrencilerinin tez çalışmalarını desteklemek üzere tez danışmanları tarafından hazırlanan Bilimsel Araştırma Projeleri Üniversite'nin ilgili birimince Üniversite içi ve dışından seçilmiş hakemlere inceletilmekte ve kabul edilenlere olanaklar ölçüsünde destek verilmektedir. Çanakkale Onsekiz Mart Üniversitesi bünyesinde öğretim kadrosunun akademik gelişimlerini sürdürebilmek amacıyla ulusal ve/veya uluslararası bilimsel toplantılara katılımlarına bütçe kısıtlamaları olması nedeniyle fakülte bütçesinden maddi destek verilememektedir. Parasal destek amacıyla bilimsel toplantılara katılım ücretleri ve seyahat masrafları yürütülen TÜBİTAK ve BAP projelerinden sağlanmaktadır. 2024 yılına ait ÇOMÜ Çevre Mühendisliği tarafından hazırlanan proje tablosu Tablo 8.1'de verilmektedir.

ÇOMÜ Çevre Mühendisliği tarafından hazırlanan proje tablosu Tablo 8.1'de verilmektedir.

Tablo 8.1 2024 yılına ait ÇOMÜ Çevre Mühendisliği tarafından hazırlanan projeler

Proje Destekçisi	Proje Yürütücüsü	Konu	Destek Miktarı
TÜBİTAK 1001	Prof.Dr. Çetin KANTAR	Doğada Kalıcı ve Mobil Toksik Maddeleri İhtiva Eden Atıksuların Sıfır Değerli Demir-Fenton Arıtım Yöntemiyle Arıtımında Cevher Hazırlama Flotasyon Tesisi Pirit Konsantresinin Asit Düzenleyici ve Katalizör Etkinliğinin Araştırılması (Halen Devam Ediyor)	659186
TÜBİTAK 1001	Prof.Dr. Sibel MENTEŞE, Arş. Gör. Kaan DİNÇER	Tarladan Sofraya Kadarki Süreçte Çeltik Tarımından Kaynaklanan Kirleticilerin Çevre Bileşenlerindeki Düzeylerinin ve Risklerin Belirlenmesi	2025000
BAP	Prof.Dr. Çetin KANTAR	Atıksuların Sıfır Değerli Demir-Fenton Prosesi ile Arıtımında Pirit Mineralinin Asit Düzenleyici ve Katalizör Etkinliğinin Araştırılması (Halen Devam Ediyor).	45000
BAP	Prof.Dr. Çetin KANTAR - **araştırmacı**	Karışık Metallerle Kirlenmiş Toprakların Elektrokinetik İyileştirilmesi (Yürütücü: Öznur Karaca) (Halen Devam Ediyor) BAP	25000
BAP	Arş.Gör. Ersin ORAK	Makine Öğrenmesi ile Çanakkale'nin Rüzgar Enerjisi Potansiyelinin İklim Değişikliğine Bağlı İncelenmesi	99720
Avrupa Birliği & Güney Marmara Kalkınma Ajansı	Görevliler: -**Prof.Dr. Nilgün Ayman ÖZ** - **Dr. Öğr.Üyesi Akın ALTEN** -**Dr.Arş.Gör. Çiğdem Öz** YAŞAR -**Arş.Gör. Ersin ORAK**	Re-YOU. Yenilenebilir Gençlik Enerjisi.	-

8.3 Altyapı ve Donanım Desteği

Bölümümüz derslik ve laboratuvarlar ile ilgili temel altyapı, teçhizatlar ve bakım masrafları için gerekli destek doğrudan fakülte ve yürütülen projelerin bütçelerinden karşılanmaktadır. Ayrıca Çevre Mühendisliği Bölümünde yürütülen akademik çalışmalar için ihtiyaç duyulan

makine-teçhizat ve sarf malzeme alımları TÜBİTAK veya Üniversitemizin Bilimsel Araştırma Projeleri (BAP) Birimi bünyesinde Araştırma, Altyapı ve Tez Proje bütçeleri kapsamında yapılmaktadır. Çevre Mühendisliği Bölümü Laboratuvarlarında bulunan donanımın çok büyük bir kısmı Altyapı projeleri ile temin edilmiştir.
Çevre Mühendisliği Bölümü'ne kurulduğu tarihten (2004) bu yana Üniversite ve Dekanlık bütçesinden laboratuvar derslerinde kullanılacak gerekli cihazlar alınmıştır. Ayrıca Üniversite bütçesinden Toplam Organik Karbon-Toplam Azot cihaz alımı gerçekleştirilmiştir. 2017 yılında laboratuvar dersi uygulamalarında kullanılmak üzere ve mevcut laboratuvarların yenilenmesiyle amacıyla Üniversitemiz destekli 1 adet Altyapı projesi kapsamında ihtiyaç duyulan Kjeldhal Azot tayin ünitesi, KOİ deneyi için yakma ve distilasyon üniteleri, yağ-gres tayin ünitesi, mikroskop, distile saf su cihazı vb. makine teçhizatın alımları gerçekleştirilmiştir. Ayrıca Altyapı projesi ve Bölümümüzde yürütülen TÜBİTAK destekli projelerin dekanlık ve bölüm katkı paylarından artan bütçe kullanılarak Atomik Absorpsiyon Spektrofotometre cihazının alımı yapılmıştır.

8.4 Teknik, İdari ve Hizmet Kadrosu Desteği

Çevre Mühendisliği Bölümü Bölüm Kurulu'nda bir Bölüm Başkanı ve bir Bölüm Başkan Yardımcısı görev yapmaktadır. İdari kadroda bir bölüm sekreteri bulunmaktadır. Laboratuvarlarda bulunan bazı elektronik cihazların bakım ve onarımı, dekanlığa bağlı teknik destek birimince sağlanmaktadır.
Laboratuvar ile ilgili genel düzeninin sağlanması için bir araştırma görevlisi görevlendirilmiştir. Ancak laboratuvarda sürekli çalışacak sorumlu bir uzmana ihtiyaç duyulmaktadır. Üniversitemizin ihtiyaç duyduğu insan gücünün planlanması ve personel politikasıyla ilgili çalışmalar, personel sisteminin geliştirilmesiyle ilgili öneriler, Üniversitemiz personelinin atama, özlük ve emeklilik işleriyle ilgili işlemler, idari personelin hizmet öncesi ve hizmet içi eğitimi programlarının düzenlenmesi ve uygulanması Rektörlüğümüz bünyesinde bulunan Personel Daire Başkanlığı tarafından yürütülmektedir.
Üniversitemiz yerleşke alanı içerisinde yer alan tüm birimlerin inşaatı, projesi, altyapısı, tadilat onarımı vb. işlerinin yapım ve kontrol hizmetleri Rektörlüğümüze bağlı Yapı İşleri ve Teknik Daire Başkanlığı tarafından yürütülmektedir.
Bilgi İşlem Daire Başkanlığı, eğitim-öğretim birimlerine, araştırmacılara, öğrencilere, personele ve yönetim birimlerine bilişim desteği sunmaktadır. Rektörlüğümüz, Mühendislik Fakültesi bünyesinde düzenlenen akademik, eğitim ve sosyal içerikli etkinliklere her türlü desteği sağlamaktadır. Fakültedeki birimlerin bakım, onarım, temizlik vb. işleri ise Dekanlık tarafından organize edilerek yürütülmektedir

Tablo 8.1 Harcamalar

[Programın Adı]

Mali Yıl Harcama Kalemi	Önceki Yıl (Gerçekleşen) (TL)	Başvurunun Yapıldığı Yıl (Bütçelenen) (TL)	Sonraki Yıl(5) (Bütçelenen) (TL)
Personel Giderleri (1)			
Seyahat Giderleri			
Hizmet Alımları			
Tüketim Malları ve Malzeme Alımları			
Demirbaş Alımları(2)			

Yapı ve Tesisler(3)			
Küçük Bakım/Onarım			
Makina Donanım ve Taşıt Alımları			
Muhtelif Araştırma Yayın			
Diğer(4)			

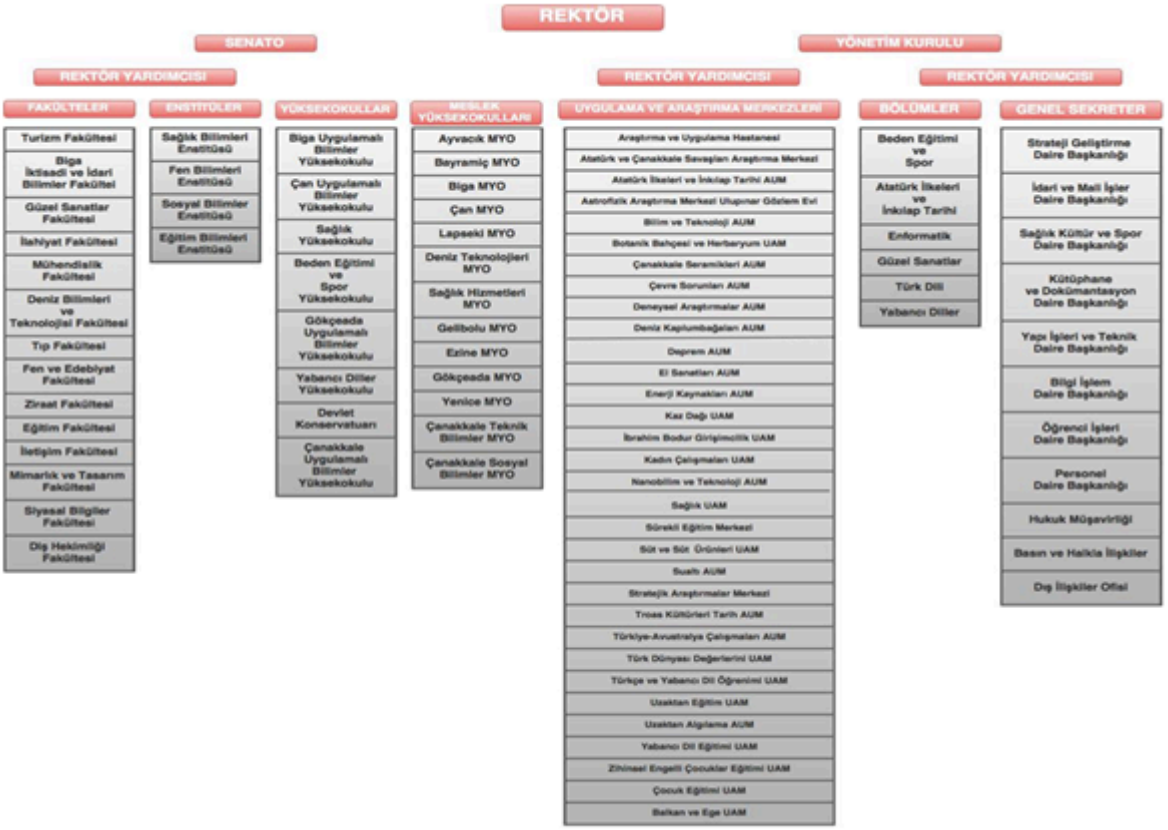
Notlar:

(1) Öğretim elemanlarının ek ders ücretleri, temsil ve tanıtma giderleri, öğrenci ödülleri ve öğrenci konseyi giderleri bu kalemdedir.
(2) Büro ve bina donatımı, eğitim araç gereçleri, kitap ve dergi alımları, emniyet ve yangın giderleri bu kalemdedir.
(3) Bina ve büyük tesis onarım giderleri, çevre düzenlemesi bu kalemdedir.
(4) Üyelikler, mahkeme masrafları, vergi, rüsum ve harçlar bu kalemdedir.
(5) Kurum ziyareti başlangıcından en geç dört hafta önce bu tablonun güncellenmiş sürümü, BBO'da İstenilen Ek Bilgi ve Belgeler dizini altında sunulmalıdır.

Ölçüt 9. Organizasyon ve Karar Alma Süreçleri

Çanakkale Onsekiz Mart Üniversitesi'nde karar alma mekanizması mevzuata uygun bir şekilde çalışmaktadır. Üniversitemizin dikey ve yatay örgütlenmesi programın eğitim amaçlarına ulaşılması için uygun bir yapıdadır. Üniversitemiz organizasyon şeması aşağıda Şekil 9.1.1'de görülmektedir. Senato, karar mekanizmalarının en üstteki oluşumudur. Senatoda, akademik birimlerimizin tamamından temsilciler bulunmakta ve görüşlerini paylaşabilmektedirler. Öğrenci konseyleri başkanı, gerekli görüldüğü takdirde, senato toplantılarına çağırılarak, öğrenciler adına görüşleri alınmakta ve bu karar ve duyurular kamuoyu ile paylaşılmaktadır. Bununla birlikte, Üniversite Yönetim Kurulu görev ve sorumlulukları gereği olağan ve olağanüstü toplantılarını etkin bir şekilde yerine getirmekte; yapılan toplantılar şeffaf bir şekilde üniversite ve kamuoyu ile paylaşılmaktadır. Üniversite Yönetim Kurulu yanında, Üniversitemizde yürütülen birçok hizmet ve uygulama için gerek yasal zorunluluklarla gerekse yürütmeye destek olmak amacıyla bazı kurul, komisyon ve koordinatörlükler oluşturulmuştur.

Çanakkale Onsekiz Mart Üniversitesi'nin eğitim, öğretim ve araştırma faaliyetleri ile idari hizmetlerinin değerlendirilmesi, kalitelerinin geliştirilmesi, bağımsız "dış değerlendirme" süreciyle kalite düzeylerinin onaylanması ve tanınması konusundaki çalışmaları düzenlemek amacıyla 20 Eylül 2005 tarihli Resmi Gazete'de yayımlanarak yürürlüğe giren "Yükseköğretim Kurumlarında Akademik Değerlendirme ve Kalite Geliştirme Yönetmeliği" uyarınca Akademik Değerlendirme ve Kalite Geliştirme Kurulu kurulmuştur. Dekanlığımızda karar alma mekanizmaları, 2547 sayılı yasanın ilgili maddelerince; Fakülte Kurulu, Fakülte Yönetim Kurulu ve Fakülte Akademik Kurulu oluşturulmakta ve görevlerini ilgili mevzuata dayalı olarak sürdürmektedir. Fakültemizdeki diğer her türlü işlevin (idari işler) yerine getirilmesi, Dekanımızın kontrolünde, Fakülte sekreteri tarafından yapılmaktadır.



Şekil 9.1.1. Üniversitemiz Organizasyon Şeması

Bölümümüzde karar alma mekanizmalarında ise 2547 sayılı yasanın ilgili maddelerince Bölüm Kurulu, Akademik Bölüm Kurulu ve Anabilim Dalı Kurulu oluşturulmakta ve kurullar görevlerini ilgili mevzuata dayalı olarak sürdürmektedir. Bölüm Kurulu'nda alınan bütün kararlar EBYS sistemi kullanılarak gerekli mercilere ulaştırılmaktadır.
Ayrıca program eğitim amaçlarının gerçekleştirilebilmesi için iç ve dış paydaş katkılarına (öğrenciler, öğretim elemanları, mezunlar, işverenler, kamu kuruluşları, özel sektör) büyük önem verilmektedir. Bu bağlamda yüz yüze görüşmeler (öğrenciler, mezunlar, işverenler ve diğer paydaşlar), seminerler, öğrenci anketleri, mezun toplantıları, mezun anketleri vb. gibi faaliyetler yapılmaktadır.
Bölüm Program eğitim amaçlarının belirlenmesi için, bölümün tüm öğretim elemanlarını içine alan komisyonlar oluşturulmuştur. Bu komisyonlar yılda bir kez güncellenmekte olup görevli öğretim komisyonlar ve koordinatörlükler Tablo 9.1' de verilmiştir.
Tablo 9.1. Eğitim-Öğretim Komisyonları ve Koordinatörlükleri

KOMİSYON ADI	KOMİSYON GÖREVİ	KOMİSYON ÜYELERİ	İLETİŞİM BİLGİLERİ
Program Güncelleme ve Geliştirme Komisyonu	Bölüm lisans ders programının güncellenmesi, lisans program çıktı ve eğitim amaçlarının güncellenmesi ve Bölüm Kuruluna görüş bildirmek.	Bölüm Öğretim Elemanları, Çanakkale Belediyesi Temsilcisi, İl Çevre Müdürlüğü Temsilcisi, Özel Sektör Temsilcileri, Öğrenci Temsilcisi,	
Staj Komisyonu	ÇOMÜ Lisans Eğitimi Öğrenci Staj Yönergesi uyarınca Staj Komisyonu, yönerge gereği staj çalışması ile ilgili ön hazırlıkları yapmak, staj dosyasını ve sicil fişlerini incelemek ve bunları değerlendirmek ve öğrencilerin stajı başlamadan İş Kazası ve Meslek Hastalığı Sigortası girişlerinin	Dr. Öğr. Üyesi Akın ALTEN (Başkan) Arş.Gör. Ersin ORAK Arş.Gör. Kaan DİNÇER	

	yapılmasını temin etmekle yükümlüdür.	
Anket Değerlendirme Komisyonu	Anketlerin analizi ve değerlendirmesi, Program Güncelleme ve Geliştirme komisyonuna görüş bildirmek	Prof.Dr. Sibel MENTEŞE Arş.Gör. Ersin Orak
Öğrenci Hareketliliği Komisyonu		
Erasmus Koordinatörü	Öğrencilerin belirli dönemlerde yurtdışında eğitim görmesini sağlar ve süreci yönetir. Yurtdışından gelen öğrencilerin almış oldukları derslerin ilgili döneme intibakını yapmak.	Prof.Dr. Hasan Göksel ÖZDİLEK

Farabi Koordinatörü	Öğrencilerin belirli dönemlerde yurtiçindeki farklı bir kurumda eğitim görmesini sağlar ve süreci yönetir. Dönüşte öğrencilerin almış oldukları dersleri ilgili döneme intibakını yapar.	Dr. Öğr. Üyesi Akın ALTEN
Mevlana Koordinatörü	Öğrencilerin belirli dönemlerde yurtiçindeki farklı bir kurumda eğitim görmesini sağlar ve süreci yönetir. Dönüşte öğrencilerin almış oldukları derslerin ilgili dönemlere intibakını yapar.	Prof.Dr. Hasan Göksel ÖZDİLEK

Mezunlarla İletişim ve Sosyal Faaliyetler Düzenleme Komisyonu	Bu komisyonun görevleri paydaşlarla ve mezunlarımız ile gerçekleştirilecek toplantıları düzenlemek, mezun öğrencilerimizle bağlantıyı sağlamak, mezun toplantıları ve çeşitli sosyal etkinlikler düzenlemek ve gerçekleştirdikleri etkinlikleri belgelemektir.	Prof.Dr. Nilgün AYMAN ÖZ (Başkan) Prof.Dr. Sibel MENTEŞE Dr.Arş.Gör. Çiğdem Öz YAŞAR
İntibak ve Ortak Dersler Komisyonu	İntibak Komisyonu Bölümümüze kurumlar arası veya birim içi yatay geçiş yapan veya daha önce devam ettiği herhangi bir yükseköğretim kurumunda geçtiği dersleri kayıt yaptırdıktan sonra eşdeğerlerinin yerine saydırmak isteyen öğrencilerin sınıf intibaklarını ve ders muafiyetlerini düzenler.	Prof.Dr. Hasan Göksel ÖZDİLEK Dr. Öğr. Üyesi Akın ALTEN

Çift Anadal-Yan Dal Koordinatörlüğü	Farklı bölümlerden Çift Anadal- Yan Dal programlarına başvuran öğrencilerin bölüm program derslerine koordinasyonunu sağlar.	Prof.Dr. Önder AYYILDIZ
Bologna Koordinatörlüğü	Eğitim öğretimde yeniden yapılandırma süreci kapsamında eğitim ve öğretim ilgili süreçlerin yönetilmesini organize eder ve kontrolünü sağlar.	Dr. Öğr. Üyesi Akın ALTEN
EBS Ders Yönetim Paneli Sorumlusu	Öğrenci Bilgi Sisteminde eğitim planıyla ilgili derslerin yönetimini sağlar.	Dr. Öğr. Üyesi Akın ALTEN
Üniversite-Sanayi İşbirliği		

Endüstriyel İlişkiler Komisyonu	Çevre Mühendisliği Bölümü ile bölgemizde faaliyet gösteren endüstriyel kuruluşları arasında iletişimi sağlar ve üniversite-sanayi işbirliği kapsamında bu kuruluşların sorunlarını gidermek için ortak projeler geliştirmeyi sağlar.	Prof.Dr. Önder AYYILDIZ (Başkan) Prof.Dr. Nilgün AYMAN ÖZ Dr. Öğr. Üyesi Akın ALTEN
Strateji Komisyonlar ve Koordinatörlükler		
Stratejik Plan Koordinatörlüğü	Bölüm stratejik plan çalışmalarını yürütür ve eylem planları hazırlar ve bölüm akademik kuruluna sunarak uygulanmasını ve kontrolünü gerçekleştirir.	Prof.Dr. Sibel MENTEŞE (Başkan) Bölüm Öğretim Elemanları

MÜDEK Koordinatörlüğü	Bu komisyonun görevi; diğer komisyonların çalışmalarını MÜDEK beklentileri doğrultusunda yönlendirmek, özdeğerlendirme raporunun hazırlamasını koordine etmek, MÜDEK Bölüm ziyaretini organize etmektir.	Prof.Dr. Nilgün AYMAN ÖZ (Başkan) Arş.Gör. Ersin Orak
AltYapı Komisyonu	Bölümün alt yapı envanterini tutmak, öğrenci ve araştırma laboratuarlarının denetimini sağlamak ve eksiklerini gidermek, Akademik Bölüm Kurulu gündemindeki ilgili konuları alt yapı uygunluğu veya gereksinimi açısından değerlendirmek ve görüş belirtmektir.	Prof.Dr. Çetin Kantar (Başkan) Arş.Gör. Kaan DİNÇER
Kalite Güvencesi Kurulu Bölüm Temsilcisi	Bölüm kalite yönetim çalışmalarını takip eder.	Prof.Dr. Hasan Göksel ÖZDİLEK

Ölçüt 10. Disipline Özgü Ölçütler

Çevre Mühendisliği Program Ölçütlerine göre mezunların türevsel denklemleri de içerecek biçimde matematik, olasılık ve istatistik, matematiğe dayalı fizik, genel kimya, program amaçları doğrultusunda yer, biyoloji bilimi (mikrobiyoloji), malzeme ve akışkanlar mekaniği bilimi konularında yeterlilik; eğitim programı çerçevesinde öğrencilerin, hava, yer ve su sistemleri ve ilgili çevre sağlığı etkileri ile bu temel odaklanma alanlarının birçoğunda deney yapabilme ve verileri analiz edip yorumlayabilme becerisi; ders programında meslek eğitimiyle entegre biçimde yürütülen tasarım deneyimleri aracılığıyla kazanılmış tasarım becerisi; program amaçları ile ilgili ileri ilkeler ve uygulamalarda yeterlilik; mesleki uygulamalar ile kamu ve özel kuruluşların çevre mühendisliğine ilişkin rolleri ve sorumluluklarına ilişkin kavramlar hakkında bilgi sahibi olması gerekmektedir.
Eğitim katoloğunda bulunan dersler ile öğrencilerimizin yeterli bilgiyi alması sağlanmaktadır.

Ek I – Programa İlişkin Ek Bilgiler

I.1 Ders İzlenceleri

1. DÖNEM

DERS PLANLARI VE İÇERİKLERİ

1.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ATA-1003	Principles of Atatürk and History of Modern Turkey I	Zorunlu	2	0	0	2	1
ENV-1009	Basic IT Skills	Zorunlu	2	2	0	0	3
ENV-1011	Development of Reading and Writing Skills I	Zorunlu	3	2	0	4	4
ENV-1013	Mathematics I	Zorunlu	2	2	0	3	5
ENV-1015	General Physics I	Zorunlu	2	3	0	4	5
ENV-1019	Introduction to Environmental Engineering	Zorunlu	2	0	0	2	3
ENV-1021	General Physics Laboratory	Zorunlu	0	0	2	1	2
TDİ-1003	Turkish Language I	Zorunlu	2	0	0	2	1
SEC-1001	YÖK Seçmeli Ders Grubu	Bölüm Seçmeli				0	1
		Toplam :	15	9	2	18	25

YÖK Seçmeli Ders Grubu - SEC-1001 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
BED-1003	Physical Education I	2	0	0	0	1
MÜZ-1003	Music I	2	0	0	0	1
RES-1003	Art I	2	0	0	0	1

Course Title	Code	Semester	T+U Hour	Credits	ECTS
Mathematics I (Matematik I)	ENV-1013	1. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Sena ÖZEN
Instructors	Assist. Prof. Dr. Sena ÖZEN
Assistants	
Course Objectives	The aim of this course is to provide the required mathematical knowledge to students for solving engineering problems and to improve their analytically thinking ability.
Course Content	Numbers, Functions, Graphs of Functions, Piecewise Defined Functions, Limit, Continuity, The Derivative and Differentiation Rules, Applications of Differentiation, Maximum and Minimum Values, Geometric Interpretation of The Derivative, Maximum and Minimum Value Problems, Indeterminate Forms and L' Hospital Rule, Asymptotes
Course Learning Outcomes	1- Explain the concept of function. 2- Sketch the graphs of functions. 3- Identify the concepts of limit and continuity of a function. 4-Express the concept of derivative and apply the methods of differentiation. 5-Interpret the applications of derivative.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Numbers	Oral presentation and Practice	

2. Week	Quadratic Equations and Inequalities	Oral presentation and Practice	
3. Week	Cartesian Coordinates in the Plane, Circle	Oral presentation and Practice	
4. Week	Functions, Domains and Ranges of Functions	Oral presentation and Practice	
5. Week	Graphs of Functions, Special Functions	Oral presentation and Practice	
6. Week	Limits of Functions, One-Sided Limits and Algebraic Operations of Limits	Oral presentation and Practice	
7. Week	Continuity and Properties of Continuous Functions	Oral presentation and Practice	
8. Week	The Definition of Derivative, Differentiation Rules, Chain Rule	Oral presentation and Practice	
9. Week	Midterm Exam	Written Exam	
10. Week	Derivatives of Trigonometric Functions, Implicit Differentiation	Oral presentation and Practice	
11. Week	Inverse Functions, Exponential and Logarithmic Functions	Oral presentation and Practice	
12. Week	Inverse Trigonometric Functions, Hyperbolic Functions	Oral presentation and Practice	
13. Week	Applications of Derivative: Maximum and Minimum Values, Concavity, Extreme Value Problems	Oral presentation and Practice	
14. Week	Indeterminate Forms and L'Hospital Theorem, Asymptotes	Oral presentation and Practice	
15. Week	General Review	Oral presentation and Practice	
16. Week	Final Exam	Written Exam	

Resources

Recommended Sources
CALCULUS: A Complete Course / Robert A. Adams, Christopher Essex; Pearson 2010

THOMAS'CALCULUS / Ross L. Finney, Maurice D. Weir, Frank R. Giordano; Boston: Addison-Wesley, 2000

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Supportive Courses	% 70
Engineering Sciences	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					

Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	13	13
Final Exam Preparation	1	13	13
Mid Term Exam 1	1	2	2
Futher Study	14	2	28

Preliminary Study	14	2	28
		Total Workload	142
		Total Workload / 25.5 (s)	5.56
		ECTS Credit of the Course	6

Course Title	Code	Semester	L+U Hour	Credits	ECTS
General Physics I (Genel Fizik I)	ENV-1015	1. Semester	2 + 2	3.0	6.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof.Dr. Kıvanç SEL
Instructors	Prof.Dr. Kıvanç SEL
Assistants	
Course Objectives	To introduce the concept of mechanic and dynamic
Course Content	This course is an introduction to the classical mechanics. We will discuss kinematics, dynamics, and Newton's laws. Topics to be covered in this course include are physics and measurement, vectors, motion in one-dimension and a plane, the laws of motion, circular motion, work and energy, conservation of energy, linear momentum, collisions and gravitational law.
Course Learning Outcomes	1) Apply Newton's law for the solution of problems in dynamics 2) Fully comprehend how to treat problems dealing with particle dynamics 3) Fully comprehend the concepts of work, potential energy and conservation of energy in

	order to employ them for the solution of problems emerging in classical dynamics 4) Understand the significance of the essential concepts of momentum and the conservation of momentum 5) Get acquainted with the concepts of rigid bodies, torque and angular momentum

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Measurement and Vectors	Oral lectures with interactive discussions, homeworks	
2. Week	Vectors	Oral lectures with interactive discussions, homeworks	
3. Week	Motion along a straight line	Oral lectures with interactive discussions, homeworks	
4. Week	Motion in two and three dimensions	Oral lectures with interactive discussions, homeworks	
5. Week	Force and Motion - I	Oral lectures with interactive discussions, homeworks	
6. Week	Force and Motion – II	Oral lectures with interactive discussions, homeworks	
7. Week	Work and Kinetic Energy	Oral lectures with interactive discussions, homeworks	
8. Week	Mid-term exam	Exam	
9. Week	Conservation of energy	Oral lectures with interactive discussions, homeworks	
10. Week	Conservation of energy - II	Oral lectures with interactive discussions, homeworks	
11. Week	Collisions - I	Oral lectures with interactive discussions, homeworks	
12. Week	Collisions - II	Oral lectures with interactive discussions, homeworks	
13. Week	Rotation of a Rigid Object About a Fixed Axis - I	Oral lectures with interactive discussions, homeworks	

14. Week	Rotation of a Rigid Object About a Fixed Axis - II	Oral lectures with interactive discussions, homeworks	
15. Week	Review of the semester	Oral lectures with interactive discussions	
16. Week	Final exam	Exam	

Resources

Recommended Sources
Serway, R.A.: 1992, Physics For Scientists & Engineers with Modern Physics, Third edition
Halliday, D., Robert, R., and Walker, J.: 1993, Fundamentals of Physics, Fourth edition, John Wiley & Sons, Inc
Bueche, A.: 1986, Introduction to Physics for Scientists, McGraw-Hill. Fishbone, Jr.: 1996, Physics for Scientists & Engineers, Prentice Hall.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage

Mathematics and Basic Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	**Relations**					
	0	**1**	**2**	**3**	**4**	**5**
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.						
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						
Understand professional and ethical responsibility.						
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.						
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.						

	0	**1**	**2**	**3**	**4**	**5**

Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	30	30
Mid Term Exam 1	1	2	2
Preliminary Study	14	2	28
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	12	12
		Total Workload	130
		Total Workload / 25.5 (s)	5.10
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS

General Chemistry I (Genel Kimya I)	ENV-1017	1. Semester	2 + 2	3.0	6.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof.Dr. Sıdıka Polat Çakır
Instructors	Prof.Dr. Sıdıka Polat Çakır
Assistants	NA
Course Objectives	To teach general chemistry knowledge
Course Content	Matter: Elements, Compounds, Mixtures, Nomenclature of Compounds. Mole Concept: Conversion of units, determination of chemical formulas, solutions. Atomic Structure. Chemical Reactions: precipitation, neutralization and redox reactions. The use of Stoichiometry. General information about the periodic table.
Course Learning Outcomes	1- Know and define the basic concepts of chemistry 2- Know the basic laws of chemistry and theories. 3- Explain the properties of periodic table, chemical bonds, compound and molecules

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Matter, Measurement and Problem Solving	Oral presentation	Textbook
2. Week	Units of Measurement for Physical and Chemical Change	Oral presentation	Textbook
3. Week	Atoms and Elements	Oral presentation	Textbook

4. Week	Molecules, Compounds, and Nomenclature	Oral presentation	Textbook
5. Week	Molecules, Compounds and Chemical Equations	Oral presentation	Textbook
6. Week	Recitation	Oral presentation	Textbook
7. Week	Midterm Exam	Oral presentation	
8. Week	Chemical Quantities and Aqueous Reactions	Oral presentation	Textbook
9. Week	Chemical Reactions and Stoichiometry	Oral presentation	Textbook
10. Week	Gases: Pressure, Ideal Gas	Oral presentation	Textbook
11. Week	Gases: Molar Volume, density, gas mixtures and partial pressures	Oral presentation	Textbook
12. Week	Periodic Properties of Elements: Electron Configuration, Valence Electrons	Oral presentation	Textbook
13. Week	Periodic Properties of Elements: Periodic Table, ionization energy, magnetic properties	Oral presentation	Textbook
14. Week	Recitation	Oral presentation	Textbook
15. Week	Final exam		
16. Week	Final exam		

Resources

Recommended Sources
Chemistry: A Molecular Approach, 1st Ed. Nivaldo Tro

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		

Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 20
Mathematics and Basic Sciences	% 80

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Assignments	7	6	42
Final Exam Preparation	1	25	25
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	25	25
Mid Term Exam 1	1	2	2
		Total Workload	152
		Total Workload / 25.5 (s)	6.0
		ECTS Credit of the Course	6.0

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Introduction to Environmental Engineering (Çevre Mühendisliğine Giriş)	ENV-1019	1. Semester	2 + 0	2.0	2.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of course is to introduce students to the profession of Environmental Engineering.
Course Content	In the course of Introduction to Environmental Engineering, some information will be given about working areas of environmental engineers, environmental pollution and its sources, water pollution and control, solid waste management, air pollution and control, soil pollution, hazardous wastes, noise pollution, environmental impact assessment. Shortly, this is an introductory course of environmental engineering profession.
Course Learning Outcomes	1) Define water, air and soil pollution 2) Classify water and wastewater parameters 3) Classify solid waste disposal methods 4) List the units at treatment plants

	5) Explain air pollutants and their sources 6) Define the content on environmental impact assessment

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Acquaintance with students, general information about environmental engineering.	Lecturing	
2. Week	Environmental pollution and pollution sources	Lecturing	
3. Week	Water pollution, hydrologic cycle, effects of pollutants	Lecturing	
4. Week	River and lake pollution	Lecturing	
5. Week	Water supply and treatment	Lecturing	
6. Week	Wastewater collection and treatment	Lecturing	
7. Week	Sources of solid wastes, collection and transfer	Lecturing	
8. Week	Solid waste disposal methods	Lecturing	
9. Week	Midterm exam	Exam	
10. Week	Air pollution, pollutants and sources	Lecturing	
11. Week	Air pollution control techniques	Lecturing	
12. Week	Soil pollution, pollutant sources and their effects	Lecturing	
13. Week	Hazardous waste management	Lecturing	
14. Week	Noise pollution and environmental impact assessment	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Toröz, İ. (Ed.), 2011, Introduvtion to Environmental Engineering, Nobel Academic Publishing, Ankara.

Karpuzcu, M., 2007, Environmental Pollution and Control, Kubbealtı Neşriyatı, İstanbul.
Corbitt, R.A., 2004, Standard Handbook of Environmental Engineering, The McGraw-Hill Companies, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 80
Mathematics and Basic Sciences	% 10
Engineering Design	% 10

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					

Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Midterm Exam 1	1	1	1

Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	8	8
Midterm Exam Preparation	1	8	8
Preliminary Study	2	2	4
		Total Workload	50
		Total Workload / 25.0 (s)	2.00
		ECTS Credit of the Course	2

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Basic IT Skills I (Temel Bilgi Teknolojileri)	ENV-1009	1. Semester	2 + 2	0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	
Assistants	
Course Objectives	Will be to give students the basic technology literacy.

Course Content	Basic keyboard skills, Hardware, Information, Computer and Internet Security, educational software (software) review, the basic formula Operations and Graphs, Tables and Charts Working on
Course Learning Outcomes	1) Use fundamental informatics 2) Use basic office programs 3) Use operating systems 4) Understand basic level programming, data querying, graphing.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Computer hardware	Presentation, practise	
2. Week	Components of hardware	Presentation, practise	
3. Week	General Concepts of Computer and Internet	Presentation, practise	
4. Week	Computer and Internet Security	Presentation, practise	
5. Week	Word Processing Program Introduction	Presentation, practise	
6. Week	Texts formation	Presentation, practise	
7. Week	Working on Tables and Graphs	Presentation, practise	
8. Week	Midterm exam	Multiple-choice test	
9. Week	Graphics, spreadsheets,	Presentation, practise	
10. Week	Basic Formula Processing and Graphics	Presentation, practise	

11. Week	Study of Presentation Programs	Presentation, practise	
12. Week	Review of educational software	Presentation, practise	
13. Week	Working with computers in the classroom	Presentation, practise	
14. Week	Working with computers in the classroom	Presentation, practise	
15. Week	Final Exam		
16. Week	Final Exam		

Resources

Recommended Sources
Halaç, Ali, and Microsoft Office 2000 Basic User's Guide, Alpha Publishing House, Istanbul
Yanik, Memik, Office 200 Pro, Beta Publishing House, Istanbul

Assessment

Measurement and Evaluation Methods and Techniques		
Midterm examination 30% + Final examination 50% + Project 10% + Homework submissions 10%		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 5
Engineering Design	% 10
Support Courses	% 85

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		

Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			
				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Class Hours (14 weeks)	14	3	42
Mid Term Exam Preparation	1	4	4
Final Exam Preparation	1	5.5	5.5
Preliminary Study	10	2	20
Research&Project	1	1	1
Assignment 1	1	1.25	1.25
Assignment 2	1	1.25	1.25
		Total Workload	77
		Total Workload / 25.5 (s)	3.02
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Turkish Language I (Türk Dili I)	TDİ-1003	1. Semester	2 + 0	2.0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The objective of this course is to show the students characteristics and rules of Turkish Language through examples; make them achieve the habit and skill of showing their emotions, thoughts, plans, impressions, observations, and experiences accurately and efficiently in writing and verbally; develop their vocabulary with the help of written and verbal texts; teach them the rules of comprehending accurately the texts they read or programs they listen to; develop their language skills which form the basis of the communication between individuals and populace.
Course Content	Students will be taught how to use the written communication tools accurately and efficiently in this course. Various types of written statements will be examined through a critical point of view by doing exercises on understanding, telling, reading, and writing. Punctuation and spelling rules, which are basis of written statement, will be taught and accurate usage of these rules for efficient and strong expression will be provided.
Course Learning Outcomes	1) Use punctuation, rules of Turkish grammar and spelling correctly in written communication. 2) Use written statement such as preparing a CV (as a form or prose), write letters (job request letter, letter of complaint, etc.), petitions, official reports, and reports. 3) Improve skills of prepared and unprepared conversation. 4) Acquire knowledge related to different languages and cultures.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Meeting; petition, definition of the course and resources of the course, definition of the aim of the course, interducing themes of the fall period.	Lecturing, Question-Answer, Workshop	
2. Week	Definition, specific traits, subbranches, type of the language ;origins of the languages ,language-culture nation emotion idea affairs	Lecturing, Question-Answer, Discussion	
3. Week	Language families of globe ,clasification of sytle and resource,place of Turkish Language in language families.	Lecturing, Question-Answer	
4. Week	Historical Periods of Turkish Language(Old, Middle, and the Modern Turkish periods).	Lecturing, Question-Answer	
5. Week	Turkish Language Alphabets : (The Gokturk, Arabic, Latin). Origin the name Turk and its meaning; language understanding of Ataturk ; Turkish Language Association -T.L.A	Lecturing, Question-Answer	
6. Week	Recent condition and spreading fields of Turkish Language; Southwest(Oguz), Southeast (Uyghur), Northwest (Kıpcak), Northeast .	Lecturing, Question-Answer	
7. Week	Spelling Rules and punctuation.	Lecturing, Question-Answer, Workshop	
8. Week	Linguistics and grammar,phonetics of Turkish Language: vowels,auxiliary consonants; vowel harmony and consonant harmony etc.	Lecturing, Question-Answer, Workshop	
9. Week	Morphology; roots and affixes etc.	Lecturing, Question-Answer, Workshop	
10. Week	Word types; nouns, adjectives, adverbs, and their types; clauses	Lecturing, Question-Answer, Workshop	

11. Week	Pronouns, prepositions, conjunctions, exclamations, actions .	Lecturing, Question-Answer, Workshop	
12. Week	Semantics; synonym,homonym,antonym, metaphors.	Lecturing, Question-Answer, Workshop	
13. Week	Syntax;types of sentences and clauses.	Lecturing, Question-Answer, Workshop	
14. Week	Analysis of sentences.	Lecturing, Question-Answer, Workshop	
15. Week	Final Exam		
16. Week	Final Exam		

Resources

Recommended Sources
EKER, Süer (2006) Çağdaş Türk Dili, Ankara: Grafiker Yayınları, 4. Baskı
ERGİN, Muharrem (1998) Türk Dilbilgisi, İstanbul: Bayrak Basın/Yayım/ Tanıtım
KARAHAN, Leyla (2005) Türkçede Söz Dizimi, Ankara: Akçağ Yayınları, 9. Baskı

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60

Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					

Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Final Exam Preparation	1	5	5
Mid Term Exam 1	1	1	1
Final Exam	1	1	1
Assignment 1	1	5	5
Further Study	1	5	5
		Total Workload	50
		Total Workload / 25.5 (s)	1.96
		ECTS Credit of the Course	2

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Principles of Atatürk and History of Modern Turkey I (Atatürk İlkeleri ve İnkılap Tarihi I)	ATA-1003	1. Semester	2 + 0	2.0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	Due to Atatürk's principles and revolutions of Turkish youth, the love of the nation and the country, with internal and external threats to the Republic of Turkey on the conscious, respectful of human rights, intellectual freedom and conscience free, wisdom free, democratic and secular-minded embraced scientific understanding of the contemporary world the need for understood as a knowledgeable and conscious people to train The Principles of Atatürk and History of Modern Turkey course includes the period of revolutions, which starts with Mustafa Kemal Pasha's landing at Samsun and aims the country's rise to the level of modern countries after the homeland's liberation from occupation, and Ataturk's principles.
Course Content	

Course Learning Outcomes	1)To be able to know about sources regarding the principles of Ataturk 2) To be able to have comprehended the historical foundations of the principles of Ataturk 3) To be able to have comprehended Ataturk's understanding of Republic and peace 4) To be able to have comprehended Ataturk's understanding of Republic and peace 5) Comprehends the Principles and Revolution of Ataturk

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Purpose, definition and the ways of teaching the Atatürk Principles and Revolution History course; the last period of the Ottoman Empire and the efforts to save the Empire	lecturing,discussion,question and answer	
2. Week	The Turco-Italian War and the Balkan Wars as the rehersals of World War I	lecturing,discussion,question and answer	
3. Week	The First World War, Partition of the Ottoman Imperial Territories, Confidential Treaties	lecturing,discussion,question and answer	
4. Week	The Armistice of Mudros, its application and the beginning of occupations	lecturing,discussion,question and answer	
5. Week	Paris Peace Talks and the partition of Ottoman territories	lecturing,discussion,question and answer	
6. Week	Early reactions against the occupations, organizations that had the objective of the collapse of the Ottoman Empire, associations that laid the basis for the formation of National Consciousness	lecturing,discussion,question and answer	
7. Week	Mustafa Kemal Pasha's landing at Samsun, the Memorandums of HavzaandAmasya	lecturing,discussion,question and answer	
8. Week	Period of Congresses (Midterm exam)	lecturing,discussion,question and answer	
9. Week	The Kuva-yı Milliye Period	lecturing,discussion,question and answer	
10. Week	From the Congress of Sivas to the opening of the Turkish Grand National Assembly (TGNA)	lecturing,discussion,question and answer	

11. Week	The Opening, structure and character of TGNA	lecturing,discussion,question and answer	
12. Week	Fronts of the Turkish War of Independence	lecturing,discussion,question and answer	
13. Week	The Great Offensive	lecturing,discussion,question and answer	
14. Week	From the Armistice of Mudanya to the Peace Treaty of Lausanne	lecturing,discussion,question and answer	
15. Week	final		
16. Week	final		

Resources

Recommended Sources
Atabay, Mithat, Atatürk İlkeleri ve İnkılap Tarihi, İstanbul 2011
Atatürk, Atatürk'ün Söylev ve Demeçleri, I-III, V, Ankara 1961-1972.
Mumcu, Ahmet, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi İstanbul 1979
Süslü, Azmi (ve diğerleri), Türkiye Cumhuriyeti Tarihi, 2 cilt, Ankara 2000.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		

Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Further Study	14	2	28
Final Exam Preparation	1	2	2
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Presentation/Seminar	1	5	5
		Total Workload	54
		Total Workload / 25.0 (s)	2.12
		ECTS Credit of the Course	2

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Development of Reading and Writing Skills I (İngilizce Okuma ve Yazma Yeteneklerinin Geliştirilmesi I)	ENV-1011	1. Semester	3 + 2	4.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	face to face
Course Coordinator	Lecturer Bora DEMİR
Instructors	Lecturer Bora DEMİR
Assistants	
Course Objectives	This lesson aims at developing reading and writing skills of the students.
Course Content	analyzing both general and oocupational texts and presentation of basic writing processes.
Course Learning Outcomes	1) Comprehend and use vocabulary effectively in reading and writing 2) Identify and analyze the purpose and message across a variety of texts. 3) Distinguish between stated and implied ideas; make inferences 4) Use strategies to think critically about reading 5) Draw conclusions and predict outcomes 6) Recognize and apply the conventions of Standard English in both reading and writing.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

1. Week	Introducing the course content and Introduction to reading comprehension strategies	lecture	
2. Week	Defining the basic principles of reading process	lecture	
3. Week	Scanning	lecture	
4. Week	Previewing	Lecture	
5. Week	Skimming	Lecture	
6. Week	Basic principles of writing a paragraph	Lecture	
7. Week	Analyzing and evaluating topic sentences	Lecture	
8. Week	Mid-term	Test	
9. Week	Revising and editing a paragraph	Lecture	
10. Week	Using vocabulary knowledge for effective reading	Lecture	
11. Week	Making inferences	Lecture	
12. Week	Writing essays	Lecture	
13. Week	Recognizing parts of an essay	Lecture	
14. Week	Recognizing techniques for writing an essay	Lecture	
15. Week	General Rewiev	Lecture	
16. Week	Final Exam	Test	

Resources

Recommended Sources
Mikulecky, B., Jeffries, L. (2004). More Reading Power. Pearson Education
Blanchard, K., Root, C. (2004). Ready to Write. Pearson Education
People, Places, and Things 3 (2010), Oxford University Press

Assessment

Measurement and Evaluation Methods and Techniques

Midterm exam %40, Final exam %60		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			

Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.		X				
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	5	70
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	10	10
Further Study	3	5	15
Preliminary Study	0	0	0

Mid Term Exam 1	1	1	1
Final Exam	1	1	1
		Total Workload	107
		Total Workload / 25.5 (s)	4.20
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Physical Education I (Beden Eğitimi I)	BED-1003	1. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	theoretical
Course Coordinator	
Instructors	
Assistants	
Course Objectives	This course aims to enable the students to comprehend the importance of physical education and sports. The students will have preliminary knowledge about different sports

	branches and they will learn different ways to adopt a sporting habit for life and to stay away from unhealthy habits.
Course Content	The skills covered in this course include; Basketball: Double hand pass, push pass, chest pass, floor pass, left and right trurning, bank shot; Volleyball: basic pass, jump serve, spiked ball, roll shot; Soccer: kicking styles, passing the ball, assist, spot kick, wall-pass, dribbling etc.
Course Learning Outcomes	1) The education of basıc pasture,types of pass and rolling the ball in basketboll,The applied education of chest pass,types of ground pass in basketboll,The applied education of types of head up pass baunus pas in basketboll,The applied education of right and left turnstile in basketboll,The applied education of basic posture,types of pass,serving the ball in volleyboll,The applied education of finger pass and cuff pass in volleyboll,The applied education of serving the ball in volleyboll,The applied education of pacing smack in volleyboll,The education of rolling the ball and types of shout in foot ball,The applied educationof type of interior exterior and upper pass in football,The education of basic,pasture,types of pass,rolling the ball and trick in handboll,The applied education of basc pasture and types of pass in handboll,The applied education of rolling the ball(low-high)and types of trick with ball. 2) Development of Physical Education and Sport in Turkey understand the Physical Education and Sport Educators recognizes leading. 3) Physical Education-Training-Understanding of Science Concepts and detection 4) Basic Concepts of Physical Education and Sport adequacy or transfer to the winner. 5) Physical education and sports broadcasts to follow the habit wins.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The aim and benefit of Physical Education, sociable games	Lecture	
2. Week	Human anatomy, muscle and skelaton systems, attainment about membrums and its functions, games	Lecture	
3. Week	Atatürk and sport, Republic Day walk	Lecture	
4. Week	The game rules of Basketball and pass techniques, pedagogical game.	Lecture	
5. Week	The pass techniques in basketball, dribling, toolbar, pedagogical game.	Lecture	

6. Week	dribling,toolbar,shot,games	Lecture	
7. Week	defence and offence systems,manto man and 5v5 games	Lecture	
8. Week	The game rules of voleyball and finger pass techniques, pedagogical game.	Lecture	
9. Week	Finger pass and wristband exercises, pedagogical game.	Lecture	
10. Week	Service techniques and service, receiving wristband than service, pedagogical game	Lecture	
11. Week	Volleyball fixtures inside class	Lecture	
12. Week	Infornation about winter sports and funny games	Lecture	
13. Week	Infornation about women and sport and funny traditional games	Lecture	
14. Week	Overcome narcotic, cigarette and alcohol and these harms, funny games	Lecture	
15. Week	Final preparation	Lecture	
16. Week	Final		

Resources

Recommended Sources
Branch federations and olympic commitee publications

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60

Final Makeup Exam		
Other		
Total	2	100

Course Category

Course Category	Percentage
Engineering Design	
Mathematics and Basic Sciences	
Mathematics and Basic Sciences	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	16	2	32
		Total Workload	34
		Total Workload / 25.5 (s)	1.33
		ECTS Credit of the Course	1

Course Title	Code	Semester	L+U Hour	Credits	ECTS

Art I (Resim)	RES-1003	1. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The objectives of this course are to provide the students with theoretical knowledge about fine arts like Plastıc Arts,Vısıual Arts, Phonetıc Arts are introduced ,seeing with many dimensions,drawing,perceiving and reflection process targets to see visual structure. And therorical information about elements of arts like line,colour, form,sense,value and place, also principles like balance,rhythm,action,appesition,totalitanion and accent and to.develop their skills of drawing
Course Content	This course includes the topics :the appearence of the painting, art concept, the appearence of art, necessity of art, qualifications of the artist, the criteria of the art work historical development and the kinds of Fine Arts and the branches that take place under the scope of fıne Arts, the development of Fıne Arts before the period of Republıc and during the Republıc in our country, visual explanatıon of the Works that are made of different kinds of materials in the different periods of the painting history. the workshop applications.
Course Learning Outcomes	1) Definition of fine art, scope and describes areas of application 2) Asssess the drawings, paintings and artistic Works based on the criteria 3) Draw simple pictures for visual expressions 4) Explain the qualifications of an artist. 5) Will have information about the plastic arts terminology.

Weekly Course Content

Week	Topics	Teaching and Learning	Study Materials

		Methods and Techniques	
1. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	
2. Week	Description of Art,Artisan,Art Work,and aim of Arts.	Lecture and practical application	
3. Week	To comprehend pyshhologic and pratical ways of Arts.	Lecture and practical application	
4. Week	Classifycatıon of art fields.	Lecture and practical application	
5. Week	Description,scope and aplication are as of the painting.	Lecture and practical application	
6. Week	Form the basic plastic elements; importance and description of the point,line,spot,stain,texture,volume,color.	Lecture and practical application	
7. Week	Midterm Exam		
8. Week	From the basic plastic elements;application of point and line, abstract arrangement.	Lecture and practical application	
9. Week	From the basic plastic elements;application of texture and stain,evaluation and application of surface.	Lecture and practical application	
10. Week	Object,portrait and composition work by point and line from the basic plastic elements.	Lecture and practical application	
11. Week	Object,portrait and composition work by texture and stain from the basic plastic elements. Object,portrait and composition work by point and line from the basic plastic elements.	Lecture and practical application	

12. Week	Formalist description of light-dark value and light-shadow.	Lecture and practical application	
13. Week	Description of a picked object or subject by light-dark value and light-shadow.	Lecture and practical application	
14. Week	Description of a picked composition by light-dark value and light-shadow.	Lecture and practical application	
15. Week	Final exam		
16. Week	Final exam		

Resources

Recommended Sources
Classical Drawing Atelier, Juliette Aristides,2006
Light and shadow,E.Parramon ,2007
The Art of Responsive Drawing. Nathan Godstein,2006

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		

Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					

Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Assignment 1	1	8	8
Class Hours (14 weeks)	14	2	28
Preliminary Study	14	1	14
		Total Workload	52
		Total Workload / 25.0 (s)	2.04
		ECTS Credit of the Course	2

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Music I (Müzik I)	MÜZ-1003	1. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	This course aims to develop the general culture of music .
Course Content	Course gives information about what the music is, birth of music, general theories of music and historical evaluation of music. The course introduces music and kinds of music in Turkey (Turkıish public music, Turkıish art music, classical Turkıish music ect.). The course gives information about sound and kinds of sound. The course explains the function of music, effects of music on education and people and also explains fields of music, Turkish public music and classical Turkıish music. The course gives information about today's popular music and culture of music. Common voice studies are made by the students.
Course Learning Outcomes	1) Explains the definition of fine arts, the content of fine arts and the application area of the fine arts. 2) Discusses the mental,practical and psychlocigal function of the art. 3) Explains the effect of the music in the human life 4) Listens to the music. 5) Defines the basic concepts: art, artist, artwork , the purpose of the art, and the identity of the artist and artistic expression of the meaning. 6) Explains the content of fine arts and the application area of the music. 7) Explains the relationship of music-human, human-society and music-society 8) Recognises the kinds of music in the World.

Weekly Course Content

Week	Topics	Teaching and Learning	Study Materials

		Methods and Techniques	
1. Week	Meeting with students and general description of the course Explains to art,artist,artwork,the purpose of the art,the identity of the artist and artistic expression of the meaning. Subject of discussion: What is the place of our lives of music's?	Lecture and practice.Lecture Lecture	
2. Week	Classification of music: Traditional, classical an popular musics. Application: Teaching songs and listenin to music	Lecture and practice.Lecture Lecture	
3. Week	Introduction to the History of the Turkish Music. Geography of the Turkish Music. Application: Teaching songs and listenin to music.	Lecture and practice.Lecture Lecture	
4. Week	Introduction to the Traditional Turkish Music. Slide Show and listening to music. Application: Teaching songs.	Lecture and practice.Lecture Lecture	
5. Week	Instruments of the Traditional Turkish Music. Slide Show and listening to music. Application: Teaching songs	Lecture and practice. Lecture Lecture	
6. Week	Forms of the Traditional Turkish Music: Kırık Havalar. Slide Show and listening to music. Application: Teaching songs.	Lecture and practice.Lecture Lecture	
7. Week	Forms of the Traditional Turkish Music: Uzun Havalar Slide Show and listening to music Application: Teaching songs.	Lecture and practice.Lecture Lecture	
8. Week	Famous composers in Traditional Turkish Music. Slide Show and listening to music. Application: Teaching songs	Lecture and practice.Lecture Lecture	
9. Week	Midterm exam.	Writen exam	
10. Week	Famous composers in Traditional Turkish Music. Slide Show and listening to music. Application: Teaching songs	Lecture and practice.Lecture Lecture	
11. Week	The World Music Language. Forms of the Classical Western Music Slide Show and listening to music.	Lecture and practice.Lecture Lecture	

12. Week	Instruments of the Classical Western Music and scheme of the orchestra. Slide Show and listening to music Application: Teaching songs	Lecture and practice.Lecture Lecture	
13. Week	Periods of the Classical Western Music, Slide Show and listening to music Application: Teaching songs.	Lecture and practice.Lecture Lecture	
14. Week	Famous composers in Classical Western Music, Slide Show and listening to music. Application: Teaching songs	Lecture and practice.Lecture Lecture	
15. Week	General repeat for final exam.	Lecture and practice.Lecture Lecture	
16. Week	Final exam	Writen examLecture Lecture	

Resources

Recommended Sources
UCAN, A., Human and Music, Human and Art Education, 2000, Ankara.
CANGAL, N., Forms of Music, 2008, Ankara
MİMAROGLU, İ., History of Music, 1995, İstanbul.
AK, A.S., History of Turkish Music, 2002, Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		

Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Mid Term Exam 1	1	1	1
Final Exam	1	1	1
		Total Workload	30
		Total Workload / 25.0 (s)	1.18
		ECTS Credit of the Course	1

2. DÖNEM

DERS PLANLARI VE İÇERİKLERİ

2.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ATA-1004	Principles of Atatürk and History of Modern Turkey II	Zorunlu	2	0	0	2	1
ENV-1010	Development of Reading and Writing Skills II	Zorunlu	3	2	0	2	4
ENV-1012	Mathematics II	Zorunlu	2	2	0	3	5
ENV-1014	General Physics II	Zorunlu	2	3	0	4	5
ENV-1016	General Chemistry II	Zorunlu	2	2	0	3	4
ENV-1018	Scientific Research Methods	Zorunlu	2	0	0	2	2
ENV-1020	General Chemistry Laboratory	Zorunlu	0	0	2	1	2
ENV-1022	Computer Aided Technical Drawing	Zorunlu	3	3	0	5	5
TDİ-1004	Turkish Language II	Zorunlu	2	0	0	2	1
SEC-1002	YÖK Seçmeli Ders Grubu	Bölüm Seçmeli				0	1
		Toplam :	18	12	2	24	30

YÖK Seçmeli Ders Grubu - SEC-1002 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
BED-1004	Physical Education II	2	0	0	0	1
MÜZ-1004	Music II	2	0	0	0	1
RES-1004	Art II	2	0	0	0	1
ENV-1024	Career Planning	2	0	0	2	1

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	T+U Hour	Credits	ECTS
Mathematics II (Matematik II)	ENV-1012	2. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory

Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Sena ÖZEN
Instructors	Assist. Prof. Dr. Sena ÖZEN
Assistants	
Course Objectives	The aim of this course is to provide the required mathematical knowledge to students for solving engineering problems and to improve their analytically thinking ability.
Course Content	The Indefinite Integral, Riemann Integral, Definite Integral, The Fundamental Theorem of Calculus, The Techniques of Integration, Trigonometric Integrals, Integrals of Rational Functions, Improper Integrals, Applications of Definite Integrals
Course Learning Outcomes	1- Learn Sigma Notation, summation rules and Riemann sum. 2- Identify lower and upper sums. 3- Calculate integrals by using techniques of integration. 4- Evaluate the definite integrals. 5- Find arc length, surface area and volume by using the concept of integral.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The Indefinite Integral, Sums and Sigma Notation	Oral presentation and Practice	
2. Week	Areas as Limits of Sums	Oral presentation and Practice	
3. Week	Riemann Sum. Riemann Integral	Oral presentation and Practice	
4. Week	Definite Integral and Properties	Oral presentation and Practice	
5. Week	The Fundamental Theorem of Calculus	Oral presentation and Practice	

6. Week	The Method of Substitution	Oral presentation and Practice	
7. Week	Areas of Plane Region	Oral presentation and Practice	
8. Week	The Method of Integration By Parts	Oral presentation and Practice	
9. Week	Midterm Exam	Written Exam	
10. Week	Improper Integrals	Oral presentation and Practice	
11. Week	Calculation of Volume	Oral presentation and Practice	
12. Week	Volumes of Solids of Revolution	Oral presentation and Practice	
13. Week	Volumes of Solids of Revolution	Oral presentation and Practice	
14. Week	Calculation of Arc Length and Surface Area	Oral presentation and Practice	
15. Week	General Review	Oral presentation and Practice	
16. Week	Final Exam	Written Exam	

Resources

Recommended Sources
CALCULUS: A Complete Course / Robert A. Adams, Christopher Essex; Pearson 2010 THOMAS'CALCULUS / Ross L. Finney, Maurice D. Weir, Frank R. Giordano; Boston: Addison-Wesley, 2000

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		

Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Supportive Courses	% 70
Engineering Sciences	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	13	13
Final Exam Preparation	1	13	13
Mid Term Exam 1	1	2	2
Futher Study	14	2	28
Preliminary Study	14	2	28
		Total Workload	142
		Total Workload / 25.5 (s)	5.56

ECTS Credit of the Course	6

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MÜHENDİSLİK FAKÜLTESİ
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Course Title	Code	Semester	L+U Hour	Credits	ECTS
General Physics II (Genel Fizik II)	ENV-1014	2. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Kıvanç Sel
Instructors	
Assistants	
Course Objectives	To introduce the concept of electric ang magnetism
Course Content	Electrostatic, magnetostatic, electromagnetic field, Maxwell equations, and electromagnetic waves
Course Learning Outcomes	1) To learn the theoretical base of electricity and magnetism 2) To gain the ability of analytical thinking in problem solving 3) To understand the applications of electricity and magnetism to the daily life

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Electric Fields	Oral lectures with interactive discussions, homeworks	
2. Week	Gauss's Law	Oral lectures with interactive discussions, homeworks	
3. Week	Electrical Potential	Oral lectures with interactive discussions, homeworks	
4. Week	Capacitance and Dielectrics	Oral lectures with interactive discussions, homeworks	
5. Week	Current and Resistance	Oral lectures with interactive discussions, homeworks	
6. Week	Direct Current Circuit	Oral lectures with interactive discussions, homeworks	
7. Week	Magnetic Fields	Oral lectures with interactive discussions, homeworks	
8. Week	Magnetic Field Sources	Oral lectures with interactive discussions, homeworks	
9. Week	Faraday's Law	Oral lectures with interactive discussions, homeworks	
10. Week	Inductance	Oral lectures with interactive discussions, homeworks	

11. Week	Maxwell Equations	Oral lectures with interactive discussions, homeworks	
12. Week	Alternating Current Circuit	Oral lectures with interactive discussions, homeworks	
13. Week	Electromagnetic Waves	Oral lectures with interactive discussions, homeworks	
14. Week	Polarization	Oral lectures with interactive discussions, homeworks	
15. Week	Semester review	Oral lectures with interactive discussions, homeworks	
16. Week	Semester review	Oral lectures with interactive discussions, homeworks	

Resources

Recommended Sources
Serway, R.A.: 1992, Physics For Scientists & Engineers with Modern Physics, Third edition
Halliday, D., Robert, R., and Walker, J.: 1993, Fundamentals of Physics, Fourth edition, John Wiley & Sons, Inc
Bueche, A.: 1986, Introduction to Physics for Scientists, McGraw-Hill.
Fishbone, Jr.: 1996, Physics for Scientists & Engineers, Prentice Hall.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32

Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.				X		

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	30	30
Class Hours (14 weeks)	14	4	56
Mid Term Exam 1	1	2	2
Preliminary Study	14	3	42
		Total Workload	132
		Total Workload / 25.5 (s)	5.18
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS
General Chemistry II (Genel Kimya II)	ENV-1016	2. Semester	2 + 2	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr.Sıdıka Polat Çakır
Instructors	Prof. Dr.Sıdıka Polat Çakır
Assistants	NA
Course Objectives	To extend students general chemistry knowledge
Course Content	Chemical Bonds: Lewis structure, Molecular structures, VSPR theory; Solutions and related calculations; Identification of acids and bases and related calculations: Chemical Kinetics
Course Learning Outcomes	1- Prepare acid, base and buffer solution 2- Express the concepts of acid, base, salt, pH and pOH 3- Define VSPR theory and draw Lewis structure 4-Define the concept of chemical kinetics

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Chemical Bonding I: Lewis Theory	Oral presentation	Textbook
2. Week	Chemical Bonding II: Molecular Shapes, Valend Bond Theory and Molecular Orbital Theory	Oral presentation	Textbook
3. Week	Recitation	Oral presentation	Textbook
4. Week	Chemical Kinetics: Determining the order of a reaction and rate law	Oral presentation	Textbook
5. Week	Chemical Kinetics: Reaction Mechanism and catalysis	Oral presentation	Textbook
6. Week	Recitation	Oral presentation	
7. Week	Midterm Exam	Oral presentation	Textbook
8. Week	Chemical Equilibrium: K_p and K_c, Predicting the direction of change	Oral presentation	Textbook
9. Week	Chemical Equilibrium: Le Chatelier Principle	Oral presentation	Textbook
10. Week	Recitation	Oral presentation	Textbook
11. Week	Acids and Bases: Definitions and finding pH and POH	Oral presentation	Textbook
12. Week	Acids and Bases: Polyprotic acids, Lewis acids and Lewis bases	Oral presentation	Textbook
13. Week	Aqueous ionic equilibrium	Oral presentation	Textbook
14. Week	Recitation		
15. Week	Final exam		
16. Week	Final exam		

Resources Recommended Sources
Chemistry: A Molecular Approach, 1st Ed. Nivaldo Tro

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 20
Mathematics and Basic Sciences	% 80

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2

Assignment 1	7	6	42
Final Exam Preparation	1	25	25
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	25	25
Mid Term Exam 1	1	2	2
		Total Workload	152
		Total Workload / 25.5 (s)	6.0
		ECTS Credit of the Course	6.0

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Computer Aided Technical Drawing (Teknik Resim)	ENV-1022	2. Semester	3 + 3	5.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory

Mode of delivery	face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	Students will interpret basic drawing rules, Students will understand and interpret floor plans and create
Course Content	Students learn the Fundamentals of basic drawing according to the rules of technical drawing to expertise those knowledge in their Professional Works such as in structure (architecture) and design of irrigation projects. In addition, students can be able to inspect drawings of this kind of projects.
Course Learning Outcomes	1) Students will interpret basic drawing rules 2) Students will understand and interpret floor plans and create 3) Students will organize materials and farm structures plans 4) Students will understand scale drawings; read, create and articulate and identify construction materials

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Course concept, the necessary materials		
2. Week	Drawing standards, to use drawing tools and equipment		
3. Week	Writing according to the rules of technical drawing		
4. Week	Basic geometric drawings		
5. Week	The theory of projection		
6. Week	To draw 3D appearance of objects		
7. Week	To draw 3D appearance of the cylindrical bodies and perforated		
8. Week	Sectioning techniques on different shapes		
9. Week	Middterm		

10. Week	Measurement techniques for dimensioning of objects		
11. Week	Perspective drawing techniques		
12. Week	Drawing techniques for architectural projects		
13. Week	Measurement of the architectural projects of construction, detail drawings, construction projects, legend information		
14. Week	Model drawing and details of a structure		

Resources

Recommended Sources
Class notes
Class notes

Assessment

Measurement and Evaluation Methods and Techniques		
Exam,Homework,Presentation		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.		X				
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.			X			
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Further Study	14	2	28
Class Hours (14 weeks)	14	3	42
Mid Term Exam 1	1	5	5
Final Exam	1	5	5
Presentation/Seminar	1	2	2
Preliminary Study	1	10	10
Assignment 1	8	1	8
		Total Workload	100
		Total Workload / 25.5 (s)	3.92
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Development of Reading and Writing Skills II (Okuma ve Yazma Yeteneklerinin Geliştirilmesi II)	ENV-1010	2. Semester	3 + 2	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory

Mode of delivery	Face to face
Course Coordinator	Instructor Dr. Bora DEMİR
Instructors	Instructor Dr. Bora DEMİR
Assistants	
Course Objectives	This lesson aims at developing reading and writing skills of the students.
Course Content	analyzing both general and oocupational reading texts and presentation of basic writing processes.
Course Learning Outcomes	1) Comprehend and use vocabulary effectively in reading and writing 2) Identify and analyze the purpose and message across a variety of texts. 3) Distinguish between stated and implied ideas; make inferences 4) Use strategies to think critically about reading 5) Draw conclusions and predict outcomes 6) Recognize and apply the conventions of Standard English in both reading and writing.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introducing the course content and Introduction to reading comprehension strategies	Oral presentation	coursebooks
2. Week	Defining the basic principles of reading process	Oral presentation	coursebooks
3. Week	Finding topics of paragraphs	Oral presentation	coursebooks
4. Week	Finding the topic sentences o paragraphs	Oral presentation	coursebooks
5. Week	Stating the main idea of a paragraph	Oral presentation	coursebooks
6. Week	Basic principles of writing an essay	Oral presentation	coursebooks
7. Week	Mid-term Exam	Oral presentation	
8. Week	Analyzing and evaluating topic sentences	Oral presentation	coursebooks
9. Week	Recognizing parts of an essay	Oral presentation	coursebooks
10. Week	Planning an essay	Oral presentation	coursebooks

11. Week	Writing opinion essays	Oral presentation	coursebooks
12. Week	Translating sentences about environmental engineering	Oral presentation	coursebooks
13. Week	Translating paragraphs about environmental engineering	Oral presentation	coursebooks
14. Week	Translating paragraphs about environmental engineering	Oral presentation	coursebooks
15. Week	General review	Oral presentation	coursebooks
16. Week	Final Exam		

Resources

Recommended Sources
Mikulecky, B., Jeffries, L. (2004). More Reading Power. Pearson Education Blanchard, K., Root, C. (2004). Ready to Write. Pearson Education

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	50%

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.		X				
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5

Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Reading	8	1	8
Final Exam Preparation	1	5	5
Further study	10	1	10
Midterm exam	1	2	2
Class Hours (14 weeks)	14	5	70
Mid Term Exam Preparation	1	5	5
Final exam	1	2	2
		Total Workload	102
		Total Workload / 25.0 (s)	4.00
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Computer-Aided Technical Drawing (Bilgisayar Destekli Teknik Çizim)	ENV-1022	4. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assoc. Prof. Dr. Ali Tolga ÖZDEN
Instructors	
Assistants	
Course Objectives	The contents of this course are designed to teach the skills needed to draw the 2D Drawing commands used on most construction-related drawings and also commands,in the basic level, related to drawing solid models.
Course Content	The contents of this course are designed to teach the skills needed to draw the 2D Drawing commands used on most construction-related drawings and also commands,in the basic level, related to drawing solid models.
Course Learning Outcomes	1) Drawing geometrical shapes 2) The rules of technical drawing 3) To learn AutoCad Commands 4) To plot the shapes drawn by Computer

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to AutoCAD	Class Notes	
2. Week	Basic Drawing Commands	Class Notes	
3. Week	Modifying Drawing Commands	Class Notes	
4. Week	Drawing Geometric Shapes	Class Notes	
5. Week	Drawing Display Options, Layers	Class Notes	
6. Week	Dimensioning	Class Notes	

7. Week	Midterm	Class Notes	
8. Week	Oblique and Isometric drawings	Class Notes	
9. Week	Blocks and Insert	Class Notes	
10. Week	Surface Models	Class Notes	
11. Week	Surface Models	Class Notes	
12. Week	Introduction to 3D modelling	Class Notes	
13. Week	Printing	Class Notes	
14. Week	Student Drawing Works and Presentation	Class Notes	

Resources

Recommended Sources
Class notes

Assessment

Measurement and Evaluation Methods and Techniques		
Exam and Homeworks		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.		X				
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.		X				
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.		X				
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS Credits and Course Workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	8	8
Further Study	1	10	10
Mid Term Exam 1	1	10	10
Assignment 1	1	10	10
Final Exam	1	10	10
		Total Workload	100
		Total Workload / 25.5 (s)	3.92
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Turkish Language II (Türk Dili II)	TDİ-1004	2. Semester	2 + 0	2.0	1.0

Prerequisites	None

Language of Instruction	Turkish

Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The course aims toshow the characteristics and rules of the Turkish language with examples help students develop familiarity and skills for expressing their feelings, thoughts, plans, impressions, observations and experiences through written and spoken language correctly and effectivelyexpand vocabulary through written and spoken texts develop reading and listening comprehension develop overall language skills, which are essential to interpersonal communication.
Course Content	Students will be taught how to use the written communication tools accurately and efficiently in this course. There will be exercises on understanding, telling, reading, and writing; types of speeches (panel, symposium, conference, etc.) will be introduced; the student will be equipped with information on using body language, accent and intonation, and presentation techniques.
Course Learning Outcomes	1) Internalize the basic rules of Turkish grammar and spelling. 2) Use written statement such as preparing a CV (as a form or prose), write letters (job request letter, letter of complaint, etc.), petitions, official reports, and reports. 3) Distinguish the types of prepared and unprepared speeches. 4) Acquire knowledge related to different languages and cultures.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Semantic; parts of speech, assonant doublet	Lecturing, workshop	
2. Week	Expression and exposition rules; exposition mistakes.	Lecturing, workshop	

3. Week	Parts of expression on writing.(Petition, brief history of someone´s life, curriculum vitae, letter)	Lecturing, workshop	
4. Week	Parts of expression on writing. .(Essay, column, short feature and article in a newspaper or magazine, reporting)	Lecturing, workshop	
5. Week	Parts of expression on writing. (memory, criticism)	Lecturing, workshop	
6. Week	Parts of expression on writing. (article)	Lecturing, workshop	
7. Week	Theater, parts of theater, characteristics of theater, Turkish theater.	Lecturing, workshop	
8. Week	Poetry, characteristics and parts of poetry; poetry literature of Turkish.	Lecturing, workshop	
9. Week	Story, parts of story, the past of story writing at Turkish literature	Lecturing, workshop	
10. Week	Novel (a prose narrative), the past of novel writing at Turkish literature and the famous novalists.	Lecturing, workshop	
11. Week	Folk tale; fable; summarize; to take notes, index; report; official report (signed and submitted by a committee or group.)	Lecturing, workshop	
12. Week	Oral expressions	Lecturing, workshop	
13. Week	Oral expressions and its rules; speech, lecture, briefing, seminar, announcement, notice.	Lecturing, workshop	
14. Week	Debate, panel, panel discussion, forum, symposium.	Lecturing, workshop	
15. Week	Final Exam		
16. Week	Final Exam		

Resources

Recommended Sources
EKER, Süer (2006) Çağdaş Türk Dili, Ankara: Grafiker Yayınları, 4. Baskı
ERGİN, Muharrem (1998) Türk Dilbilgisi, İstanbul: Bayrak Basın/Yayım/ Tanıtım

KARAHAN, Leyla (2005) Türkçede Söz Dizimi, Ankara: Akçağ Yayınları, 9. Baskı

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	5	5
Mid Term Exam Preparation	1	5	5
Mid Term Exam 1	1	1	1

Final Exam	1	1	1
Further Study	1	5	5
Assignment 1	1	5	5
		Total Workload	50
		Total Workload / 25.5 (s)	1.96
		ECTS Credit of the Course	2

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Principles of Atatürk & History of Modern Turkey II (Atatürk İlkeleri ve İnkılap Tarihi II)	ATA-1004	2. Semester	2 + 0	2.0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	Due to Atatürk's principles and revolutions of Turkish youth, the love of the nation and the country, with internal and external threats to the Republic of Turkey on the conscious,

	respectful of human rights, intellectual freedom and conscience free, wisdom free, democratic and secular-minded embraced scientific understanding of the contemporary world the need for understood as a knowledgeable and conscious people to train
Course Content	The Principles of Atatürk and History of Modern Turkey course includes the period of revolutions, which starts with Mustafa Kemal Pasha's landing at Samsun and aims the country's rise to the level of modern countries after the homeland's liberation from occupation, and Ataturk's principles.
Course Learning Outcomes	1) To be able to know about sources regarding the principles of Ataturk 2) To be able to have comprehended the historical foundations of the principles of Ataturk 3) To be able to have comprehended Ataturk's understanding of Republic and peace 4) To be able to have comprehended the state structure of the Republic of Turkey 5) Comprehends the Principles and Revolution of Ataturk

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	In the field of Political Revolutions (Abolition of the Sultanate-Declaration of the Republic)		
2. Week	In the field of Political Revolutions (Abolition of the Caliphate)	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
3. Week	Transition to Multi-party and the Progressive Republican Party Order	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
4. Week	Declaration-i Sükûn Period	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
5. Week	Reforms in Education and Culture	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
6. Week	Reforms in Education and Culture	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	

7. Week	Reforms in Social and Civic Field	Kronoloji, Karşılaştırmalı, Örnek Olay ve Metin okumaya Dayalı Anlatım, Soru Cevap Yöntemi	
8. Week	Reforms in the Field of Law (the Constitution of the Republic Period: 1924, 1961 and 1982) (Midterm exam)	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
9. Week	Economic Reforms in the field	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
10. Week	Republic of Turkey and Turkey's Foreign Policy Geopolitics	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
11. Week	Principles of Atatürk and the Kemalist Thought System	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
12. Week	Principles of Atatürk and the Kemalist Thought System	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
13. Week	Ideology and the Modernization of Turkey	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
14. Week	Ideology and the Modernization of Turkey	Chronology, Comparative, Narration Based on Sample Incidents and Reading Texts, Question and Answer Method	
15. Week	final		
16. Week	final		

Resources

Recommended Sources
Atatürk, Atatürk'ün Söylev ve Demeçleri, I-III, V, Ankara 1961-1972.
Atabay, Mithat, Atatürk İlkeleri ve İnkılap Tarihi, İstanbul 2011
Süslü, Azmi (ve diğerleri), Türkiye Cumhuriyeti Tarihi, 2 cilt, Ankara 2000.
Mumcu, Ahmet, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi İstanbul 1979.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					

Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	**1**	**2**	**3**	**4**	**5**
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	**Quantity**	**Duration (Hour)**	**Total Workload (Hour)**
Final Exam	1	2	2
Presentation/Seminar	1	5	5
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Further Study	14	1	14
		Total Workload	54
		Total Workload / 25.5 (s)	2.12

ECTS Credit of the Course	2

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Physical Education II (Beden Eğitimi II)	BED-1004	2. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	This course aims to enable the students to comprehend the importance of physical education and sports. The students will have preliminary knowledge about different sports branches and they will learn different ways to adopt a sporting habit for life and to stay away from unhealthy habits.
Course Content	The skills covered in this course include; Basketball: Double hand pass, push pass, chest pass, floor pass, left and right trurning, bank shot; Volleyball: basic pass, jump serve, spiked ball, roll shot; Soccer: kicking styles, passing the ball, assist, spot kick, wall-pass, dribbling etc.
Course Learning Outcomes	1) The education of basıc pasture,types of pass and rolling the ball in basketboll,The applied education of chest pass,types of ground pass in basketboll,The applied education

	of types of head up pass baunus pas in basketboll,The applied education of right and left turnstile in basketboll,The applied education of basic posture,types of pass,serving the ball in volleyboll,The applied education of finger pass and cuff pass in volleyboll,The applied education of serving the ball in volleyboll,The applied education of pacing smack in volleyboll,The education of rolling the ball and types of shout in foot ball,The applied educationof type of interior exterior and upper pass in football,The education of basic,pasture,types of pass,rolling the ball and trick in handboll,The applied education of basc pasture and types of pass in handboll,The applied education of rolling the ball(low-high) and types of trick with ball. 2) Basic Concepts of Physical Education and Sport adequacy or transfer to the winner. 3) Physical education and sports broadcasts to follow the habit wins 4) Development of Physical Education and Sport in Turkey understand the Physical Education and Sport Educators recognizes leading. 5) Physical Education and Sports Science and establish relationships with other Divisions

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The aim and benefit of Physical Education, sociable games	Lecture	
2. Week	Human anatomy, muscle and skelaton systems, attainment about membrums and its functions, games	Lecture	
3. Week	Atatürk and sport, Republic Day walk	Lecture	
4. Week	The game rules of Basketball and pass techniques, pedagogical game.	Lecture	
5. Week	The pass techniques in basketball, dribling, toolbar, , pedagogical game	Lecture	
6. Week	Dribling, toolbar, kick, pedagogical game	Lecture	
7. Week	Defense and offensive systems, one to one and fives to fives game	Lecture	
8. Week	The games rules of volleyball and finger pass exercise, pedagogical game.	Lecture	
9. Week	Finger pass and wristband exercises, pedagogical game.	Lecture	
10. Week	Service techniques and service, receiving wristband than service, pedagogical game	Lecture	

11. Week	Volleyball fixtures inside class	Lecture	
12. Week	Infornation about winter sports and funny games	Lecture	
13. Week	Infornation about women and sport and funny traditional games	Lecture	
14. Week	Overcome narcotic, cigarette and alcohol and these harms, funny games.	Lecture	
15. Week	Final preparation		
16. Week	Final exam		

Resources

Recommended Sources
Branch federations and olympic commitee publications

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 5

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5

Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	16	2	32
Mid Term Exam 1	1	2	2
		Total Workload	36
		Total Workload / 25.5 (s)	1.41
		ECTS Credit of the Course	1

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Art II (Resim II)	RES-1004	2. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	
Instructors	
Assistants	
Course Objectives	The objectives of this course are to provide the students with theoretical knowledge about fine arts like Plastıc Arts,Vısıual Arts, Phonetıc Arts are introduced ,seeing with many dimensions,drawing,perceiving and reflection process targets to see visual structure. And therorical information about elements of arts like line,colour, form,sense,value and place, also principles like balance,rhythm,action,appesition,totalitanion and accent and to.develop their skills of drawing
Course Content	This course includes the topics :the appearence of the painting, art concept, the appearence of art, necessity of art, qualifications of the artist, the criteria of the art work historical development and the kinds of Fine Arts and the branches that take place under the scope of fine Arts, the development of Fıne Arts before the period of Republıc and during the Republıc in our country, visual explanatıon of the Works that are made of different kinds of materials in the different periods of the painting history. the workshop applications.
Course Learning Outcomes	1) Thoughts about the fine arts, the ability to share the gains suggestions 2) Skill wins used the technical possibilities of a combination of different drawing materials,. 3) With the use of various techniques in Picture describes the application andapplies it to. 4) With the use of various techniques in Picture describes the application andapplies it to.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The review of the subject and the discussion of the problems of the stterm.	Lecture and practical application	
2. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	
3. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	

4. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	
5. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	
6. Week	Description,scope,Application fields of Fine Arts.	Lecture and practical application	
7. Week	Description,scope,Application fields of Fine Arts.	Explwining of lesson, co-operation, practices	
8. Week	Midterm exam		
9. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
10. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
11. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
12. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
13. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
14. Week	Description,scope,Application fields of Fine Arts	Lecture and practical application	
15. Week	Final exam		

16. Week	Final exam		

Resources

Recommended Sources
Classical Drawing Atelier, Juliette Aristides,2006
Light and Shadow, Jose E.Parramon, 2007
The Art of Responsive Drawing. Godstein, Nathan, New Jersey, 2006

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5

Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Preliminary Study	14	1	14
Assignment 1	1	8	8
		Total Workload	52
		Total Workload / 25.5 (s)	2.04
		ECTS Credit of the Course	2

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Music II (Müzik II)	MÜZ-1004	2. Semester	2 + 0	0	1.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	

Assistants	
Course Objectives	This course aims to develop the general culture of music .
Course Content	Course gives information about what the music is, birth of music, general theories of music and historical evaluation of music. The course introduces music and kinds of music in Turkey (Turkısh public music, Turkısh art music, classical Turkısh music ect.). The course gives information about sound and kinds of sound. The course explains the function of music, effects of music on education and people and also explains fields of music, Turkish public music and classical Turkısh music. The course gives information about today's popular music and culture of music. Common voice studies are made by the students.
Course Learning Outcomes	1) Explains the definition of fine arts, the content of fine arts and the application area of the fine arts. 2) Discusses the mental,practical and psychlocigal function of the art 3) Explains the effect of the music in the human life 4) Listens to the music. 5) Defines the basic concepts: art, artist, artwork , the purpose of the art, and the identity of the artist and artistic expression of the meaning. 6) Explains the content of fine arts and the application area of the music. 7) Explains the relationship of music-human, human-society and music-society 8) Recognises the kinds of music in the World.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Classical Turkish Music. Slide Show and listening to music.	Lecture and practice.Lecture Lecture	
2. Week	Writing notes in Turks. Application: Teaching songs and listenin to music	Lecture and practice.Lecture Lecture	
3. Week	Music educational intstitutions in Ottomans. Application: Teaching songs and listening to music	Lecture and practice.Lecture Lecture	

4. Week	Classical Turkish Music in 14.15.16. and 17. Centuries. Application: Teaching songs and listenin to music	Lecture and practice.Lecture Lecture	
5. Week	Classical Turkish Music in 18. and 19.centuries. Application: Teaching songs and listenin to music.	Lecture and practice.Lecture Lecture	
6. Week	Classical Turkish Music in 20.century. Classical Instrumental Turkish Music. Application: Teaching songs and listenin to music.	Lecture and practice.Lecture Lecture	
7. Week	Classical Turkish Music Instruments. Slide Show and listening to music. Application: Teaching songs	Lecture and practice.Lecture Lecture	
8. Week	General repeat for midterm exam.	Lecture and practice.Lecture Lecture	
9. Week	Midterm Exam	Writen exam	
10. Week	Famous composers in Classical Turkish Music. Slide Show and listening to music. Application: Teaching songs	Lecture and practice.Lecture Lecture	
11. Week	The World Musics (Historical and popular musics). Slide Show and listening to music.	Lecture and practice.Lecture Lecture	
12. Week	Blues, Jazz and Rock Music Slide Show and listening to music.	Lecture and practice.Lecture Lecture	
13. Week	Flemenco and Tango Slide Show and listening to music	Lecture and practice.Lecture Lecture	
14. Week	Arabesque, pop, metal, hip hop musics. Slide Show and listening to music	Lecture and practice. Lecture Lecture	
15. Week	Year-end (General repeat)	Lecture and practice.Lecture Lecture	

16. Week	Final exam	Writen exam	

Resources

Recommended Sources
AK, A.S., History of Turkish Music, 2002, Ankara.
CANGAL, N., Forms of Music, 2008, Ankara
MİMAROGLU, İ., History of Music, 1995, İstanbul.
UCAN, A., Human and Music, Human and Art Education, 2000, Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Class Hours (14 weeks)	14	2	28
		Total Workload	30
		Total Workload / 25.5 (s)	1.18
		ECTS Credit of the Course	1

3. DÖNEM

DERS PLANLARI VE İÇERİKLERİ

3.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-2001	Statics and Dynamics	Zorunlu	1	2	0	2	4
ENV-2003	Environmental Chemistry I	Zorunlu	2	2	0	3	6
ENV-2005	Environmental Chemistry Laboratory I	Zorunlu	0	2	0	1	2
ENV-2007	Fluid Mechanics	Zorunlu	1	2	0	2	5
ENV-2009	Occupational Health and Safety I	Zorunlu	2	0	0	2	2
SEC-2001	Mesleki Seçmeli Ders Grubu	Bölüm Seçmeli				9	11
		Toplam :	6	8	0	19	30

Mesleki Seçmeli Ders Grubu - SEC-2001 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-2011	Environmental Engineering Hydrology	3	0	0	3	4
ENV-2013	Analysis of Engineering Systems	3	0	0	3	4
ENV-2015	Environmental Ecology	1	2	0	2	4
ENV-2017	Current Topics in Environmental Engineering	2	0	0	2	3
ENV-2019	Urban Development and Environment	2	0	0	2	3
ENV-2021	Thermodynamics	2	0	0	2	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Statics and Dynamics (Statik ve Dinamik)	ENV-2001	3. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Orhun KÖKSAL
Instructors	Prof. Dr. Hasan Orhun KÖKSAL
Assistants	
Course Objectives	The objective of this course is to introduce the fundamental concepts and principles of statics with engineering applications. In addition, the basic principles of dynamic analysis of particles and rigid bodies are also studied.
Course Content	Topics include the basic concepts in engineering mechanics (Statics and Dynamics); vector description of forces and moments; vectoral operations; 2D and 3D equilibrium of particles and rigid bodies; center of gravity; first and second moments of area; basic principles of the rectilinear and curvilinear motions of vector kinematics for particles.
Course Learning Outcomes	1) Define the basic concepts (length,time,mass,force,particle,rigid body,scaler,vector,tensor) in engineering mechanics. 2) Use the basic vectoral operations necessary in engineering calculations. 3) Define and describe the basic equations of the particle statics and dynamics (Newton's

	laws). 4) Calculate the resultants of forces and couples, and the equivalent force and moment systems. 5) Draw free body diagrams and impose constraints on a mechanical system. 6) Write the equilibrium equations for 2D and 3D engineering problems. 7) Perform the analyses of plane and space trusses. 8) Determine the center of gravity, first and second moments of area for common geometrical shapes. 9) Describe the fundamental concepts and use the basic mathematical formulations of engineering dynamics (kinematic definitions, rectilinear and curvilinear motions)

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction and fundamental principles. Vectors and forces. Statics of a particle	Lecture	
2. Week	Statics of a particle, basic vector operations and forces	Lecture, Sample problem solving	
3. Week	Rigid bodies and equivalent sytems of forces. Rijid bodies: External and internal forces. Moment of a force about a point. Varignon's theorem	Lecture with digital projection	
4. Week	Rigid bodies and equivalent sytems of forces. Moment of a force about a given axis. Moment of a couple. Equivalent couples	Lecture with digital projection, Sample problem solving	
5. Week	Area of moments, center of gravity	Lecture, Sample problem solving	
6. Week	Equilibrium of rigid bodies. Degrees of freedom	Lecture with digital projection	
7. Week	Various types of supports and connections of two dimensional structures. Plane structural systems. Various types of loadings affecting on plane structural members	Lecture with digital projection	
8. Week	Mid-term exam	Written exam	

9. Week	Plane and space tusses, cables	Lecture, Sample problem solving	
10. Week	Anaysis methods of trusses (method of joints, method of sections)	Lecture, Sample problem solving	
11. Week	Introduction to dynamics	Lecture	
12. Week	Kinematics of particles	Lecture, Sample problem solving	
13. Week	Kinematic equations in rectilinear and curvilinearcoordinates	Lecture, Sample problem solving	
14. Week	Kinetics of particles, Newton's second law of motion, systems of particles, D'Alambert's principle	Lecture, Sample problem solving	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Beer F.P., Johnston E.R., and Mazurek D., Vector Mechanics for Engineers: Statics, McGraw-Hill, 10th Edition, 2012
Hibbeler R.C., Engineering Mechanics: Statics, Prentice Hall, 12th Edition, 2009
Hibbeler R.C., Engineering Mechaics: Dynamics, Prentice Hall, 13th Edition, 2012

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		

Final Exam		
Final Makeup Exam		
Other		
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	**Relations**					
	0	**1**	**2**	**3**	**4**	**5**
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		

Design and conduct experiments, collect, analyze and interpret data.			X			
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.			X			
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	12	12
Further Study	14	3	42
Final Exam	1	3	3
Mid Term Exam 1	1	3	3
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	10	10

Total Workload	126
Total Workload / 25.5 (s)	4.94
ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Chemistry I (Çevre Kimyası I)	ENV-2003	3. Semester	2 + 2	3.0	6.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	The students are thought about the fundamental principles of analytical chemistry, description, importance and analysis of environmental pollutants.
Course Content	Reaction kinetics, techniques for sampling, instrumental analysis, important parameters in water and wastewater, suspended, dissolved and volatile solids, acidity, alkalinity, turbidity, color, hardness, chlorides.
Course Learning Outcomes	1) Learn basic chemical content in context.

	2) Develop an understanding of the range and chemistry of compounds in the hydrosphere and geosphere 3) Define and classify environmental pollutants in air, water, and soil phases. 4) Discuss local and global environmental issues based on scientific principles and data. 5) Follow current developments in environmental chemistry.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Instrumental analysis	Lecturing, reading	
2. Week	Instrumental analysis	Lecturing, reading	
3. Week	Molarity and normality	Lecturing, reading	
4. Week	Ionic strength and activity	Lecturing, reading, problem solving	
5. Week	pH,conductivity, saltness	Lecturing, reading, quiz	
6. Week	Chemical equilibrium	Lecturing, reading, problem solving	
7. Week	Solids	Lecturing, reading, problem solving	
8. Week	Solids	Lecturing, reading, quiz, problem solving	
9. Week	Midterm	Written exam	
10. Week	Turbidity and color	Lecturing, reading, problem solving	
11. Week	Hardness	Lecturing, reading, quiz	
12. Week	Acidity	Lecturing, reading, problem solving	
13. Week	Alkalinity	Lecturing, reading, quiz	
14. Week	Buffer solutions	Lecturing, reading, problem solving, quiz	

15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Sawyer, C.N., McCarty, P.L., Parkin, G.F., (1994) Chemistry for Environmental Engineering, McGraw-Hill, New York, NY (0-07-054978-8).
Snoeyink, V.L and Jenkins, D (1980) Water Chemistry; John Wiley & Sons, New York, NY (ISBN 0-471-05196-9.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	5	10
Quiz (zes)	5	10
Total	11	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X

Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.					X	
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.		X				
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)

Final Exam	1	3	3
Class Hours (14 weeks)	14	4	56
Laboratory			
Final Exam Preparation	1	15	15
Mid Term Exam Preparation	1	15	15
Preliminary Study	14	3	42
Mid Term Exam 1	1	3	3
Assignment 1	5	2	10
Quiz (zes)	5	1	5
		Total Workload	149
		Total Workload / 25 (s)	5.96
		ECTS Credit of the Course	6

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Chemistry Laboratory I (Çevre Kimyası Laboratuvarı I)	ENV-2005	3. Semester	0 + 2	1.0	2.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)

Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	Student will be able to gain technical skills about how to use and calibrate measurement devices, how to perform experiments that analyze samples for physical and chemical characteristics, and how to write a report.
Course Content	Use and calibration of instruments, experimental analysis of physicochemical parameters of water and wastewater such as pH, conductivity, suspended, dissolved and volatile solids, hardness, acidity, alkalinity and buffer pH.
Course Learning Outcomes	1) Understand and apply water and wastewater sampling procedures. 2) Perform analytical and instrumental analyses of inorganic pollution parameters. 3) Provide the ability to prepare technical laboratorial reports. 4) Statistically examine and interpret laboratorial results. 5) Demonstrate the ability to work in groups 6) Understand the significances of water and wastewater treatment processes.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to laboratory instruments	Lecturing, reading	
2. Week	Introduction to laboratory instruments	Lecturing, reading	
3. Week	Preparation of standard solutions	Lecturing, laboratory, reading	
4. Week	pH calibration and measurement	Lecturing, practice, reading	

5. Week	Analysis of ionic strength and conductivity	Lecturing, reading, laboratory	
6. Week	Analysis of total and suspended solids	Lecturing, reading, laboratory	
7. Week	Analysis of dissolved and volatile Solids	Lecturing, reading, problem solving	
8. Week	Midterm	Lecturing, reading, laboratory	
9. Week	Turbidity measurement	Written exam	
10. Week	Color measurement	Lecturing, reading, laboratory	
11. Week	Analyses of total and calcium hardness	Lecturing, reading, laboratory	
12. Week	Titrimetric analysis of acidity	Lecturing, reading, laboratory	
13. Week	Titrimetric analysis of alkalinity	Lecturing, reading, problem solving	
14. Week	Preparation of buffer solutions	Lecturing, reading, laboratory	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources

Sawyer, C.N., McCarty, P.L., Parkin, G.F., (1994) Chemistry for Environmental Engineering, McGraw-Hill, New York, NY (0-07-054978-8).

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Assignment	12	20
Total	13	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.			X			
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	

Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.			X			
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	5	5
Mid Term Exam Preparation	1	5	5
Preliminary Study	12	1	12
Mid Term Exam 1	1	1	1
Assignment	12	2	24

Quiz (zes)			
		Total Workload	76
		Total Workload / 25 (s)	3.04
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Fluid Mechanics (Akışkanlar Mekaniği)	ENV-2007	3. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of this course is to prepare students for Hydraulics, Water Supply, and Sewer Systems Design classes.
Course Content	This course comprises the definition and properties of fluids, fundamental principles of hydrostatics, calculation of hydrostatic forces both on plane and curved surfaces, buoyancy and flotation, Bernoulli equation and its applications and impulse-momentum equation. This course will prepare the students for infrastructural system courses.

Course Learning Outcomes	1) Classify fluid types 2) List the basic principles of hydrostatics 3) Calculate the hydrostatic forces on plane surfaces 4) Calculate the hydrostatic forces on curved surfaces 5) Describe hydrodynamics, flow types, The Reynolds experiment 6) Describe and calculate the Reynolds number 7) Practice Bernoulli equation in different situations 8) Calculate the water hammer in pipes using impulse momentum equation

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to fluid mechanics	Lecturing	
2. Week	Properties of fluids, unit systems	Lecturing	
3. Week	Hydrostatics	Lecturing, Problem solving	
4. Week	Calculation of hydrostatic forces on plane surfaces	Lecturing, Problem solving	
5. Week	Calculation of hydrostatic forces on curved surfaces	Lecturing, Problem solving	
6. Week	Buoyancy and stability	Lecturing, Problem solving	
7. Week	Examples on hydrostatics	Problem solving	
8. Week	Midterm exam	Exam	
9. Week	Hydrodynamics, flow types, The Reynolds number	Lecturing, Problem solving	
10. Week	Contiunity Equation (equation of mass conservation), motion equation,	Lecturing, Problem solving	
11. Week	Bernoulli equation	Lecturing, Problem solving	
12. Week	Practical application of Bernoulli equation	Problem solving	

13. Week	The linear momentum equation	Lecturing, Problem solving	
14. Week	Examples on hydrodynamics	Problem solving	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Evett , J. B., & Liu, C., (1989). "2500 Solved Problems in Fluid Mechanics and Hydraulics", McGraw-Hill Inc.
Ilgaz, C., Karahan, E., & Bulu, A., (2000). "Akışkanlar Mekaniği ve Hidrolik Problemleri", Çağlayan Kitabevi, İstanbul.
Giles, R. V., Evett , J. B., & Liu, C. (Türkoğlu, H. ve Yücel N.) (2001). "Akışkanlar Mekaniği ve Hidrolik" - Schaum's. Nobel Akademik Yayıncılık, Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage

Engineering Sciences	% 70
Mathematics and Basic Sciences	% 20
Engineering Design	% 10

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	**Relations**					
	0	**1**	**2**	**3**	**4**	**5**
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					

Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	20	20
Mid Term Exam Preparation	1	20	20
Preliminary Study	10	4	40
		Total Workload	126
		Total Workload / 25.0 (s)	5,04
		ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Occupational Health and Safety (İş Sağlığı ve Güvenliği)	ENV-2009	3. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Arş. Gör. Dr. Çiğdem Öz Yaşar
Instructors	
Assistants	
Course Objectives	This course introduces legislation, standards and guidelines related with occupational health and safety. It also provides information about employer and employee liabilities, work-related injuries and occupational diseases, concepts including risks, precautions, hazards and ergonomics.
Course Content	Introduction to main principles of occupational health and safety, historical development of occupational health concept in the world and in Turkey. Occupational health and safety (OHS) regulation in Turkey, legal liabilities and enforcement of regulations. Occupational accidents and diseases. Different regulations related to OHS. Personal protective equipments and measures. Ergonomics and anthropometry. Hazardous chemicals, laboratuary safety, Fire and explosions. OHSAS 18001 standard. Risk and risk management. Noise and vibrations. Occupational health and safety in wastewater treatment plants and facilities. OHS in solid waste management facilities.
Course Learning Outcomes	1) Define basic principles of occupational health and safety concept including laws and regulations and occupational health and safety organization in Turkey. 2) Describe responsibilities of workers, managers, and employers and liabilities of management with respect to ensuring safe and healthy work environment. 3) Define work accident and occupational diseases, the most common diseases that affect workers in different occupational environments and the factors associated with the occurrence of disease. 4) Identify different types of WHS issues in the workplace. 5) Explain principles of ergonomic workplace. 6) Describe the essential elements of the Occupational Health and Safety Standards. 7) Describe how to apply personal protective equipment.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to main principles of occupational health and safety, historical development of occupational health concept in the world and in Turkey.	None	
2. Week	OHS regulation in Turkey, legal liabilities and enforcement of regulations. Definitions related to OHS.	Lecturing, Reading	
3. Week	Occupational accidents and occupational diseases	Lecturing, Reading	
4. Week	Personal protective equipments and measures.	Lecturing, Reading	
5. Week	Physical, chemical and biological factors	Lecturing, Reading	
6. Week	Hazardous chemicals, Laboratuary safety	Lecturing, Reading	
7. Week	Fire and explosions	Lecturing, Reading	
8. Week	Mid-term		
9. Week	OHSAS 18001 standard.	Lecturing, Reading	
10. Week	Risk and risk management	Lecturing, Reading, Assignment	
11. Week	Ergonomics and Anthropometry	Lecturing, Reading	
12. Week	Safety for construction sites	Lecturing, Reading	
13. Week	Noise and vibrations	Lecturing, Reading	

14. Week	OHS in wastewater treatment plants and solid waste management facilities	Lecturing, Reading	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Occupational health and safety regulations
TS 18001 (OHSAS) Standard

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	1	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	3	40

Course Category

Course Category	Percentage
Support Courses	% 60
Engineering Sciences	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.						X
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.						X
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.						X

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Presentation/Seminar			
Final Exam Preparation	1	10	10
Mid Term Exam 1	1	1	1
Class Hours (14 weeks)	14	2	28
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	10	10
Assignment 1	2	5	10
		Total Workload	75
		Total Workload / 25.5 (s)	3
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Engineering Hydrology (Çevre Mühendisliği Hidrolojisi)	ENV-2011	3. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English

Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	
Course Objectives	Precipitation, runoff, evaporation, groundwater recharge, etc. within hydrologic cycle will be explained in detail in this course.
Course Content	Types of precipitation, forms of precipitation and its importance in environmental engineering, hydrological basins, salt-water intrusion in coastal areas, average precipitation, precipitation-flow affair, evapotranspiration, planning surface flow in cities and urban areas, drainage canal planning, flow in subsurface, computation of safe yield of unconfined aquifers, computation of safely abstracted water from confined aquifers, contamination of groundwater and control of groundwater plumes (pump and treat technology).
Course Learning Outcomes	1) Define hydrologic cycle, explains the components of the hydrologic cycle, know the elements of hydrologic cycle 2) Recollect main elements of hydrology as precipitation, evaporation, transpiration, infiltration, surface flow and flow into the ground and general specifications of these elements 3) Regard surface flow specifications, precipitation intensity, area specifications, extreme flows/floods, flow-precipitation correlation, infiltration 4) Be familiar with rain water collection and drainage system, compute retardation, find infiltration intensity with respect to time, establish precipitation-flow relationship, define flood frequency, designs rain water collection/drainage system of an urbanized area 5) Predict groundwater flow direction, establish groundwater with area specifications relationship, conduct hydrological computations of groundwater wells 6) Complete well positioning when groundwater contamination is an issue, explain pump and treat systems

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

1. Week	Hydrological cycle, water budget and energy budget		
2. Week	Precipitation records, average precipitation, precipitation depth-duration-frequency relationship		
3. Week	Evaporation and transpiration, evapotranspiration from the field, evaporation from urban areas		
4. Week	Infiltration, contamination of surface waters and groundwater		
5. Week	Flow measurements, methods in flow measurements, computation of flood flow		
6. Week	Analysis of flows, continuous flow graphs		
7. Week	Snowmelt, snowmelt computations using degree-day factor, snow melt computations using heat budget method		
8. Week	Mid term examination and preparation		
9. Week	Unit hydrograph, base flow and direct runoff, computation of flow from precipitation using unit hydrograph		
10. Week	Rational method, shifting hydrographs, Muskingum method, basin's effect on floods		
11. Week	Groundwater, change of water level in unconfined aquifer, measurement of hydraulic conductivity, well hydraulics in unconfined aquifers		
12. Week	Safely abstracted water from groundwaters, relationship between surface and groundwaters, computation (positioning, designing) of wells for confined aquifers		
13. Week	Theis method, Cooper-Jacob method, contamination of groundwater		
14. Week	Control of groundwater plumes, capture-zone curves, Javandel and Tsang method		

Resources

Recommended Sources
Fetter, C. W. (2000) Applied Hydrogeology (4. Baskı). Prentice-Hall, Upper Saddle River, NJ, ABD.
Bayazıt, M., Avcı, İ. ve Şen, Z. (2001) Hydroloji Uygulamaları. Birsen Yayınevi, İstanbul, Türkiye.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	**1**	**32**
Homework	**1**	**8**
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	**1**	**60**
Final Makeup Exam		
Other		
Total	**2**	**40**
End-Term Studies	**Quantity**	**Percentage**
Final Exam	**1**	**60**
Total	**1**	**60**
Contribution Of In-Term Studies To Overall Grade		**40**
End-Term Studies		**60**
Total		**100**

Course Category

Course Category	Percentage
Engineering Sciences	
Mathematics and Basic Sciences	
Engineering Design	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Mid Term Exam 2	1	1	1
Assignment 1			
Application/Practice			
Presentation/Seminar			
Preliminary Study	13	2	26
Class Hours (14 weeks)	16	3	48
Final Exam Preparation	1	1	1
Further Study	14	2	28
Mid Term Exam Preparation	1	1	1
		Total Workload	107
		Total Workload / 25.5 (s)	4.19
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Analysis of Engineering Systems (Mühendislik Sistemlerinin Analizi)	ENV-2013	3. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The aim of this course is to tell students the benefits and application alternatives of system approach and optimization methods.
Course Content	This course consists of system approach, mathematical models, optimization algorithms, engineering economics and comparison of alternatives, linear programming and environmantal engineering practices, dynamic programming
Course Learning Outcomes	1) Describe the objective function, boundary conditions in system approach 2) List the optimization models 3) Classify the linear programming methods 4) Solve the water pollution, solid waste collection and air pollution control problems using linear programming

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	System Approach: Objective Function	Lecturing	
2. Week	System Approach: Boundary Conditions, Alternative Projects	Lecturing	
3. Week	Mathematical Models and Optimization	Lecturing	
4. Week	Decision Models, Simulation Models	Lecturing	
5. Week	Introduction to optimization algorithms	Lecturing	

6. Week	Lagrange multipliers	Lecturing	
7. Week	Network Analysis	Lecturing	
8. Week	Midterm exam	Exam	
9. Week	Engineering Economy: Present Value Method	Lecturing	
10. Week	Total Equivalent Annual Cost, Unit Cost Calculation, Comparison of Projects	Lecturing	
11. Week	Linear Programming: Graphical Method, Simplex Method, Dual problem	Lecturing	
12. Week	Linear Programming Examples: Water pollution control	Problem solving	
13. Week	Linear Programming Examples: Solid waste collection, Air Pollution Control	Problem solving	
14. Week	Dynamic Programming	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Deaton, M.L., Winebrake, J.I. 2000, "Dynamic Modeling of Environmental Systems", Springer.
Evrendilek, F. 2004, "Ekolojik Sistemlerin Analizi, Yönetimi, Modellenmesi", Papatya Yayıncılık.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		

Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Mathematics and Basic Sciences	% 30
Support Courses	% 20

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Homework	1	10	10
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	15	15
Mid Term Exam Preparation	1	15	15
Preliminary Study	7	2	14
		Total Workload	100
		Total Workload / 25.0 (s)	4,00
		ECTS Credit of the Course	4

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Ecology (Çevre Ekolojisi)	ENV-2015	3. Semester	1+ 2	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	
Course Objectives	In this course, the interaction between living and nonliving things and self-relationships, ecological integrity, impact of environmental deterioration on ecosystem, negative effects of ever-increasing human population, energy and material flow in ecosystem will be discussed and environmental perspectives will be explained. Fundamental concepts for the protection of ecological integrity will be discussed.
Course Content	Introduction to ecology, definition of ecology, ecological integrity, Development of Environmental Sciences and Ecology in the world and in Turkey Ecological cycles, nitrogen, carbon, oxygen, phosphorus, and water cycles Effects of humans on ecological cycles and measures takeable Energy cycle in the nature Material cycle in the nature Material cycle in the nature (renewable and nonrenewable resources) Future status of energy and material cycles with regard to environmental change Population ecology, population growth, logistic curve Specifications of human populations, developed and developing nations, carrying capacity, effects of human populations in natural resources

	Role of human being in the nature, protection-utilization balance Protected areas (natural parks, genetic reserves, heritage lands, etc.), effects of environmental contamination on the protected areas Environmental perspectives, computation of maximum load in environmental pollution cases Risk perception, types of risks, risk factors in environmental pollution cases, risk computations Environmental quality standards, environmental planning and sustainable development.
Course Learning Outcomes	1) Recollect ecological integrity 2) List living and nonliving things and defines the relationships among them 3) List specifications of different types of countries on population growth and factors on population growth and defines impacts of population growth on the environmental quality 4) List biogeochemical cycles, explains how nitrogen, phosphorus, carbon, oxygen and water cycles are affected by anthropogenic and natural factors 5) Define how energy cycle runs and impact of human on energy cycle (renewable and nonrenewable energy sources) 6) Explain the importance of the protected areas, Explains the effects of environmental pollution on he protected areas, recollects how acting locally in a responsible way can help thinking globally for improvement in ecological quality 7) Know environmental perspectives, lists what to do against global climate change 8) Define environmental risks caused by humans, lists how he/she can deal with or take measure against such problems

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to ecology, definition of ecology, ecological integrity, Development of Environmental Sciences and Ecology in the world and in Turkey		ekoloji1.pdf
2. Week	Ecological cycles, nitrogen, carbon, oxygen, phosphorus, and water cycles (Biogeochemical cycles)		
3. Week	Effects of humans on ecological cycles and measures takeable		
4. Week	Energy cycle in the nature		ekoloji2.pdf
5. Week	Material cycle in the nature (renewable materials and nonrenewable materials)		
6. Week	Material cycle in the nature (renewable and nonrenewable resources)		

7. Week	Future status of energy and material cycles with regard to environmental change		
8. Week	Population ecology, population growth, logistic curve		
9. Week	Specifications of human populations, developed and developing nations, carrying capacity, effects of human populations in natural resources		
10. Week	Role of human being in the nature, protection-utilization balance		
11. Week	Protected areas (natural parks, genetic reserves, heritage lands, etc.), effects of environmental contamination on the protected areas		
12. Week	Environmental perspectives, computation of maximum load in environmental pollution cases		
13. Week	Risk perception, risk factors in environmental pollution cases, risk computations		
14. Week	Environmental quality standards, environmental planning and sustainable development		

Resources

Recommended Sources
Kışlalıoğlu, M. ve Berkes, F. (2003) Ekoloji ve Çevre Bilimleri. 4. Baskı. Remzi Kitabevi, İstanbul, Türkiye.
Smith, R. L. (2005). Elements of Ecology, 6ncı Baskı. Benjamin Cummings, San Francisco, CA, ABD. ISBN: 9780805348309
Bernstein, R. (2003) Elements of Ecology, An Introduction to Computer Simulations, Wiley, Inc., Hoboken, New Jersey, USA

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		

Project (s)		
Laboratory		
Final Exam		
Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	
Mathematics and Basic Sciences	
Engineering Design	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.		X				

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.					X	
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	**1**	**2**	**3**	**4**	**5**
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	**Quantity**	**Duration (Hour)**	**Total Workload (Hour)**
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Assignment 1	5	1	5

Application/Practice	2	2	4
Presentation	1	5	5
Mid Term Exam Preparation	1	4	4
Class Hours (14 weeks)	14	4	56
Preliminary Study	14	1	14
Further Study	12	1	12
		Total Workload	128
		Total Workload / 25.5 (s)	4
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Current Topics in Environmental Engineering (Çevre Mühendisliğinde Güncel Konular)	ENV-2017	3. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	Prof. Dr. Nilgün AYMAN ÖZ
Instructors	Prof. Dr. Nilgün AYMAN ÖZ
Assistants	
Course Objectives	This course aims to introduce current selected current topics related to environmental engineering and issues. The issues are all of current relevance in relation to the challenge of sustainable development. The course is intended for second-year students majoring in Environmental Engineering and has no prerequisites.
Course Content	This course is an introductory, interdisciplinary survey of environmental issues. The specific topics it explores include: Environmental Pollution, Renewable Energy and Sustainable Development, Carbon Footprint, Water Resources and Climate Change, Water Footprint and Rainwater Harvesting, Green Buildings and Green Cities, Micropollutants, Microplastic Pollution, Life Cycle Assessment, Biotechnology and Bioremediation, Nanotechnology and Nanobiotechnology in Environmental Engineering. Hot topics related to current environmental issues will be also covered by giving assignments to the students.
Course Learning Outcomes	1.Understand the relation between environmental issues and sustainable development. 2.Recognize and critically assess the role of environmental engineering in the management of environmental problems. 3.Write and present academic texts, discuss problems in class, and comment on the work of peers.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	None	
2. Week	Environmental Pollution	Lecturing, Reading, Practice	
3. Week	Renewable Energy and Sustainable Development	Lecturing, Reading, Practice	
4. Week	Carbon Footprint	Lecturing, Reading, Practice	
5. Week	Water Resources and Climate Change	Lecturing, Reading, Practice	

6. Week	Water Footprint and Rainwater Harvesting	Lecturing, Reading, Practice	
7. Week	Green Buildings, Green Cities and Sustainability	Lecturing, Reading, Practice	
8. Week	Mid-term		
9. Week	Micropollutants	Lecturing, Reading, Practice	
10. Week	Microplastic Pollution, E-wastes	Lecturing, Reading, Practice	
11. Week	Life Cycle Assessment	Lecturing, Reading, Practice	
12. Week	Biotechnology and Bioremediation	Lecturing, Reading, Practice	
13. Week	Nanotechnology and Nanobiotechnology in Environmental Engineering	Lecturing, Reading, Practice, Assignment	
14. Week	Other current environmental issues	Lecturing, Assigment	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Selected articles

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	1	20

Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					

Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.						X
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.						X
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.						X

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	10	10
Preliminary Study	14	1	14
Final Exam	1	2	2
Mid Term Exam 1	1	1	1
Final Exam Preparation	1	10	10
Assignment 1	1	10	10
		Total Workload	75
		Total Workload / 25 (s)	3
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Urban Development and Environment (Kentsel Gelişme ve Çevre)	ENV-2019	5. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	

Instructors	
Assistants	
Course Objectives	The aim of this course is to inform students about environmental problems originating from urban and urban development.
Course Content	The basic definition about human settlements -village, town, small and medium sized cities, metropolis etc.- Basic concepts for understanding the planning such as urbanization, urban development, land use, population density, macroform of cities and their environmental dimensions. Cities and their cause of environmental problems. Linkage between energy consumption and land use decisions in cities. Ecological approach on urban planning and urban design. The concept and criteria of sustainable urban development. Concept of eco-city and some experiences of eco-cities in other countries.
Course Learning Outcomes	1) Discuss relationship between human settlement and environmental impacts. 2) List environmental problems caused by cities and discuss about preventive strategies. 3) Explain indicators of sustainable urban development 4) Explain the concept of ecological planning and eco-cities and its implementations.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Urban and urbanization	Lecturing	
2. Week	Basic concepts about urban planning	Lecturing	
3. Week	Cities and usage of natural resources and energy	Lecturing	
4. Week	Cities and environmental pollution	Lecturing	
5. Week	Environmental planning, ecological approach to urban planning	Case study	
6. Week	Sustainable urban development	Lecturing	
7. Week	Urban infrastructure and local governments	Case study, lecturing	
8. Week	Implementations of eco-cities	Case studies	
9. Week	Student presentation	Presentation, discussion	

10. Week	Student presentation	Presentation, discussion	
11. Week	Student presentation	Presentation, discussion	
12. Week	Student presentation	Presentation, discussion	
13. Week	Student presentation	Presentation, discussion	
14. Week	Conclusion and discussion	Discussion	
15. Week	Final exam	Exam	
16. Week	Final exam	Exam	

Resources

Recommended Sources
Aydemir ve diğerleri, 2004. Kentsel alanların planlanması ve tasarımı, Akademi kitabevi, Trabzon.
R.Thomas (ed.), 2003, Sustainable Urban Design, Spon Pres, London and Newyork.

Assessment

Measurement and Evaluation Methods and Techniques
Attendance to class, assignment (%5), presentation (%5), midterm exam (%40), final exam (%50)

In-Term Studies	Quantity	Percentage
Mid Term Exam 1	1	40
Assignment 1	1	5
Presentation/Seminar	1	5
Total	3	50
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	50

Total	1	50
Contribution Of In-Term Studies To Overall Grade		50
End-Term Studies		50
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Social Sciences	% 50

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.		X				
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.						X

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Assignment 1	1	5	5
Class Hours (14 weeks)	14	1	14
Case Study	1	5	5
Further Study	12	2	24
Presentation/Seminar	1	5	5
Mid Term Exam Preparation	1	5	5
Final Exam Preparation	1	10	10
Preliminary Study	12	1	12
		Total Workload	84
		Total Workload / 25.5 (s)	3,29

ECTS Credit of the Course	3

4. DÖNEM
DERS PLANLARI VE İÇERİKLERİ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Chemodynamics (Kemodinamik)	ENV-2002	4. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	The main goal of this course is to develop conceptual and mathematical models for the transport of pollutants between air, soil, and water phases.
Course Content	Reaction kinetics and reactor models. Distribution of pollutants in air, water, or soil at equilibrium. Analysis of mass transport of chemicals in air and water based on molecular diffusion.
Course Learning Outcomes	1) Describe characteristics of environmental phases such as air, water, and soil. 2) Learn physical and chemical characteristics of pollutants and interpret how those affect chemical transport in environment. 3) Lean chemical equilibrium of pollutants between air, soil, and water. 4) Earn the most basic knowledge and capability to model the transport of a chemical between environmental phases.

	5) Propose alternative solutions and suggestions to control the pollution from spreading to uncontaminated sites in environment.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to chemodynamics	Lecturing, reading	
2. Week	Description of environmental phases	Lecturing, reading	
3. Week	Characteristics of pollutants	Lecturing, reading, problem solving	
4. Week	Kinetics	Lecturing, reading, quiz	
5. Week	Batch and CSTR reactor models	Lecturing, reading, problem solving	
6. Week	Plug flow reactor model	Lecturing, reading, homework	
7. Week	Henry's law	Lecturing, reading, problem solving	
8. Week	Midterm	Written exam	
9. Week	Chemical equilibrium between water and soil	Lecturing, reading, quiz	
10. Week	Chemical equilibrium between air and soil	Lecturing, reading, problem solving	
11. Week	Molecular diffusion	Lecturing, reading, homework	

12. Week	Molecular diffusion	Lecturing, reading, problem solving	
13. Week	Fick's laws	Lecturing, reading, quiz	
14. Week	Evaporation	Lecturing, reading, problem solving	
15. Week	Final Exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Thibodeaux (1996) Environmental Chemodynamics; John Wiley & Sons, New York, NY (ISBN 0-471-61295-2).

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	5	10
Quiz (zes)	5	10
Total	11	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5

Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Final Exam Preparation	1	10	10
Assignment 1	5	2	10
Mid Term Exam 1	1	3	3
Preliminary Study	14	2	28
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	10	10
Quiz 1	5	1	5
		Total Workload	125
		Total Workload / 25.0 (s)	5.00
		ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Microbiology (Çevre Mikrobiyolojisi)	ENV-2004	4. Semester	1 + 2	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Arş. Gör. Dr. Çiğdem Öz Yaşar
Instructors	Arş. Gör. Dr. Çiğdem Öz Yaşar
Assistants	
Course Objectives	This course explores the basic principles of environmental microbiology, metabolism, and growth of microorganisms, role of microorganisms in both natural environments and biological treatment systems. and identification of microorganisms using different techniques.
Course Content	Introduction to Environmental Microbiology, History and Significance of Environmental Microbiology. The World of Microorganism. (Bacteria, Protozoa, Viruses, Fungi, Algaea) Role of Microorganisms in Biogeochemical Cycles. Observation of microorganisms. Microscope. General Characteristics of Microorganisms, Cell Structure and Classification. Microbial Genetics. Energy Production and Utilization Mechanisms, Respiration, Photosynthesis, Microbial Metabolism. Microbial Growth. Enzymes. Factors Affecting Microbial Growth. Çoğalmanın Ölçülmesi, Control of Microbial Growth. Environmental Sample Collection and Processing for Microbial Analysis. The role of microorganisms in biological treatment systems and activated sludge. Bacteria which play role in nitrogen and phosphorus removal. Swelling and foaming in activated sludge plants. Control of foaming. Pathogen ve Parasite Microorganisms, Indicator Organisms Identification of Microorganisms using Nucleic Acid-Based Methods (Molecular Techniques). Identification of Microorganisms using Cultural-based Methods. Identification of Microorganisms Using Molecular Techniques. Current Topics in Environmental Microbiology
Course Learning Outcomes	1) List properties of prokaryotic and eukaryotic cells. 2) List characteristics of bacteria, blue-green algae, protozoa, fungi and viruses. 3) Define growth conditions of microorganisms, energy and carbon sources for a variety of microorganisms, environmental conditions affecting rate of microbial activity. 4) Describe modern tools and treatment techniques with microorganisms. 5) Describe roles of various microorganisms in biological treatment of wastewater. 6) List the most common types of microorganisms in air and soil. 7) Define methods used in microbial control.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to Environmental Microbiology, History and Significance of Environmental Microbiology.	None	
2. Week	The World of Microorganism. (Bacteria, Protozoa, Viruses, Fungi, Algaea) Role of Microorganisms in Biogeochemical Cycles. Observation of microorganisms. Microscope.	Lecturing, Reading, Presentation	
3. Week	General Characteristics of Microorganisms, Cell Structure and Classification. Microbial Genetics.	Lecturing, Reading, Presentation	
4. Week	Energy Production and Utilization Mechanisms, Respiration, Photosynthesis, Microbial Metabolism	Lecturing, Reading , Presentation	
5. Week	Microbial Growth. Enzymes. Factors Affecting Microbial Growth.	Lecturing, Reading, Presentation	
6. Week	Control of Microbial Growth.	Lecturing, Reading, Presentation	
7. Week	Environmental Sample Collection and Processing for Microbial Analysis	Lecturing, Reading, Presentation	
8. Week	Mid-term		
9. Week	Pathogen ve Parasite Microorganisms, Indicator Organisms	Lecturing, Reading, Presentation	
10. Week	The role of microorganisms in biological treatment systems and activated sludge. Bacteria which play role in nitrogen and phosphorus removal.	Lecturing, Reading, Presentation	
11. Week	Swelling and foaming in activated sludge plants. Control of foaming.	Lecturing, Reading, Presentation	

12. Week	Identification of Microorganisms using Nucleic Acid-Based Methods (Molecular Techniques).	Lecturing, Reading, Presentation	
13. Week	Presentations	Lecturing, Reading, Presentation	
14. Week	Presentations.	Lecturing, Presentation,	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Maier R.M; Pepper I.L.; Gerba C.P. (2000) Environmental Microbiology, Academic Press.
Bitton G. (2002), Encyclopedia Of Environmental Microbiology Volumes 1, 6, John Wiley & Sons, Inc., New York.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	1	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 30
Mathematics and Basic Sciences	% 40
Engineering Design	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.				X		

Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	20	20
Mid Term Exam Preparation	1	10	10
Class Hours (14 weeks)	14	2	28
Mid Term Exam 1	1	2	2
Further Study	14	1	14
Preliminary Study	14	1	14
Assignment 1	1	10	10
		Total Workload	100
		Total Workload / 25 (s)	4
		ECTS Credit of the Course	4

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Microbiology Laboratory (Çevre Mikrobiyolojisi Laboratuvarı)	ENV-2006	4. Semester	0 + 2	1.0	2.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Arş. Gör. Dr. Çiğdem Öz Yaşar
Instructors	
Assistants	
Course Objectives	This class provides a general introduction to the diverse roles of microorganisms in natural and artificial environments.
Course Content	It will cover topics including: microscopy, gram staining, indicator microorganisms, aerobic and anaerobic biodegradation, fermentation
Course Learning Outcomes	1) Design an experiment related to microbiology, execute the experiment, analyze the data and communicate the results pertaining to the experiment. 2) Perform experiments related to environmental microbiology

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to Environmental Microbiology Lab and Safety Instructions	None	

2. Week	Aseptic Technique, Microbial Sampling	Lecturing	
3. Week	Microscopy	Lecturing, Practice	
4. Week	Examination of organisms (Gram staining)	Lecturing, Practice	
5. Week	Viable Cell Count: Spread Plate	Lecturing, Practice	
6. Week	Viable Cell Count: Pour Plate	Lecturing, Practice	
7. Week	Indicator microorganisms for receiving water quality (Membrane filtration)	Lecturing, Practice	
8. Week	Mid-term		
9. Week	Indicator microorganisms for receiving water quality (Most Proable Number)	Lecturing, Practice	
10. Week	Examination of activated sludge biomass- macro structures and micro structures	Lecturing, Practice	
11. Week	Aerobic Bioreactor (preparation of experimental set-up)	Lecturing, Demo	
12. Week	Alcohol Fermentation	Lecturing, Practice	
13. Week	Anaerobic Bioreactor (preparation of experimental set-up)	Lecturing, Demo	
14. Week	Anaerobic Bioreactor (preparation of experimental set-up)	Lecturing, Demo	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
RM Maier, IL Pepper, and CP Gerba. (2009) Environmental Microbiology (2nd edition). Academic Press: New York.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework		
Quiz (zes)		
Project (s)		
Laboratory	1	20
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					

Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Further Study	14	1	14
Preliminary Study	14	1/2	7
Final Exam	1	2	2
Mid Term Exam 1	1	1	1
Final Exam Preparation	1	5	5

Total Workload	62
Total Workload / 25 (s)	2,48
ECTS Credit of the Course	2

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Chemistry II (Çevre Kimyası II)	ENV-2008	4. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	Educate students with the basic concepts of environmental chemistry.
Course Content	Precipitation and dissolution, iron and manganese, dissolved oxygen, biochemical oxygen demand (BOD), chemical oxygen demand (COD), nitrogen chemistry, phosphorus chemistry, sulfur and sulfates, volatile oil acids.
Course Learning Outcomes	1) Define and classify organic pollutants in air, water, and soil phases.

	2) Perform analytical and instrumental analyses of pollution parameters. 3) Develop an understanding of chemicals and their effects on the environment. 4) Experience in some scientific methods employed in environmental chemistry. 5) Obtain theoretical background for the assessment and minimization of environmental pollution. 6) Follow current developments in environmental chemistry.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecturing, reading	
2. Week	Precipitation and dissolution	Lecturing, reading, problem solving	
3. Week	Iron and manganese	Lecturing, reading, quiz, problem solving	
4. Week	Chlorine chemistry	Lecturing, reading, problem solving	
5. Week	Dissolved oxygen	Lecturing, reading, quiz	
6. Week	Biological oxygen demand (BOD)	Lecture, reading, problem solving	
7. Week	Chemical oxygen demand (COD)	Lecturing, reading, quiz	
8. Week	Midterm	Written exam	
9. Week	Total Organic Carbon (TOC)	Lecturing, reading, problem solving	
10. Week	Nitrogen chemistry	Lecturing, reading, quiz	

11. Week	Phosphate chemistry	Lecturing, reading, problem solving	
12. Week	Sulphur chemistry	Lecturing, reading, quiz	
13. Week	Volatile oily acids	Lecturing, reading, problem solving	
14. Week	Oil and grease	Lecturing, reading, problem solving	
15. Week	Final	Written exam	
16. Week	Final	Written exam	

Resources

Recommended Sources
1. Sawyer, C.N., McCarty, P.L., Parkin, G.F., (1994) Chemistry for Environmental Engineering, McGraw-Hill, New York, NY (0-07-054978-8). 2. Snoeyink, V.L and Jenkins, D (1980) Water Chemistry; John Wiley & Sons, New York, NY (ISBN 0-471-05196-9).

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	5	10
Quiz (zes)	5	10
Project (s)		
Total	11	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60

Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.					X	
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.		X				
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.			X			

Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	10	10
Final Exam Preparation	1	10	10
Assignment 1	5	2	10
Quiz (zes)	5	1	5
Mid Term Exam 1	1	3	3
Preliminary Study	14	2	28
		Total Workload	125
		Total Workload / 25 (s)	5.0
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Chemistry Laboratory II (Çevre Kimyası Laboratuvarı II)	ENV-2010	4. Semester	0 + 2	1.0	2.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	Students are thought about how the common environmental experiments relating to water and wastewater quality are conducted.
Course Content	Experimental examination of precipitation and dissolution, analyses of iron and manganese, dissolved oxygen, biochemical oxygen demand (BOD), chemical oxygen demand (COD), nitrogenous, phosphorus, sulfurous and chlorine species,
Course Learning Outcomes	1) Perform analytical and instrumental analyses of organic and inorganic pollution parameters. 2) Understand the significances of water and wastewater treatment processes. 3) Provide the ability to write technical laboratorial reports. 4) Statistically analyze and interpret experimental data. 5) Gain the ability to work in groups

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecturing, reading	

2. Week	Experimental analysis of precipitation and dissolution	Lecturing, reading, laboratory	
3. Week	Iron and manganese measurements	Lecturing, reading, laboratory	
4. Week	Analysis of chlorine and chlorides	Lecturing, laboratory, reading	
5. Week	Dissolved oxygen measurement	Lecturing, reading, laboratory	
6. Week	BOD analysis	Lecture, reading, laboratory	
7. Week	BOD analysis	Lecturing, reading, laboratory	
8. Week	Midterm	Written exam	
9. Week	COD analysis	Lecturing, reading, laboratory	
10. Week	TOC analysis	Lecturing, reading, laboratory	
11. Week	Analysis of nitrogenous species	Lecturing, reading, laboratory	
12. Week	Analysis of phosphorus species	Lecturing, reading, laboratory	
13. Week	Analysis of sulfur species	Lecturing, reading, laboratory	
14. Week	Oil and grease analysis	Lecturing, reading, laboratory	
15. Week	Final	Written exam	
16. Week	Final	Written exam	

Resources

Recommended Sources

Sawyer, C.N., McCarty, P.L., Parkin, G.F., (1994) Chemistry for Environmental Engineering, McGraw-Hill, New York, NY (0-07-054978-8).

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Assignment	12	20
Total	13	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.			X			
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	

Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.			X			
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	**1**	**2**	**3**	**4**	**5**
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	**Quantity**	**Duration (Hour)**	**Total Workload (Hour)**
Final Exam	1	1	1
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Final Exam Preparation	1	5	5
Assignment	12	1	12
Quiz (zes)			
Mid Term Exam 1	1	1	1
Preliminary Study	14	0,5	7

Total Workload	59
Total Workload / 25 (s)	2.36
ECTS Credit of the Course	2

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Course Title	Code	Semester	L+U Hour	Credits	ECTS
Hydraulics (Hidrolik)	ENV-2012	4. Semester	1 + 2	2.0	4.0
Prerequisites	None				

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN

Assistants	
Course Objectives	The aim of this course is to give students the necessary knowledge about the design of infrastructure and treatment systems.
Course Content	This course comprises the pressure flows, laminar and turbulent flow, head losses in pipelines, water tanks, open channel flows, head losses in open channels, flowrate measurements and flow control structures. This will prepare the students for infrastructural system courses.
Course Learning Outcomes	1) Describe the flow types in pipeline systems 2) Calculate the head loses in pipeline systems 3) Calculate the power of pumps used for flowing the water between tanks 4) Describe the flow types in open channels 5) Calculate the energy change in open channels 6) Design open channels 7) Explain the flowrate measurement methods

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Pipe flows, Laminer and Turbulent flows	Lecturing, problem solving	
2. Week	Energy and Hydraulic Grade Lines	Lecturing, problem solving	
3. Week	Head loss formulas, pipe friction, Darcy-Weisbach equation, local and minor losses	Lecturing, problem solving	
4. Week	Steady flow analyses, series pipe flow	Lecturing, problem solving	
5. Week	Series pipe flow with pump(s),	Lecturing, problem solving	
6. Week	Parallel pipe flow	Lecturing, problem solving	
7. Week	Multiple reservoir problems	Lecturing, problem solving	

8. Week	Midterm exam	Exam	
9. Week	Classification of open channel flows	Lecturing, problem solving	
10. Week	Head losses in open channels	Lecturing, problem solving	
11. Week	Subcritical, Supercritical, and Critical Flows	Lecturing, problem solving	
12. Week	Specific energy, hydraulic jump	Lecturing, problem solving	
13. Week	Channel design, best hydraulic cross section	Lecturing, problem solving	
14. Week	Water surface changes , Channel control structures and flowrate measurements	Lecturing, problem solving	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Evett , J. B., & Liu, C., (1989). “2500 Solved Problems in Fluid Mechanics and Hydraulics”, McGraw-Hill Inc.
Ilgaz, C., Karahan, E., & Bulu, A., (2000), Fluid Mechanics and Hydraulics Problems, Çağlayan Kitabevi, İstanbul.
Giles, R. V., Evett , J. B., & Liu, C. (Türkoğlu, H. ve Yücel N.) (2001). Fluid Mechanics and Hydraulics - Schaum's. Nobel Akademik Publications, Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		

Final Exam	1	60
Final Makeup Exam		
Other		
Total	2	40

Course Category

Course Category	Percentage
Engineering Sciences	% 40
Mathematics and Basic Sciences	% 20
Engineering Design	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Homework	1	2	2
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	20	20
Mid Term Exam Preparation	1	20	20
Preliminary Study	6	2	12
		Total Workload	100
		Total Workload / 25.0 (s)	4.00
		ECTS Credit of the Course	4

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Strength of Materials (Malzeme-Mukavemet)	ENV-2016	4. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Orhun KÖKSAL
Instructors	Prof. Dr. Hasan Orhun KÖKSAL
Assistants	
Course Objectives	This course aims to provide the theory of deformable solid mechanics and necessary skills for the investigation of the behavior and performance of the materials under different types of loading (concentric, pure bending, shear, torsion) structures and structural elements used in engineering design.The final objective of the course is to expose the students to the classification of the materials and the evaluation of the atomic structures of materials. Design of structural elements and structures will be accomplished and the maximum loads which can be carried safely will be determined.
Course Content	Classifying the materials and evaluating the atomic structures of materials, design of structural elements and materials will be accomplished and the maximum loads which can be carried safely will be determined.

Course Learning Outcomes	1) Classify the materials according to their physical and mechanical properties. 2) Solve the enginnering problems and design the structural elements under the axial loading. 3) Use the concepts of force and stress in the structural analysis and design. 4) Choose the appropriate materials for the desing making the necessary stress transformations in order to find principal stresses. 5) Perform preliminary design of primary structural elements depending on the behavior of the beams, columns, foundations, soil and support conditions.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Material knowledge, classification of materials	Lecture	
2. Week	Concepts of force and stress	Lecture, Sample problem solving	
3. Week	Axial loading and deformation, tension and compression	Lecture, Sample problem solving	
4. Week	Atomic order, interatomic distances, the relation between interatomic bonds and properties	Lecture with digital projection	
5. Week	Moments of inertia, center of gravity	Lecture with the digital projection	
6. Week	Stress-strain relationships, Poisson's ratio	Lecture, Sample problem solving	
7. Week	Hooke's law, Bulk modulus, shear deformation, thermal stress	Lecture, Sample problem solving	
8. Week	Mid-term exam	Written exam	
9. Week	Transverse loading and pure bending	Lecture	
10. Week	Shear and bending moment diagrams	Lecture, Sample problem solving	
11. Week	Normal and shear stresses at beam sections	Lecture, Sample problem solving	

12. Week	Normal and bending moments	Lecture, Sample problem solving	
13. Week	Biaxial bending	Lecture, Sample problem solving	
14. Week	Transformations of stress: principal stresses, Mohr Circle	Lecture, Sample problem solving	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
İnan M., Cisimlerin Mukavemeti, İTÜ Vakfı yayınları, 8. Baskı, İstanbul, 2001
Onaran K., Malzeme Bilimi, Bilim Teknik Yayınevi, 8. Baskı, İstanbul, 2000
Omurtag M.H., Mukavemet Cilt 1, Genişletilmiş ikinci baskı, Birsen Yayınevi, İstanbul, 2007
Callister W.D., Fundamentals of Materials Science and Engineering: An Integrated Approach 2nd Editon, Wiley International Edition, 2005
Beer F.P., Johnston E.R., and Dewolf J.T., " Mechanics of Materials", Fourth Edition, The McGraw-Hill Companies, 2006
Hayden H.W., Moffatt W.G., and Wulff J., The Structure and Properties of Materials V.3: Mechanical Behavior, John Wiley and Sons, INC.,1980
Can A.Ç., Tasarımcı Mühendisler İçin Malzeme Bilgisi, Birsen Yayınevi, 1. Baskı, İstanbul, 2006

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Homework		
Quiz (zes)		
Project (s)		

Laboratory		
Final Exam		
Final Makeup Exam		
Other		
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			

Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.			X			
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.			X			
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.			X			
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Further Study	14	2	28
Final Exam Preparation	1	6	6
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	8	8
Class Hours (14 weeks)	14	3	42
Final Exam	1	2	2
Mid Term Exam 1	1	1	1
		Total Workload	101

Total Workload / 25.5 (s)	3.96
ECTS Credit of the Course	4

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Course Title	Code	Semester	L+U Hour	Credits	ECTS
Computer Programming (Bilgisayar Programlama)	ENV-2016	4. Semester	3+0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	Programming computer depending on needs.
Course Content	Expressing algorithmic solution of a given problem by using a programming language is main goal.
Course Learning Outcomes	1) Solve an engineering problem by using programming language.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

Resources

Recommended Sources

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam		
Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60

Total	100

Course Category

Course Category	Percentage
Engineering Sciences	% 30
Support Courses	% 70

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.					X	

Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	40	40
Mid Term Exam Preparation	1	38	38
Mid Term Exam 1	1	2	2
Application/Practice	14	2	28
		Total Workload	110
		Total Workload / 25.5 (s)	4.31
		ECTS Credit of the Course	4

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ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Soil Mechanics (Zemin Mekaniği)	ENV-2020	4. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Dr. Lect. Öznur KARACA
Instructors	Dr. Lect. Öznur KARACA
Assistants	
Course Objectives	Comprehension of the fundamental concepts related to Soil Mechanics and physical and mechanical properties.
Course Content	Fundamental concepts related to Soil Mechanics and physical and mechanical properties of soils are described in this course.
Course Learning Outcomes	1) Describe basic concepts relevant to soil mechanics 2) Identify soil types 3) Have the ability to determine Index properties and classify the soil 4) Know to determine engineering properties through standard tests

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Definition of Soil Mechanics	Lecture, question-answer, discussion, homework	
2. Week	Soils and Soil Formation	Lecture, question-answer, discussion, homework	
3. Week	Index Properties of Soils	Lecture, question-answer, discussion, homework	
4. Week	Soil Classification	Lecture, question-answer, discussion, homework	

5. Week	Soil Water	Lecture, question-answer, discussion, homework	
6. Week	Laboratory	Lab Experiments	
7. Week	Laboratory	Lab Experiments	
8. Week	Midterm	Written exam	
9. Week	Stress in Soil	Lecture, question-answer, discussion, homework	
10. Week	Stress in Soil	Lecture, question-answer, discussion, homework	
11. Week	Consolidation of Soils	Lecture, question-answer, discussion, homework, practice, laboratory tests	
12. Week	Calculation of Settlement in Soils	Lecture, question-answer, discussion, homework, practice, laboratory tests	
13. Week	Shear Strength of Soils	Lecture, question-answer, discussion, homework	
14. Week	Shear Strength of Soils	Lecture, question-answer, discussion, homework	
15. Week	Geomechanical Properties of Soils, Test in Laboratory and In Situ	Lecture, question-answer, discussion, homework	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Das, B., 1999, Fundamentals of geotechnical engineering, 656 p.
Craig, R.F., 1993, Soil Mechanics, ELBS with Chapman & Hall, 427p.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20

Homework		
Quiz (zes)	5	10
Project (s)		
Laboratory	2	10
Final Exam	1	60
Final Makeup Exam		
Other		
Total	8	100
	Total	100

Course Category

Course Category	Percentage
Support Courses	% 70
Engineering Sciences	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Demonstrate sufficient knowledge in mathematics, science and related engineering discipline; and apply institutional and practical knowledge in these areas to solve complex environmental engineering problems					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods					X	
Analyze and design a complex engineering and natural system, system components, or process under realistic constraints to meet the desired requirements by effectively using modern design engineering methods				X		

Use modern engineering techniques, skills, and tools necessary to analyze and solve complex environmental engineering problems; and demonstrate ability to effectively use information technologies				X		
Design and conduct experiments, collect, analyze and interpret data to investigate complex environmental engineering problems or discipline specific research topics					X	
Function and take responsibility individually and on multi-disciplinary teams				X		
Communicate in written and oral forms in both Turkish and English; and demonstrate skills for effective report writing, understanding written reports, preparing design and production reports, giving effective oral presentation, and giving and retrieving clear and straightforward instruction				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues; and show ability to reach information					X	
Comply with ethical principles; understand professional and ethical responsibility; and have knowledge on standards used in engineering practices					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development			X			
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context; and demonstrate awareness about the legal consequences of engineering solutions.		X				

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2

Final Exam Preparation	1	6	6
Mid Term Exam 1	1	2	2
Laboratory	3	4	12
Mid Term Exam Preparation	1	6	6
Assignment 1	7	2	14
Application/Practice	8	2	16
Class Hours (14 weeks)	14	3	42
		Total Workload	100
		Total Workload / 25.5 (s)	3.92
		ECTS Credit of the Course	4

5. DÖNEM
DERS PLANLARI VE İÇERİKLERİ

5.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-3001	Unit Operations I	Zorunlu	1	2	0	2	5
ENV-3003	Unit Operations Laboratory I	Zorunlu	0	2	0	1	3
ENV-3005	Soil and Groundwater Pollution	Zorunlu	1	2	0	2	5
ENV-3007	Water Supply	Zorunlu	1	2	0	2	5
ENV-3009	Project Management and Entrepreneurship	Zorunlu	3	0	0	3	3
SEC-3001	Mesleki Seçmeli Ders Grubu	Bölüm Seçmeli				6	7
		Toplam :	6	8	0	16	28

Mesleki Seçmeli Ders Grubu - SEC-3001 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-3013	Environmental Impact Assessment	3	0	0	3	4
ENV-3015	Noise Control	2	0	0	2	3
ENV-3017	Pollution Prevention	2	0	0	2	3
ENV-3019	Environmental Biotechnology	3	0	0	3	4

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ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Unit Operations I (Temel İşlemler I)	ENV-3001	5. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)

Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Arş. Gör. Dr. Çiğdem Öz Yaşar
Instructors	
Assistants	
Course Objectives	This course aims to introduce basic concepts of unit operations commonly used in water and/or wastewater treatment.
Course Content	It covers basic concepts of the most widely used unit operations and processes such as aeration, coagulation and flocculation, sedimentation, flotation, filtration. Students will learn and apply engineering design principles for unit operations to achieve desired parameters.
Course Learning Outcomes	1) Define major processes used in water and wastewater treatment. 2) Define major design parameters in unit operations. 3) Apply mass balance and chemical kinetics in basic treatment schemes. 4) Identify reactor types. 5) Define unit operations including coagulation, flocculation, floatation, sedimentation, aeration and filtration.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to Unit Operations	None	
2. Week	Reaction Kinetics, Reactor Types	Lecturing, Reading, Practice	
3. Week	Reactor Types	Lecturing, Reading, Practice	
4. Week	Reactor Types	Lecturing, Reading, Practice	
5. Week	Mixing	Lecturing, Reading, Practice	

6. Week	Coagulation-Flocculation	Lecturing, Reading, Practice	
7. Week	Design of Coagulation&Flocculation Units	Lecturing, Reading, Practice	
8. Week	Mid-term		
9. Week	Sedimentation	Lecturing, Reading, Practice	
10. Week	Sedimentation	Lecturing, Reading, Practice	
11. Week	Sedimentation	Lecturing, Reading, Practice	
12. Week	High Rate Settlers	Lecturing, Reading, Practice	
13. Week	Filtration I	Lecturing, Reading, Practice, Assignment	
14. Week	Filtration II	Lecturing, Reading, Practice	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Reynolds, T.D.&Richards, P.A., "Unit Operations and Engineering in Environmental Engineering" 2nd Ed., PWS Publishing Company, 1995. Wastewater engineering, treatment, disposal and reuse, Metcallf Eddy, McGraw- Hill series, Third edition, 1991

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20

Homework	5	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	**1**	**2**	**3**	**4**	**5**
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	**Quantity**	**Duration (Hour)**	**Total Workload (Hour)**
Class Hours (14 weeks)	14	3	42
Mid Term Exam Preparation	1	15	15
Further Study	14	1	14
Preliminary Study	14	1	14
Final Exam	1	3	3
Mid Term Exam 1	1	2	2
Final Exam Preparation	1	25	25
Assignment 1	5	2	10
		Total Workload	125

Total Workload / 25 (s)	5
ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Unit Operations Laboratory I (Temel İşlemler Laboratuvarı I)	ENV-3003	5. Semester	0 + 2	1.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of Delivery	Face to face
Course Coordinator	Arş. Gör. Dr. Çiğdem Öz Yaşar
Instructors	
Assistants	
Course Objectives	This course aims to enable the students to better grasp the underlying principles as well as the operational aspects of the unit operations and processes of environmental engineering.
Course Content	The course covers the laboratory applications in fundamental engineering and environmental pollution control topics of treatment technologies used in Environmental Engineering. Within this context, the unit operations, chemical processes and biological processes related to the mentioned area will be taken as a basis for the experimental applications.

Course Learning Outcomes	1)Apply the unit operations and processes used in water and wastewater treatment systems in laboratory scale, 2)Produce experimental data for the unit operations and processes which are the basis of the design and operation of water and wastewater treatment systems, 3)Evaluate and interpret the experimental data obtained. 4)Prepare the technical reports.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to Unit Operations Laboratory and Safety Instructions	None	
2. Week	Reactor types	Lecturing, Demo	
3. Week	Tracer (non-reactive) Input in Continuous Stirred Tank Reactors (CSTRs)	Lecturing, Demo	
4. Week	Tracer (non-reactive) Input in Plug Flow Reactors (PFR)	Lecturing, Demo	
5. Week	Coagulation/Flocculation (Jar Test) FeCl3 pH	Lecturing, Practice	
6. Week	Coagulation/Flocculation (Jar Test) Optimum Coagulant Dose	Lecturing, Practice	
7. Week	Coagulation/Flocculation (Jar Test) Alum pH	Lecturing, Practice	
8. Week	Mid-term		
9. Week	Coagulation/Flocculation (Jar Test) Optimum Coagulant Dose	Lecturing, Practice	
10. Week	Sedimentation	Lecturing, Practice	
11. Week	Sedimentation	Lecturing, Practice	
12. Week	Aeration	Lecturing, Demo	

13. Week	Grain Size Sieve Analysis	Lecturing, Practice	
14. Week	Filtration	Lecturing, Demo	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
AEESP Environmental Engineering Processes Laboratory Manual (v0.1) (2001). Eds. S.E. Powers, J.J. Bisogni, J.G. Burken and K. Pagilla, Association of Environmental Engineering and Science Professors, (USA), Copyright 2001, AEESP, Champaign-IL, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework		
Quiz (zes)		
Project (s)		
Laboratory	1	20
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Further Study	14	1	14
Preliminary Study	14	1	14
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Final Exam Preparation	1	12	12
		Total Workload	75
		Total Workload / 25 (s)	3
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Soil and Groundwater Pollution (Toprak ve Yeraltı Suyu Kirliliği)	ENV-3005	5. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory

Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Çetin KANTAR
Instructors	Prof. Dr. Çetin KANTAR
Assistants	
Course Objectives	This course is an attempt to wed elementary concepts of pollutant fate, transport and remediation technologies with chemical principles to assess environmental quality in subsurface systems
Course Content	Soil and its components, Soil contaminants and their physical-chemical properties, Contaminant distribution in soil components and mass balance, Remediation technologies and application techniques, Subsurface groundwater flow and contaminant transport, Darcy Law, Advection-Dispersion Models, Sorption Isotherms and Modeling, Retardation factor, Contaminant transport
Course Learning Outcomes	1) Describe soil origin and constituents 2) Describe soil contaminants and their physical-chemical properties 3) Calculate contaminant distribution between soil constituents 4) Establish mass balance on contaminants in soil constituents 5) Apply remediation technologies to contaminant sites 6) Apply sorption isotherms to transport models 7) Perform 1-D Advection-Dispersion calculations.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Origin of soil	Lecture, discussion	
2. Week	Soil constituents	Lecture	
3. Week	Soil properties	Lecture	
4. Week	Sources of soil pollution, properties and concentrations	Lecture	
5. Week	Inorganic soil pollutants and contaminant distribution between different phases of soil components (water and mineral)	Lecture, sample problem calculations	

6. Week	Organic soil pollutants and contaminant distribution between different phases of soil components (air, water and mineral)	Lecture, sample problem calculations	
7. Week	Organic soil pollutants and contaminant distribution between different phases of soil components (air, water and mineral), Henry law, Octanol-water distribution coefficient (Kow), Octanol-carbon distribution coefficient (Koc)	Lecture, sample problem calculations	
8. Week	Mass-volume calculations for contaminant sites	Lecture, sample problem calculations	
9. Week	Remediation technologies	Lecture, sample problem calculations	
10. Week	Remediation technologies	Lecture, sample problem calculations	
11. Week	Sources of groundwater contaminants, groundwater contaminant transport, Darcy law	Lecture, sample problem calculations	
12. Week	Isotherm isotherms and their applications to contaminant transport	Lecture, sample problem calculations	
13. Week	Advection-dispersion models and analytical solutions	Lecture	
14. Week	Contaminant transport, concentration-time breakthrough curves, concentration-distance relationships.	Lecture, sample problem calculations	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Practical Design Calculations For Groundwater and Soil Remediation, Jeff Kuo, CRC Press, 1999.
Soil Pollution; Origin, Monitoring & Remediation, İbrahim A Mirsal, Springer, 2004

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework	5	10
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Mathematics and Basic Sciences	% 40
Engineering Design	% 20
Engineering Sciences	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.		X				

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	20	20
Mid Term Exam Preparation	1	20	20

Preliminary Study	1	20	20
Homework	5	5	25
		Total Workload	127
		Total Workload / 25.5 (s)	4.98
		ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Water Supply (Su Temini)	ENV-3007	5. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of this course is to inform students about the design of water supply systems.

Course Content	This course comprises the projections of future population, projections of future water demands (consumptions), water intake structures (wells, dams, etc.), design of transmission lines, water storage tanks and water distribution networks.
Course Learning Outcomes	1) Calculate the future population of a given city 2) Calculate the future water demand of a city 3) Design the water storage tanks 4) Design the water transmission line 5) Design the water distribution network

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Projection methods for future population	Lecturing	
2. Week	Calculation of future water demand	Lecturing, problem solving	
3. Week	Raw water intake structures	Lecturing	
4. Week	Numerical examples about flowrate calculations and well design	Lecturing, problem solving	
5. Week	Water transmission lines, gravity mains, pumping mains	Lecturing	
6. Week	Design of water transmission lines	Lecturing, problem solving	
7. Week	Design of water transmission lines	Lecturing, problem solving	
8. Week	Midterm exam	Exam	
9. Week	Design of water storage tanks	Lecturing, problem solving	
10. Week	Types of water distributon systems , branched water distribution systems, looped water distribution systems	Lecturing	
11. Week	Design of water distribution systems using dead points method	Lecturing, problem solving	

12. Week	Design of water distribution systems using dead points method	Lecturing, problem solving	
13. Week	Design of water distribution systems using Hardy Cross method	Lecturing, problem solving	
14. Week	Pump stations and water stroke	Lecturing, problem solving	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Prabhata K. Swamee, Ashok K. Sharma., (2008). "Design of water supply pipe networks". John Wiley & Sons, Inc.
Samsunlu, A., (2005). " Su Getirme ve Kanalizasyon Yapılarının Projelendirilmesi". Birsen Yayınevi, İstanbul.
Şekerdağ, N., (2011). "Su Getirme ve Kanalizasyon Problemleri". Nobel Akademik Yayıncılık Eğitim Danışmanlık Tic.Ltd.Şti., Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	25
Homework		
Quiz (zes)		
Project (s)	1	15
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 20
Mathematics and Basic Sciences	% 20
Engineering Design	% 60

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					

Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam	1	2	2
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	25	25
Mid Term Exam Preparation	1	20	20
Preliminary Study	9	1	9
Research&Project	1	25	25
		Total Workload	125
		Total Workload / 25.0 (s)	5,0
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Impact Assessment (Çevresel Etki Değerlendirme)	ENV-3013	5. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	
Assistants	
Course Objectives	the student is to obtain information about the method and implementations of Environmental Impact Assessment (EIA).
Course Content	Aim of the Environmental Impact Assessment (EIA) method, and its historical background. The process of EIA (screening, scoping, preparation of report, public participation, evaluation of report, monitoring and auditing). Techniques and mothods that using in EIA (checklists, matrices etc.). Prediction and mitigation of environmental impacts. The Regulation of EIA and implementations in Turkey. Implementations of EIA and SEA in the developed countries.
Course Learning Outcomes	1) be able to determinate professions in EIA process according to project issue. 2) be able to establish environmental impacts of a project with using suitable methods. 3) be able to produce engineering solving for mitigate environmental impacts. 4) be able to write the parts of environmental impacts of project and preventions 5) be able to investigation and evaluation a EIA report 6) be able to monitor a EIA legal process in Turkey

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The aim of the EIA method and historical development		
2. Week	EIA process		
3. Week	Techniques and methods in EIA process		
4. Week	Prediction of environmental impacts		
5. Week	Mitigation of environmental impacts		
6. Week	The regulation of EIA and formal process in Turkey		
7. Week	Implemantations of EIA and problems in Turkey		
8. Week	Strategic Environmental Assessment (SEA)		
9. Week	Implementations of EIA and SED in the developed countries		
10. Week	Student presentation		
11. Week	student presentation		
12. Week	student presentation		
13. Week	student presentation		
14. Week	Conclusion and discussion		
15. Week	Final exam	exam	
16. Week	Final exam	exam	

Resources

Recommended Sources
Wood, C., 2003. Environmental impact assessment, a comparative rewiev, second edition, Pearson Education Ltd., England.
Çevresel Etki Değerlendirmesi El Kitabı, 2009. Çevre ve Orman Bakanlığı, ÇED Eğitimi ve Bilgi Merkezi, Ankara.
Erickson, P. A., 1994. A practical guide to environmental impact assessment, Academic Press.
Uslu, O. 1993. Çevresel Etki Değerlendirmesi, Türkiye Çevre Vakfı Yayını, Ankara.

Assessment

Measurement and Evaluation Methods and Techniques
participation of the lectures, evaluation of homeworks, results of the exams

In-Term Studies	Quantity	Percentage
Mid Term Exam 1	1	40
Assignment 1	1	10
Total	2	50
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	50
Total	1	50
Contribution Of In-Term Studies To Overall Grade		50
End-Term Studies		50
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 80
Social Sciences	% 20

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.			X			

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.					X	
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Assignment 1	1	15	15
Application/Practice	1	2	2

Research&Project	1	10	10
Final Exam Preparation	1	15	15
Preliminary Study	5	1	5
Case Study	1	15	15
Class Hours (14 weeks)	14	2	28
		Total Workload	94
		Total Workload / 25.5 (s)	3,64
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Noise Pollution (Gürültü Kirliliği)	ENV315	5. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK

Instructors	Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	
Course Objectives	In this course, noise and vibration will be discussed from the environmental quality perspective and measures against noise pollution will be underlined. Effects of urbanization and industrialization on noise, impacts of niose and measures that can be taken against noise pollution will ve explained in detail.
Course Content	The concept of sound. Sound waves, frequency, amplitude, sound pressure level, intensity and propagation Sound level, sound measurements, fudge factor, transient and intermittent noises. Noise as energy. Measuring transient noise. Different sctor induced noise and their specifications. The acoustic environment, closed environment and open environment. Health effects of noise on humans and other creatures. Presbycusis The monetary cost of noise pollution and vibration pollution Control of noise and vibration Characteristics of noise caused by different industries/sectors Noise control – fundamental concepts Noise control techniques in industrial sector Community noise control Noise in the home Control of noise in Turkey, noise level maps Noise control in the European Union
Course Learning Outcomes	1) Define voice and vibration, list noise sources in the environment 2) List how to control noise and vibrations 3) Explain noise control methods 4) Elucidate what a noise map is, explain its properties 5) Mention noise and its control methods in industry, vehicular traffic and at homes 6) Define the effects of noise on humans and other living things

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The concept of sound. Sound waves, frequency, amplitude, sound pressure level, intensity and propagation		
2. Week	Sound level, sound measurements, fudge factor, transient and intermittent noises		
3. Week	Sources of noise, measuring transient noise		
4. Week	The acoustic environment. Media type.		
5. Week	Health effects of noise on humans and other creatures. Presbycusis		

6. Week	The monetary cost of noise pollution and vibration pollution		
7. Week	Control of noise and vibration. Noise control techniques.		
8. Week	Characteristics of noise caused by different industries/sectors		
9. Week	Noise control – fundamental concepts		
10. Week	Noise control techniques in industrial sector		
11. Week	Community noise control		
12. Week	Noise in dwellings		
13. Week	Control of traffic induced noise in Turkey, noise level maps		
14. Week	Noise and vibration control in the European Union		

Resources

Recommended Sources
Fahy, F. and Walker, J. (1998). Fundamentals of Noise and Vibration. Spon Press, London.
Kotzen, B. and English, C. (2009). Environmental Noise Barriers: A Guide to Their Acoustic and Visual Design. Spon Press, London.
Möser, M. (2009). Engineering Acoustics: An Introduction to Noise Control (2. Baskı). Springer-Verlag, Berlin Heidelberg.
Peters, R. J., Smith, M. J., Hollins, B. (2011) Acoustics and Noise Control (3. Baskı). Pearson Academic, Upper Saddle River, NJ, ABD.

Assessment

Measurement and Evaluation Methods and Techniques
Active participation in class, measurement and reporting of noise in a defined area (project), appropriate submission of homework, attendance to the class.

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5

Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)

Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Assignment 1	8	2	16
Project	1	10	10
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	6	6
Case Study	1	3	3
Presentation	1	2	2
		Total Workload	77
		Total Workload / 25.5 (s)	3.01
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Pollution Prevention (Kirlilik Önleme)	ENV-3017	5. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective

Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of this course is to inform the students about the methods used in order to prevent contamination from industrial facilities.
Course Content	This course comprises the benefits and implementing of pollution prevention (source reduction, recycling, treatment) facility site selection considerations, risk assessment (emissions model, dispersion model, risk model etc.), emission control techniques, protection of surface waters and groundwater qualities, technical considerations for landfills and waste piles, maintenance and operation of waste management system components, monitoring of groundwaters, surface waters, soil and air.
Course Learning Outcomes	1) Describe the implementation methods of pollution prevention (source reduction, recycling, treatment) and its benefits 2) Explain the particular points of facility site selection 3) Describe the models used for risk management at industrial facilities 4) Describe pollution prevention strategies 5) Designate the methods used for surface and groundwater quality protection 6) Explain the important technical points for landfill sites and waste containment systems 7) Evaluate the monitoring of groundwater, surface water, soil and air.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Facts on pollution prevention	Lecturing	
2. Week	Developing a pollution prevention plan	Lecturing	
3. Week	Developing a pollution prevention plan	Lecturing	
4. Week	Site selection for industrial facilities	Lecturing	
5. Week	Engineering design-based pollution prevention strategies	Lecturing	
6. Week	Engineering design-based pollution prevention strategies	Lecturing	

7. Week	Process chemistry and technology-based pollution prevention strategies	Lecturing	
8. Week	Midterm exam	Exam	
9. Week	Operations-based pollution prevention strategies	Lecturing	
10. Week	Maintenance-based pollution prevention strategies	Lecturing	
11. Week	Life cycle assessment	Lecturing	
12. Week	Examples for life cycle assessment	Lecturing, problem solving	
13. Week	Models used for risk management at industrial facilities, emission control techniques and waste containment sites	Lecturing	
14. Week	Monitoring of groundwaters, surface waters, soil and air	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Toronto Works and Emergency Services, “A Guidance Manual To Pollution Prevention Plan”.
Woodard, Frank (2001). Industrial Waste Treatment Handbook. Butterworth–Heinemann, USA.
Graedel, Thomas E. & Howard-Grenville, Jennifer A., (2005). Greening the Industrial Facility Perspectives, Approaches, and Tools. Springer Science + Business Media, Inc., USA.
Liu, David H.F. (1999). Environmental Engineers’ Handbook. CRC Press LLC, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam	1	40
Homework		
Quiz (zes)		

Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100
End-Term Studies	**Quantity**	**Percentage**

Course Category

Course Category	Percentage
Engineering Sciences	% 80
Engineering Design	% 20

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Midterm Exam	1	1	1
Class Hours (14 weeks)	14	2	28
Preparation for Final Exam	1	10	10
Preparation for Midterm Exam	1	10	10
Preliminary Study	12	2	24
		Total Workload	75
		Total Workload / 25.0 (s)	3.00

ECTS Credit of the Course	3

6. DÖNEM

DERS PLANLARI VE İÇERİKLERİ

6.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-3002	Unit Operations II	Zorunlu	1	2	0	2	4
ENV-3004	Biological Processes	Zorunlu	2	2	0	3	5
ENV-3006	Statistics	Zorunlu	1	2	0	2	4
ENV-3008	Atmospheric Chemistry and Air Quality	Zorunlu	2	2	0	3	5
ENV-3010	Sewer System Design	Zorunlu	1	2	0	2	3
SEC-3002	Mesleki Seçmeli Ders Grubu	Bölüm Seçmeli				6	9
		Toplam :	7	10	0	18	30

Mesleki Seçmeli Ders Grubu - SEC-3002 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-3012	Environmental Law	2	0	0	2	3
ENV-3014	Environmental Sanitation	2	0	0	2	3
ENV-3016	Environmental Modeling	2	0	0	2	3
ENV-3018	Sustainable Development	2	0	0	2	3
ENV-3020	Marine Outfalls	2	0	0	2	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ

MÜHENDİSLİK FAKÜLTESİ

ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Unit Operations II (Temel İşlemler II)	ENV-3002	6. Semester	1 + 2	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Çetin KANTAR
Instructors	Prof. Dr. Çetin KANTAR
Assistants	
Course Objectives	The objective of this course is to teach the students the theorotical aspects of unit operations and processes of water and wastewater treatment.
Course Content	Neutralization, aeration and gas transfer rate, chemical precipitation, adsorption, adsorption kinetics and isotherms, water softening, taste and odor control
Course Learning Outcomes	1) Apply simple reaction kinetics to water treatment. 2) Apply oxygen transfer kinetic equations to design aeration systems in water/wastewater treatment. 3) Apply the appropriate treatment method to the removal of a specific pollutant based on the type and properties of pollutants. 4) Apply isotherm models in reactor design. 5) Apply electroneutrality equations (ENE) to neutralize wastewater. 6) Apply chemical precipitation techniques to water/wastewater treatment 7) Apply water softening techniques to water treatment

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

1. Week	Neutrilization	Lecture, sample problem solution	
2. Week	Neutralization	Lecture, example problem solutions	
3. Week	Aeration and gas transfer	Lecture, example problem solution	
4. Week	Aeration and gas transfer	Lecture, example problem calculations	
5. Week	Air stripping towers and design equations	Lecture, example problem calculations	
6. Week	Chemical precipitation	Lecture	
7. Week	Chemical precipitation	Lecture, sample problem solution	
8. Week	Water softening	Lecture, discussion, sample problem calculations	
9. Week	Water softening	Lecture, discussion, sample problem calculations	
10. Week	Water softening	Lecture, sample problem calculations	
11. Week	Taste and odor problems in water treatment	Lecture	
12. Week	Sorption and isotherm models	Lecture, discussion, sample problem calculations	
13. Week	Powdered activated carbon (PAC) applications	Lecture, sample design problem calculations	
14. Week	Granule activated carbon (GAC) columns	Lecture, sample problem solution	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
1) Environmental Engineering Science, William W. Nazaroff and Lisa Alvarez-Cohen, John Wiley & Sons, 2001 2) Unit Operations and Processes in Environmental Engineering, Reynods, T. D. And Richards, P.A., PWS Publishing Company, 1996.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework	4	10
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Design	% 80
Mathematics and Basic Sciences	% 20

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X

Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam			

Class Hours (14 weeks)	14	3	42
Mid Term Exam 1			
Preliminary Study			
Homework	4	4	16
Mid Term Exam Preparation	1	20	20
Final Exam Preparation	1	20	20
		Total Workload	98
		Total Workload / 25.5 (s)	3.85
		ECTS Credit of the Course	4

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Biological Processes (Biyolojik Prosesler)	ENV-3004	6. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Nilgün AYMAN ÖZ
Instructors	Prof. Dr. Nilgün AYMAN ÖZ

Assistants	
Course Objectives	This course covers the theory and application of biological processes that are relevant for wastewater treatment engineering applications, with an emphasis on municipal/industrial wastewaters and biosolids. The initial lectures provides fundamental concepts of biological processes including stoichiometry, kinetics of biochemical reactions and microbial energetics. The remainder of the course involves the application of these foundational principles to treatment processes and bioreactor design considerations. The course also gives information on biological nutrient removal, anaerobic treatment of wastewater and treatment sludge.
Course Content	Introduction to biological processes, characterization of wastewaters and sludge, Microbial metabolism and growth, enzymes and inhibition, Stoichiometry of microbial growth and bacteria energy, Reactors and mass balance, Reactor kinetics of biological processes, Design parameters in biological processes, Suspended aerobic systems, Design of activated sludge systems for carbon removal, Design of activated sludge systems for nutrient removal, Biofilm systems, Biological nutrient removal, Anaerobic treatment systems, Aerobic and anaerobic sludge treatment
Course Learning Outcomes	1) Explain key principles of biological processes including stoichiometry, kinetics and microbial pathways. 2) Identify the range of conventional and advanced biological treatment processes for the treatment of organics and nutrients. 3) Define design principles of biological treatment processes. 4) Explain activated sludge principles, design parameters and operation. 5) Design activated sludge systems for both carbon and nutrient removal. 6) Explain anaerobic digestion principles, design and operation. 7) Explain biological nutrient removal including Anamox and alternative nutrient removal processes.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to biological processes, characterization of wastewaters and sludge	None	

2. Week	Role of microorganisms in biological wastewater treatment, microbial metabolism and growth	Lecturing, Reading, Practice	
3. Week	Kinetics of bacterial growth	Lecturing, Reading, Practice	
4. Week	Activated sludge processes	Lecturing, Reading, Practice	
5. Week	Activated sludge processes	Lecturing, Reading, Practice	
6. Week	Design of activated sludge systems for carbon removal	Lecturing, Reading, Practice	
7. Week	Nitrification and design of activated sludge systems for both carbon removal and nitrification	Lecturing, Reading, Practice	
8. Week	Mid-term		
9. Week	Biological nutrient removal -Nitrification	Lecturing, Reading, Practice	
10. Week	Biological nutrient removal - Denitrification	Lecturing, Reading, Practice	
11. Week	Biological nutrient removal -Nitrification and Denitrification Systems	Lecturing, Reading, Practice	
12. Week	Biological nutrient removal-Phosphorus removal	Lecturing, Reading, Practice	
13. Week	Biofilm systems	Lecturing, Reading, Practice	
14. Week	Other Biological Processes: Ponds and lagoons, Anaerobic processes, Sludge treatment processes (aerobic and anaerobic stabilization)	Lecturing, Reading, Practice	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources

Tchobanoglous, G., Burton, F.L., Stensel, H.D., (2003) Wastewater Engineering Treatment and Reuse, Metcalf&Eddy, McGraw-Hill, 4th edition
Wang, L.K., Pereira N.C., Hung, Y-T, (2009) Biological Treatment Processes, Handbook of Environmental Engineers, Volume 8, Humana Press, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	4	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 60
Engineering Sciences	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5

Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)

Final Exam Preparation	1	16	16
Further Study	14	1	14
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	10	10
Class Hours (14 weeks)	14	2	28
Mid Term Exam 1	1	2	2
Application/Practice	14	2	28
Final Exam	1	3	3
Presentation/Seminar			
Assignment 1	4	2,5	10
		Total Workload	125
		Total Workload / 25 (s)	5
		ECTS Credit of the Course	5

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ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Statistics (İstatistik)	ENV-3006	6. Semester	1 + 2	2.0	4.0

Prerequisites	None

Language of Instruction	English

Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Sibel MENTEŞE
Instructors	Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Evaluation of the statistical methods that can be used in environmental engineering and finding the best fitted solution methods of related applications in this area.
Course Content	Introduction to statistics in environmental engineering, theory of probability, frequency analysis, important probability distributions, sampling distributions, hypothesis test, ANOVA test, Chi-square tests, Regression analysis, Correlation. Interactive education.
Course Learning Outcomes	1. Introduction to basic statistics. 2. Defines the methods to prepare a data set to be used in statistical tests 3. Explains the probability analysis 4. Explains how to test the hypothesis 5. Plans the ways of data sets comparisons 6. Evaluates the results of the statistical test results

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to statistics: calculation of central tendency	lectures, assignments, projects	textbooks
2. Week	Outlier detection and forming box-whisker graphics	lectures, assignments, projects	textbooks
3. Week	Probability tests	lectures, assignments, projects	textbooks

4. Week	Assessing the distribution and shape of the data set	lectures, assignments, projects	textbooks
5. Week	Probability distribution types	lectures, assignments, projects	textbooks
6. Week	Normal distribution	lectures, assignments, projects	textbooks
7. Week	Dealing with the missing values	lectures, assignments, projects	textbooks
8. Week	Hypothesis tests: t-distribution	lectures, assignments, projects	textbooks
9. Week	Comparison of two data sets	lectures, assignments, project	textbooks
10. Week	Hypothesis tests: F-test	lectures, assignments, project	textbooks
11. Week	Error types occurring with hypothesis tests	lectures, assignments, project	textbooks
12. Week	Analysis of variance	lectures, assignments, project	textbooks
13. Week	Linear regression	lectures, assignments, project	textbooks
14. Week	Representing the test results with graphics	lectures, assignments, project	textbooks

15. Week	Final exam	individual work	Textbooks, lecture notes
16. Week	Final exam	individual work	Textbooks, lecture notes

Resources

Recommended Sources
McBean EA and Rovers FA, Statistical procedures for analysis of environmental monitoring & risk assessment, vol.3, Prentice Hall PTR Environmental Management & Engineering Series,1998 James, G., Witten, D., Hastie, T., Tibshirani, R. An introduction to statistical learning. Springer, 2013.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	4	10
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Makeup Exam		
Other		
Total	6	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Mathematics and Basic Sciences	% 50
Support Courses	% 50

CONTRIBUTION TO PROGRAM OUTCOMES

Program Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					

Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Mid Term Exam	1	3	3
Mid Term Exam Preparation	1	10	10
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	12	12
Research & Project	1	14	14
Assignment 1	4	4	16
		Total Workload	100
		Total Workload / 25 (s)	4.0
		ECTS Credit of the Course	4.0

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS

Atmospheric Chemistry and Air Quality (Atmosfer Kimyası ve Hava Kalitesi)	ENV-3008	6. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Sibel MENTEŞE
Instructors	Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Stating the components of atmospheric chemistry (major chemical compounds, chemical reactions, meteorology, transport etc.) together with the variations on the basis of time.
Course Content	Photochemistry, organic chemistry, gas chemistry and physics. Fundamentals of atmospheric sciences, formation of atmosphere, its components, energy fluxes and atmosphere, formation of climates, structure and layers of atmosphere, air circulations, retention time of the substances, turbulence and diffusion, natural greenhouse effect, water, air and CO2 in the atmosphere, chemical reactions, substantial gaseous, chemicals, and aerosols. Stratospheric and tropospheric ozone, atomic forms of oxygen, radical reactions, photochemical reactions. Definitions of air quality components, air pollutants: SOx, NOx, CO, VOC, PAH.
Course Learning Outcomes	1) Classifies chronologically the formation of the modern atmosphere both quantitatively and qualitatively 2) Defines the atmosphere of the sun other planet and important reactions therein 3) Classifies the flow cycles of important substances' such as oxygen, nitrogen, and sulfur and photochemical, radical, organic, and heterogeneous reactions occurring in the troposphere 4) Defines the energy fluxes within the atmosphere and between atmosphere and the sun 5) Defines the reactions related to ozone layer occurring in the stratosphere 6) Calculates the atmospheric stability and plans its effect on transportation of pollutants 7) Defines the aerosol formation and the sizes and the sources of the aerosols

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Scientific history for formation of atmosphere, atmospheric composition of other planets and the sun	lectures, discussion, reading	textbooks
2. Week	Organic chemistry	lectures, discussion, reading	textbooks
3. Week	Gas chemistry and physics	lectures, discussion, reading	textbooks
4. Week	Fundamentals of atmospheric sciences	lectures, discussion, reading	textbooks
5. Week	Formation and structure of atmosphere	lectures, discussion, reading	textbooks
6. Week	Energy fluxes in the atmosphere	lectures, discussion, reading	textbooks
7. Week	Important gaseous in the atmosphere and their photochemical reactions	lectures, discussion, reading	textbooks
8. Week	Aerosol formation, sizes and sources of atmospheric aerosols	lectures, discussion, reading	textbooks
9. Week	Tropospheric chemistry	lectures, discussion, reading	textbooks
10. Week	Stratospheric chemistry	lectures, discussion, reading	textbooks

11. Week	Radical chemistry	lectures, discussion, reading	textbooks
12. Week	Atmospheric cycles and reactions of Oxygen, Nitrogen and Sulphur	lectures, discussion, reading	textbooks
13. Week	Important atmospheric chain reactions	lectures, discussion, reading	textbooks
14. Week	Stability of atmosphere and behavior of a pollutant plume under different stability conditions	lectures, discussion, reading	textbooks
15. Week	Final exam	individual work	Textbooks and lecture notes
16. Week	Final exam	individual work	Textbooks and lecture notes

Resources

Recommended Sources
Holloway AM & Wayne RP, Atmospheric Chemistry, RSC Publishing, 2010.
De Nevers R, Air Pollution Control Engineering, McGraw Hill Education, 1999.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework		
Quiz (zes)		
Project (s)	1	10
Laboratory		

Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 70
Engineering Design	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.				X		

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	4	3
Class Hours (14 weeks)	14	4	56
Final Exam Preparation	1	12	12
Mid Term Exam Preparation	1	10	10
Mid Term Exam 1	1	4	4
Research & Project	1	20	20
Preliminary Study	10	2	20
		Total Workload	125
		Total Workload / 25 (s)	5.0

ECTS Credit of the Course	5

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Sewer System Design (Kanalizasyon Sistemlerinin Tasarımı)	ENV-3010	6. Semester	1 + 2	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of course is to inform students about the collection of wastewaters and stormwaters, sewer types and their designs.
Course Content	This course comprises the projections of future population, projections of future wastewater generation, design of sewer system pipes, calculation of stormwater flowrates and design of storm sewers..
Course Learning Outcomes	1) Calculate the future population of a given city 2) Calculate the future wastewater flowrates of a given city 3) Design sewer pipes

	4) Calculate stormwater flowrate of a given district 5) Design stormwater collection system

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Quantity of wastewater, peak, average, and minimum flows	Lecturing, problem solving	
2. Week	Sewer types (combined, separate and stormwater)	Lecturing	
3. Week	Manholes and other appurtenances used in sewer systems	Lecturing	
4. Week	Determination of pipe slopes according to street slopes	Lecturing	
5. Week	Flow velocities and design depths of flow	Lecturing	
6. Week	Drops (chutes) in sewer systems	Lecturing, problem solving	
7. Week	Pumping in sewer systems	Lecturing, problem solving	
8. Week	Midterm exam	Exam	
9. Week	Design of single pipe	Lecturing, problem solving	
10. Week	Design of multiple pipe systems	Lecturing, problem solving	
11. Week	Design of multiple pipe systems	Lecturing, problem solving	
12. Week	Calculation of stormwater flowrates	Lecturing, problem solving	
13. Week	Hydraulic design of stormwater sewers	Lecturing, problem solving	
14. Week	Sewer pipe materials	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Paul Bizier (Editor) (2007). “Gravity Sanitary Sewer Design and Construction Second Edition”, ASCE & WEF.
A. Melih Yanmaz, (2013). “Applied Water Resources Engineering”, ODTÜ Yayıncılık.
Ahmet Samsunlu (2005). ” Su Getirme ve Kanalizasyon Yapılarının Projelendirilmesi”. Birsen Yayınevi, İstanbul.
Nusret Şekerdağ (2011). “Su Getirme ve Kanalizasyon Problemleri”. Nobel Akademik Yayıncılık Eğitim Danışmanlık Tic.Ltd.Şti., Ankara.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam	1	30
Homework		
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 20
Mathematics and Basic Sciences	% 20
Engineering Design	% 60

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Midterm Exam	1	2	2
Class Hours (14 weeks)	14	3	42
Preparation for Final Exam	1	10	10
Preparation for Midterm Exam	1	5	5
Research&Project	1	14	14
		Total Workload	75
		Total Workload / 25.0 (s)	3,0
		ECTS Credit of the Course	3

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MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Sanitation (Çevre Sağlığı)	ENV-3014	6. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective

Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The link between human health and environmental health (environmental quality) will be examined scientifically.
Course Content	Ecology and environmental health, toxicology, pandemics and epidemics, environmental and professional epidemiology, principles of environmental health protection, global climate change and environmental health, healthy communities, environmental disaster and health relationship.
Course Learning Outcomes	1) Establish environmental quality and human health relationship 2) Mention which cases are observed under different environmental deterioration 3) Define morbidity and mortality 4) Establish air quality and human health connection 5) List water borne diseases and their effects 6) Explain the relationship between natural and human anthropogenic radioactivity, noise,

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Ecology and environmental health. Toxicology. Pandemics and epidemics	Lecturing, discussion	
2. Week	Human induced environmental health problems in the world, environmental deterioration in developing countries	Lecturing, discussion	
3. Week	Environmental and occupational epidemiology.	Lecturing and discussion	
4. Week	Exposure assessment, industrial hygiene and environmental management	Lecturing, discussion	
5. Week	Environmental justice. Population pressure on developing countries	Lecturing discussion	

6. Week	Climate change and its effects on people. Environmental health concerns in developing nations	Lecturing and discussion	
7. Week	Climate change and its effects on water quality/availability	Lecturing and discussion	
8. Week	Energy production-air pollution dilemma. Healthy communities	Lecturing and discussion	
9. Week	Water and health. Morbidity and mortality related to environmental health. Pest control and pesticides	Lecturing and discussion	
10. Week	Food safety, healthy buildings, radiation and electromagnetic radiation	Lecturing and discussion	
11. Week	Prevention principles in environmental health	Lecturing and discussion	
12. Week	Environmental Health Policy, National measures	Lecturing and discussion	
13. Week	Environmental disasters (such as Love Canal, Bhopal, Chernobyl, Fukushima)	Lecturing and discussion	
14. Week	Legal remedies for environmental health issues	Lecturing and discussion	
15. Week	Final Exam	Evaluation	
16. Week	Final Exam	Evaluation	

Resources

Recommended Sources
Friis, R. H. (2010). Essentials of Environmental Health (2nd Edition). Jones and Bartlett, Boston, MA, USA.
Frumkin, H. (2010). Environmental Health from Global to Local. Jossey-Bass, New York, NY, USA.
Moeller, D. W. (2011). Environmental Health (4th Edition). Harvard University Press, Boston, MA, USA.

Assessment

Measurement and Evaluation Methods and Techniques
Active participation in class, appropriate completion of assignments, attendance to class meetings

Course Category

Course Category	Percentage
Engineering Sciences	% 4

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.					X	
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.						X
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					

Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Presentation/Seminar	1	1	1
Assignment 2	4	2	8
Preliminary Study	14	1	14
Case Study	2	2	4
Mid Term Exam Preparation	1	3	3
Assignment 1	7	1	7
Application/Practice	1	6	6
Class Hours (14 weeks)	16	2	32
		Total Workload	76
		Total Workload / 25.5 (s)	2,98
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Law (Çevre Hukuku)	ENV-3012	6. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	
Course Objectives	To focus on laws and regulations on environmental quality will be discussed in this course
Course Content	Environmental regulations, application of environmental legislation
Course Learning Outcomes	1) Define the importance of environmental law 2) Explain “Polluter pays” and “Polluter cleans up” principles 3) List laws and regulations on air quality, water pollution and soil quality deterioration 4) Explain the need of legal regulations on the environment 5) Define the requirement of environmental laws/regulations for ecological integrity 6) Evaluate transboundary pollution problems from the point of legislation

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Environmental Law in Different Countries	Lecturing and discussion	
2. Week	Legislation and approaches to environmental protection. European Environment Agency, Environmental Protection Agency (USA), etc.	Lecturing and discussion	

3. Week	Constitution, laws and regulations concerning environmental quality	Lecturing and discussion	
4. Week	Environmental Ethics, Standards, Markets and the Common Law, carbon trade off	Lecturing and discussion	
5. Week	Administrative Procedure for Environmental Regulation	Lecturing and discussion	
6. Week	Air quality regulation. Water pollution control regulation	Lecturing and discussion	
7. Week	Rights to use water. The management of hazardous and solid wastes	Lecturing and discussion	
8. Week	“Polluter pays” principle. “Polluter cleans up” approach	Lecturing, case study, discussion	
9. Week	Local environmental controls. Civil society and environmental protection	Lecturing and discussion	
10. Week	Preservation of natural areas. Energy and the environment	Lecturing and discussion	
11. Week	Population growth and the pressure on natural resources/environmental quality	Lecturing and discussion	
12. Week	The endangered species act. Protected lands and areas	Lecturing, case study, discussion	
13. Week	Regulating chemical manufacture and distribution	Lecturing and discussion	
14. Week	International environmental law. Global environmental health	Lecturing and discussion	
15. Week	Final Exam	Evaluation	
16. Week	Final Exam	Evaluation	

Resources

Recommended Sources
Ferrey, S. (2007). Environmental Law Examples and Explanations (4th Edition). Aspen Publishers, Inc., New York, NY, USA.

Kubasek, N. K. and Silverman, G. S. (2010). Environmental Law (7th Edition). Prentice Hall, Upper Saddle River, NJ, USA.

Assessment

Measurement and Evaluation Methods and Techniques
Attendance to class meetings, appropriate submission of assignments, active participation in class, success in exams

Course Category

Course Category	Percentage
Engineering Sciences	% 3

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.			X			
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.		X				
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.		X				
Communicate in written and oral forms in both Turkish and English.					X	

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Assignment 2	8	2	16
Final Exam Preparation	1	6	6
Further Study	12	1	12
Mid Term Exam 1	1	1	1
Preliminary Study	14	1	14
Class Hours (14 weeks)	14	2	28
		Total Workload	78
		Total Workload / 25.5 (s)	3.05
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Modelling (Çevresel Modelleme)	ENV-3016	6. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	This course is an attempt to wed elementary concepts of polutant fate and transport with chemical principles to assess environmental quality.
Course Content	Scope of environmental modeling, mass balances, contaminant properties, transport phenomena, chemical reaction kinetics, chemical equilibrium, box models, contaminants in lakes, contaminants in rivers, trace element modeling, groundwater contamination.
Course Learning Outcomes	1) Describe different reaction kinetics 2) Apply the concept of chemical equilibrium to understand the behavior of contaminants in natural systems 3) Apply lineer models to estimate data variation as a function of time 4) Apply lineer and non-lineer models to estimate data variations in the future. 5) Apply the concept of mass balance principles to environmental problems 6) Solve mass balance problems for steady-state

	7) Apply mass balance principles for non-steady state situations 8) Apply analytical solutions to 1-D advection-dispersion models

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Scope of environmental modeling, mass balances and contaminant properties	Lecture, sample problem calculations	
2. Week	Chemical and biological reaction kinetics	Lecture, sample problem calculations	
3. Week	Box models	Lecture, sample problem calculations	
4. Week	Equilibrium chemical modeling, equilibrium principles, adsorption, precipitation, dissolution and redox reactions	Lecture, sample problem calculations	
5. Week	Advection-dispersion modelling	Lecture, sample problem calculations	
6. Week	Equilibrium partionining of organic pollutants	Lecture, sample problem calculations	
7. Week	Equilibrium partitioning of organic pollutants	Lecture, sample problem calculations	
8. Week	Multicomponent box models	Lecture, sample problem calculations	

9. Week	Contaminants in rivers, mass balances, Streeter-Phelps equation	Lecture, sample problem calculations	
10. Week	Dissolved oxygen, Streeter-Phelps equation	Lecture, sample problem calculations	
11. Week	Lake contaminants, eutrophication in lakes, nitrogen and phosphorus mass balance in lakes	Lecture, sample problem calculations	
12. Week	Groundwater transport	Lecture, sample problem calculations	
13. Week	Contaminant transport in groundwater, 1-D advection-dispersion models	Lecture	
14. Week	Analytical solutions to 1-D advection-dispersion models and applications to contaminant transport	Lecture, sample problem calculations	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
Environmental Modeling: Fate and Transport of Pollutants in Water, Air and Soil, Jerald L Schnoor, John Wiley & Sons, Inc. 1996

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework	6	10

Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Mathematics and Basic Sciences	% 50
Engineering Sciences	% 40
Engineering Design	% 10

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.		X				

Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	15	11
Mid Term Exam Preparation	1	15	10
Homework	6	2	12
		Total Workload	75
		Total Workload / 25.0 (s)	3.00
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Sustainable Development (Sürdürülebilir Kalkınma)	ENV-3018	6. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	Development using natural resources optimally and using natural resources wisely for the sake of the environment (environmental quality) is crucial. In this course the balance between consumption and protection of natural resources will be discussed.
Course Content	
Course Learning Outcomes	1) Define sustainable common property regimes. 2) Classify natural resources and use-conservation strategies. 3) Emphasize water resources in different sectors, establish relationship between water quality and economic activities, comment on sustainability of water resources. 4) To be aware of problems associated with sharing of common goods (resources) and optimum production. 5) Discuss effects of global climate change and acid rain problem in the world.

	6) Underline renewable and innovative energy resources. 7) Develop pathway for sustainable resource utilization from engineering point of view.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Visions of the future. Definition of sustainable development	**Lecturing** **assignments** **discussion** **practice** **case study** **reading**	
2. Week	Visions of the future. Definition of sustainable development		
3. Week	The challenges of sustainable development		
4. Week	Actors and actions in sustainable development		
5. Week	State versus private institutions to realize sustainable development		
6. Week	Sustainable rural livelihoods: Agricultural sector		
7. Week	Sustainable urban livelihoods		
8. Week	Sustainable development in services sector		
9. Week	Sustainable Industry: Zero Waste and Minimum Energy Use		
10. Week	Sustainability in waste and wastewater		
11. Week	Global challenges in front of sustainable development		
12. Week	Sustainable Development in the developing world: An assessment		
13. Week	Sustainable Development in the developing world: An assessment		
14. Week	Development, Poverty, and the Environment. The Quest for Sustainable Development.		
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
1) Elliott, J. A. (2006). Introduction to Sustainable Development. Routledge New York, USA.

2) Conroy, M.J. ve Peterson, J.T. (2013). Decision Making in Natural Resource Management: A Structured, Adaptive Approach. Wiley, USA. ISBN: 978-0-470-67174-0.
3) Vig, N. J. ve Kraft, M. E. (2012). Environmental Policy: New Directions for the Twenty-first Century. CQ Press. Thousand Oaks, CA, ABD.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	25
Homework		
Course Attendance		5
Research	1	5
Seminars	1	5
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Design	
Mathematics and Basic Sciences	
Mathematics and Basic Sciences	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.			X			
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	16	14x2	28
Doing Research	1	1x15	15
Preparation	12	12x2	24
Mid Term Exam Preparation	1	1x3	3
Final	1	1x6	6
Total Workload	76		
Total Workload / 25.0 (s)	3		
		ECTS Credit of the Course	3

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Course Title	Code	Semester	L+U Hour	Credits	ECTS
Marine Outfalls (Deniz Deşarjı)	ENV-3020	6. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The purpose of this course is to inform students about marine pollution and marine outfall systems.
Course Content	In this course, detailed information is given about marine pollution, marine outfall systems used after wastewater treatment and design of marine outfall systems.
Course Learning Outcomes	1) Explain the sea pollution and its sources 2) Explain the forces in shoreline 3) Draw a flow scheme for a wastewater pre-treatment plant 4) Design the diffuser 5) Calculate the dilution of wastewater in the sea 6) Explain the marine outfall systems in Turkey and other countries

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Marine Pollution	Lecturing	
2. Week	Properties of marine environment		
3. Week	Forces in shoreline	Lecturing	
4. Week	Pretreatment requirement of wastewaters prior to marine discharge	Lecturing	
5. Week	Design of diffusers	Lecturing, problem solving	
6. Week	Design of discharge pipe	Lecturing, problem solving	
7. Week	Design examples	Lecturing, problem solving	
8. Week	Midterm exam	Exam	

9. Week	Calculation of first dilution	Lecturing, problem solving	
10. Week	Calculation of second dilution	Lecturing, problem solving	
11. Week	Calculation of third dilution	Lecturing, problem solving	
12. Week	Pipe types and installation methods	Lecturing	
13. Week	Stability of discharge pipes and weight anchors	Lecturing	
14. Week	Marine outfall systems in Turkey and other countries	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Berkün, M., (2006). Wastewater Treatment and Marine Outfall Systems. Seçkin Publications, Ankara.
Garber, W.F., Neves R.J.J. and Roberts, P.J.W. Marine Disposal Systems. Water Science and Technology, V.25 No:9, 1992.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		

Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Engineering Design	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					

Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Midterm Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Preparation for Final Exam	1	10	10
Preparation for midterm exam	1	5	5
Preliminary Study	10	2	20
Homework	1	8	8
		Total Workload	75
		Total Workload / 25.0 (s)	3,00
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Biotechnology (Çevre Biyoteknolojisi)	ENV-3019	6. Semester	3 + 0	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	This course covers the major groups of microorganisms playing role in environmental biotechnology as well as biological mechanisms that allow microorganisms to degrade and/or remove contaminants from the environment. The current environmental applications of biotechnology including bioremediation of natural resources, bioenergy production from biodegradable materials will be presented in detail and will be supported by examples from the national and international literature.
Course Content	Microbial metabolism and genetics, Enzymes and Inhibition, Bioreactors, Activated sludge process, Biological nutrient removal, Anaerobic treatment, Biofilm processes, Aerobic and anaerobic degradation of recalcitrant organic compounds, Bioremediation, Bioenergy from waste and biomass, Molecular tools

Course Learning Outcomes	● 1. Identify the role of major groups microorganisms in environmental biotechnology applications 2. Explain how biotechnology is used in environmental engineering. 3. Describe fundamental biological mechanisms that allow microorganisms to degrade and/or remove contaminants from the environment. 4. Recognize kinetic equations for microbial growth and substrate consumption. 5. Apply kinetic equations to reactors to write mass balance equations for the system. 6. Describe basic concepts in biological nutrient removal. 7. Explain the significance of various types of bioremediation in waste management. 8. Compute theoretical cell production from microbial reactions by combining cell synthesis reaction with chemical reaction. 9. Explain bioenergy production pathways from different sources. 10. Know modern biotechnological tools used to detect and identify microorganisms in environmental monitoring and analysis.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction-Microbial metabolism and genetics	Lecturing, Reading	
2. Week	Enzymes and Inhibition	Lecturing, Reading	
3. Week	Bioreactors	Lecturing, Reading	
4. Week	Activated sludge process.	Lecturing, Reading,	
5. Week	Biological nutrient removal	Lecturing, Reading	
6. Week	Anaerobic treatment	Lecturing, Reading	
7. Week	Biofilm processes	Lecturing, Reading	
8. Week	Mid-term		
9. Week	Aerobic and anaerobic degradation of recalcitrant organic compounds	Lecturing, Reading	
10. Week	Bioremediation	Lecturing, Reading	
11. Week	Bioenergy from waste and biomass	Lecturing, Reading	
12. Week	Molecular tools	Lecturing, Reading	
13. Week	Emerging environmental biotechnologies	Lecturing, Reading	

14. Week	Emerging environmental biotechnologies	Lecturing, Reading	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Environmental Biotechnology : Principles and Applications Rittmann, B.E., and McCarty, P.L., McGraw Hill, 2001
Environmental Bioengineering - Lawrence K. Wang, Joo-Hwa Tay, Stephen Tiong Lee Tay - 2010
Selected articles

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	2	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	4	100

Course Category

Course Category	Percentage
Engineering Sciences	% 40
Engineering Design	% 60

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.				X		
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Mid Term Exam Preparation	1	10	10
Final Exam Preparation	1	15	15
Class Hours (14 weeks)	14	3	42
Mid Term Exam 1	1	1	1
Further Study	14	1	14
Assignment	2	3	6
Preliminary Study	14	1	14
		Total Workload	104
		Total Workload / 25 (s)	4,16
		ECTS Credit of the Course	4

7. DÖNEM
DERS PLANLARI VE İÇERİKLERİ

7.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-4001	Wastewater Treatment	Zorunlu	3	2	0	4	5
ENV-4003	Air Pollution Control Technologies	Zorunlu	2	3	0	4	4
ENV-4005	Solid Waste Management	Zorunlu	2	2	0	3	4
ENV-4007	Term Project I	Zorunlu	0	2	0	1	3
SEC-4001	Mesleki Seçmeli Ders Grubu	Bölüm Seçmeli				8	12
		Toplam :	7	9	0	20	28

Mesleki Seçmeli Ders Grubu - SEC-4001 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-4011	Environmental Management Systems	2	0	0	2	3
ENV-4013	Environmental Economics	2	0	0	2	3
ENV-4015	Industrial Ecology	2	0	0	2	3
ENV-4017	Natural Resources and Environmental Planning	2	0	0	2	3
ENV-4019	Indoor Air Quality	2	0	0	2	3
ENV-4021	Water Pollution Control	2	0	0	2	3
ENV-4023	Anaerobic Treatment and Bioenergy	2	0	0	2	3
ENV-4025	Urban Mining	2	0	0	2	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Wastewater Treatment (Atıksuların Arıtılması)	ENV-4001	7. Semester	3 + 2	4.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory

Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Çetin KANTAR
Instructors	Prof. Dr. Çetin KANTAR
Assistants	
Course Objectives	The main objective of the course is to teach the key components of a wastewater treatment plant as well as the basic design criteria for all components.
Course Content	Wastewater properties and treatment methods, flow charts, flow rate estimation, screening, equalization basin, grit removal, primary sedimentation, biological waste treatment, secondary clarifier, stabilization ponds, trickling filter, anaerobic wastewater treatment, aerated lagoons, activated sludge, inlet/outlet structures, plant hydraulics
Course Learning Outcomes	1) Describe the sources of wastewater pollutants and their physical and chemical properties. 2) Apply the appropriate treatment method to the removal of a specific pollutant based on the type and properties of pollutants. 3) Establish a treatment flowchart 4) Apply the knowledge of basic criteria for establishing dimensions for treatment units. 5) Establish hydraulic profiles on units. 6) Function on a team or work individually to carry out a treatment plant design project.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Purpose of wastewater treatment, the selection of treatment methods (e.g., guides for source selection, chemical and physical pollutant properties, process flow charts)	Lecture, discussion	
2. Week	Flow rate calculations (iterations)	Lecture, discussion	
3. Week	Flow rate calculations (iterations)/equalization tanks (purpose, considerations, design criteria for equalization tanks, example design calculations)	Lecture, discussion, sample problem calculations	

4. Week	Screening (purpose, types of screens, and selection guide for bar racks, considerations, design criteria, discussion of alternatives, tank inlet/outlets, tank hydraulics, example design calculations)	Lecture, discussion, sample problem calculations	
5. Week	Grit removal (purpose, considerations, types and selection guide for grit removal facilities, design criteria, grit collection and removal, tank inlet/outlet structure, tank hydraulics, design example)	Lecture, discussion, sample problem calculations	
6. Week	Sedimentation (clarification) process (purpose, considerations, clarifier types and properties, tank inlet/outlet structure)	Lecture, discussion, sample problem calculations	
7. Week	Sedimentation (clarification) process (selection guides for some basic types of clarifiers, design criteria, discussion of alternatives, example design calculations, basic hydraulics, operation and maintenance)	Lecture, discussion, sample problem calculations	
8. Week	Biological wastewater treatment (purpose, considerations, types of biological wastewater treatment, design criteria, selection guides for some basic types of treatment methods)	Lecture, discussion	
9. Week	Aerated lagoon/trickling filter/biological rotating disk reactors (purpose, consideration, design criteria, design examples)	Lecture, discussion, sample problem calculations	
10. Week	Activated sludge and modifications, aeration methods, design criteria, alternatives, design example	Lecture, discussion, sample problem calculations	
11. Week	Activated sludge and modifications, aeration methods, design criteria, alternatives, design example	Lecture, discussion, sample problem calculations	
12. Week	Anaerobic wastewater treatment (Types of reactors, biological nutrient removal)	Lecture, discussion, sample problem calculations	

13. Week	Secondary sedimentation tank design	Lecture, discussion, sample problem calculations	
14. Week	Term project, discussion and short presentations	Lecture, discussion	

Resources

Recommended Sources
1) Wastewater Treatment Plants: Planning, Design and Operation, Syed R. Qasim, Technpmic Publishing CO., INC,1998. 2) Wastewater Treatment Plant Design, Aarne Vesilind ,IWA Publishing, 2003. 3) Theory and Practice of Water and Wastewater Treatment, Ronald L.Droste, John Wiley & Sons, 1997

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	11	10
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Design	% 90

Engineering Sciences	% 10

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	**Relations**					
	0	**1**	**2**	**3**	**4**	**5**
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modelling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.			X			
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.		X				

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam			
Mid Term Exam 1			
Homework	11	2	22
Application/Practice			
Class Hours (14 weeks)	14	5	70
Fieldwork			
Presentation/Seminar			
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	8	8
Project (s)	1	20	20
		Total Workload	130
		Total Workload / 25.5 (s)	5.09
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS

Air Pollution Control Technologies (Hava Kirliliği Kontrolü)	ENV-4003	7. Semester	2 + 2	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Sibel MENTEŞE
Instructors	Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Identifying the fundamentals of air pollution and its control
Course Content	General principles and approaches in air pollution. Basic processes in air pollution control. Best available air pollution control technologies in important industrial sectors. Lawful applications and emission standards. Incineration emission control and treatment. Air pollution control in vehicles. Control at source. Exhaust emissions control approaches. Catalytic converter applications and emission standards. Pollution control approaches to other polluting sources and applications.
Course Learning Outcomes	1) Defines and classifies the air pollution 2) Explains the air pollutants and the sources 3) Defines the global air pollution problems: climate change, greenhouse effect, acid rains, and damage in ozone layer 4) Calculates the amount of air pollutants reaching on the ground 5) Defines the atmospheric reactions occurring among the air pollutants 6) Plans to air pollution measurements 7) Designs the best-available technology to control air pollution

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

1. Week	Scope of air pollution	lectures, discussion, reading	textbooks
2. Week	Air pollutants	lectures, discussion, reading	textbooks
3. Week	Legislation on air pollution control	lectures, discussion, reading	textbooks
4. Week	Meteorology	lectures, discussion, reading	textbooks
5. Week	Climates and climate change models	lectures, discussion, reading	textbooks
6. Week	Greenhouse effect	lectures, discussion, reading	textbooks
7. Week	Acid rain	lectures, discussion, reading	textbooks
8. Week	Formation mechanisms of particulates	lectures, discussion, reading	textbooks
9. Week	Formation mechanisms of gaseous pollutants	lectures, discussion, reading	textbooks
10. Week	Formation reactions of secondary air pollutants	lectures, discussion, reading	textbooks
11. Week	Measurement techniques of air pollutants	lectures, discussion, reading	textbooks

12. Week	Dispersion of air pollutants emitted from a point source	lectures, discussion, reading	textbooks
13. Week	Removal methods of gaseous pollutants	lectures, discussion, reading	textbooks
14. Week	Removal methods of particulate pollutants	lectures, discussion, reading	textbooks
15. Week	Final exam	individual work	Textbooks and lecture notes
16. Week	Final exam	individual work	Textbooks and lecture notes

Resources

Recommended Sources
Heumann WL, Industrial Air Pollution Control Systems, McGraw Hill pub., 1997.
De Nevers R, Air Pollution Control Engineering, McGraw Hill Education, 1999.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework		
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Makeup Exam		
Other		
Total	2	40

End-Term Studies	Quantity	Percentage
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Engineering Design	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	4	4
Class Hours (14 weeks)	14	4	56
Research & Project	1	11	21
Mid Term Exam 1	1	4	4
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	5	5
		Total Workload	100
		Total Workload / 25 (s)	4.0
		ECTS Credit of the Course	4

ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Solid Waste Management (Katı Atık Yönetimi)	ENV-4005	7. Semester	2 + 2	3.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of this course is to inform students about solid waste management and design of related facilities.
Course Content	This course comprises the fundamentals of solid waste management, description and classification of solid wastes, collection and transfer of solid waste, recycling, landfilling, incineration, pyrolysis, composting and operation of disposal facilities.
Course Learning Outcomes	1) Describe the solid waste management system theory 2) Calculate the number of waste containers required for a city 3) Calculate the number of garbage trucks required for a city 4) List the landfill site selection criteria 5) Design a composting plant for the organic solid waste 6) Evaluate the possibility for the incineration of waste generated in a city 7) Classify the medical waste disposal methods

Weekly Course Content

Week	Topics	Teaching and Learning	Study Materials

		Methods and Techniques	
1. Week	Introduction to solid waste management, definition of solid waste, solid waste disposal methods	Lecturing	
2. Week	Fundamentals of solid waste management, sources and composition of municipal solid waste (MSW)	Lecturing	
3. Week	Physical, chemical and biological properties of MSW	Lecturing	
4. Week	Solid waste generation and storage	Lecturing	
5. Week	Collection of MSW, transfer and transport of MSW	Lecturing	
6. Week	Basics of composting, composting methods	Lecturing	
7. Week	Design and operational considerations for composting process	Lecturing	
8. Week	Midterm exam	Exam	
9. Week	Landfill types, siting considerations	Lecturing	
10. Week	Composition and characteristics, generation, movement and control of landfill gases	Lecturing	
11. Week	Composition and characteristics, generation, movement and control of leachate	Lecturing	
12. Week	Closure and rehabilitation of landfills	Lecturing	
13. Week	Incineration of MSW and other thermal conversion technologies	Lecturing	
14. Week	Medical waste management and legislations	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Tchobanoglous, G., Theisen, H. and Vigil, S (1993). Integrated Solid Waste Management, Engineering Principles and Management Issues. McGraw-Hill, Inc., Singapore.
Tchobanoglous, G., Kreith, F. (2002). Handbook of Solid Waste Management. McGraw-Hill, Inc., USA.

John Pichtel (2014). Waste Management Practices Municipal, Hazardous, and Industrial (Second Edition). CRC Press, USA.
Öztürk, İ., (2010). Katı Atık Yönetimi ve AB Uyumlu Uygulamaları. İSTAÇ Teknik Kitaplar Serisi, İstanbul.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 60
Engineering Design	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					

Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.						
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2

Midterm Exam	1	2	2
Class Hours (14 weeks)	14	4	56
Preparation for Final Exam	1	10	10
Preparation for midterm exam	1	10	10
Preliminary Study	10	1	10
Homework	1	10	10
Research&Project			
		Total Workload	100
		Total Workload / 25.0 (s)	4.00
		ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Term Project I (Bitirme Ödevi I)	ENV407	7. Semester	0 + 2	1.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr. Lect. Akın ALTEN

Instructors	Dr. Lect. Akın ALTEN Prof. Dr. Önder AYYILDIZ Prof. Dr. Çetin KANTAR Prof. Dr. Hasan Göksel ÖZDİLEK Prof. Dr. Nilgün AYMAN ÖZ Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Hypothesis formation and testing it and evaluation of his/her work in the field of Environmental Engineering
Course Content	Hypothesis formation and testing it and evaluation of his/her work in the field of Environmental Engineering
Course Learning Outcomes	1) Define an environmental contamination problem he/she observes 2) List sources, results, impacts, fate in the future of environmental contamination problem 3) Define sampling/observation program on this environmental problem 4) Sample/monitor the problem/situation scientifically 5) Analyse samples he/she collects, interpret the results 6) Use statistical methods or mathematical methods to interpret the analyses' results 7) Submit mid/all scientific/technical report of his/her own

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Meeting with students, discussion on what they can perform, selection of subjects	Discussion	
2. Week	Introduction of the report, literature review, preparation of experimental procedure	Discussion	
3. Week	Material request, collection of consumables, safety precautions	Discussion	
4. Week	Sampling and start of experiments/testing	Practice	
5. Week	Completion of literature review, relation of the work with examples in the world	Reading	
6. Week	Continuation of sampling and analyses	Practice	

7. Week	Continuation of sampling and analyses	Practice	
8. Week	Discussion on how to review experimental/test results	Discussion	
9. Week	Discussion on submission of results/report	Discussion	
10. Week	Continuation of sampling and analyses	Practice	
11. Week	Continuation of sampling and analyses	Practice	
12. Week	Statistical evaluation/mathematical methods used in the work	Making critique	
13. Week	Formation of the reports	Report writing	
14. Week	Submission of the reports	Report writing and presentation	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Related articles and books

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)		
Homework		
Quiz (zes)		
Project (s)	1	100
Laboratory		
Final Exam		
Final Makeup Exam		
Other		

Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 30
Mathematics and Basic Sciences	% 30
Engineering Design	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		

Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	2	28
Literature Research/Project	1	48	48
		Total Workload	76
		Total Workload / 25.0 (s)	3.02
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS

Environmental Management Systems (Çevre Yönetim Sistemleri)	ENV-4011	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Sibel MENTEŞE
Instructors	Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Synthesis of the definition and aim of the Environmental Management Systems. Assessment of the associations between environmental policy and the environmental management systems in Turkey and worldwide on a historical basis.
Course Content	Definition and aim of Environmental Management System. Terms and concepts in Environmental Management System. Functions that are affected by Environmental Management Systems. Structure of Environmental Management System. Environmental policy, environmental management program, environmental education, certification of Environmental Management System. Control of certification. Environmental procedures, emergency preparations and things to do under emergency, processing and measurement. Environmental Management System Governance Environmental Management System ISO 14000 and Quality Standards System ISO 9000 relationship. Current status and applications in Turkey.
Course Learning Outcomes	1) Defines the terms and conditions of Environmental Management Systems 2) Lists the important functions that are affected by Environmental Management Systems 3) Explains the advancement of environmental policies historically 4) Lists the common environmental management systems worldwide 5) Explains the environmental legislation in Turkey 6) Explains the relationship among environment, quality, and economics 7) Defines the chronological overview of environmentalist activities

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Definition of Environmental Management Systems	lecture, project, seminar	Textbooks, legislation and standards
2. Week	Historical progress of environmentalist activities worldwide	lecture, project, seminar	Textbooks, legislation and standards
3. Week	Historical progress of environmentalist activities in Turkey	lecture, project, seminar	Textbooks, legislation and standards
4. Week	Environmental policies	lecture, project, seminar	Textbooks, legislation and standards
5. Week	Environmental education, certification of Environmental Management System.	lecture, project, seminar	Textbooks, legislation and standards
6. Week	Environmental economics	lecture, project, seminar	Textbooks, legislation and standards
7. Week	Natural resources management	lecture, project, seminar	Textbooks, legislation and standards
8. Week	Historical overview of Environmental Legislations in Turkey	lecture, project, seminar	Textbooks, legislation and standards
9. Week	Current legislations for Air and noise pollution control	lecture, project, seminar	Textbooks, legislation and standards
10. Week	Current legislations for Water pollution control	lecture, project, seminar	Textbooks, legislation and standards

11. Week	Current legislations for Solid waste pollution control	lecture, project, seminar	Textbooks, legislation and standards
12. Week	Environmental procedures, emergency preparations and things to do under emergency, processing and measurement.	lecture, project, seminar	Textbooks, legislation and standards
13. Week	Environmental Management System Governance, Environmental Management System ISO 14000 and Quality Standards System ISI 9000 relationship. Current status and applications in Turkey.	lecture, project, seminar	Textbooks, legislation and standards
14. Week	EMAS (Environmental Management and Auditing System)	lecture, project, seminar	Textbooks, legislation and standards
15. Week	Final exam	individual work	Textbooks, legislation, standards and lecture notes
16. Week	Final exam	individual work	Textbooks, legislation, standards and lecture notes

Resources

Recommended Sources
Tietenberg, T., Environmental and Natural Resource Economics, 7th Edition, Addison Wesley, 2006, USA.
Related regulations and international standards

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework		
Quiz (zes)		
Project (s)	1	10

Laboratory		
Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 50
Support Courses	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					

Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	**1**	**2**	**3**	**4**	**5**
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	**Quantity**	**Duration (Hour)**	**Total Workload (Hour)**
Final Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	15	14
Mid Term Exam Preparation	1	10	9
Research & Project	1	20	20
Mid Term Exam 1	1	2	2
		Total Workload	75

Total Workload / 25.5 (s)	3.0
ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Natural Resources and Environmental Planning (Doğal Kaynaklar ve Çevre Planlama)	ENV-4017	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel Özdilek
Instructors	Prof. Dr. Hasan Göksel Özdilek
Assistants	

Course Objectives	Growing populations in less developed countries and escalating incomes in developed countries are causing increasing demands on the Earth's resources. Therefore, there are many unresolved conflicts over the use of natural resources and the conservation of the environment (environmental quality). In this course the balance between consumption and protect natural resources will be discussed.
Course Content	
Course Learning Outcomes	1) Define sustainable common property regimes. 2) Classify natural resources. 3) Emphasize water resources in different sectors, establish relationship between water quality and economic activities, comment on sustainability of water resources. 4) To be aware of problems associated with sharing of common goods (resources). 5) Discuss effects of global climate change in the world. 6) Underline renewable and innovative energy resources. 7) Develop pathway for sustainable resource utilization.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Visions of the future. The basic pessimist model and the best optimist model.	**Lecturing** **assignments** **discussion** **practice** **case study** **reading**	
2. Week	Economics of the Environment: An Overview.		
3. Week	Property rights, externalities, and environmental problems.		
4. Week	The Allocation of Depletable and Renewable Resources: An Overview.		
5. Week	Depletable and nonrecyclable energy resources: Natural gas, petroleum, coal, and uranium.		
6. Week	Recyclable resources: Minerals, paper, glass, metals, etc.		
7. Week	Replenishable but deplorable resources: Water. Importance of water in agriculture.		
8. Week	Storable, renewable resources: Forests.		
9. Week	Renewable common-property resources: Fisheries and Other species.		

10. Week	Generalized resource scarcity.		
11. Week	Economics of resource utilization and pollution control.		
12. Week	Stationary-source local air pollution. Regional and Global air pollutants (Acid rain and atmospheric modification), Mobile source air pollution.		
13. Week	Water pollution and toxic substances		
14. Week	Development, Poverty, and the Environment. The Quest for Sustainable Development.		
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
1) National Research Council of the National Academies (USA). (2007). Models in Environmental Regulatory Decision Making, National Academy Press. Washington, D. C., ABD. 2) Conroy, M.J. ve Peterson, J.T. (2013). Decision Making in Natural Resource Management: A Structured, Adaptive Approach. Wiley, USA. ISBN: 978-0-470-67174-0. 3) Vig, N. J. ve Kraft, M. E. (2012). Environmental Policy: New Directions for the Twenty-first Century. CQ Press. Thousand Oaks, CA, ABD.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	25
Homework	3	5
Course Attendance		5
Research	1	5
Seminars		
Quiz (zes)		
Project (s)		

Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Design	
Mathematics and Basic Sciences	
Mathematics and Basic Sciences	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.			X			
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.		X				
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.		X				

Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	16	14x2	28
Doing Research	1	1x8	8
Homeworks	3	3x3	9
Preparation	12	12x2	24
Mid Term Exam Preparation	1	1x2	2
Final	1	1x4	4
Total Workload			75
Total Workload / 25.0 (s)	3		3
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Environmental Economics (Çevre Ekonomisi)	ENV-4013	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	
Course Objectives	The investigation of how economic activities are shaped taking into account of the principles of optimum protection of natural resources and environmental elements. Economics focusing only on benefit-cost analysis is missing one point: ecosystem sustainability. This course takes into account ecosystem sustainability in different economic sectors' planning.
Course Content	Development of ideas on natural resources and the environment Economics and policies in fisheries (catch and fish farms) Economics and policies in forestry Agriculture and the environment Economics and policies in mining, petroleum and natural gas Economics of environmental degradation and policies (public health, agricultural activities, aesthetics, tourism, etc.) International (transboundary) environmental problems Ecosystem protection approaches in developing and industrialized nations Valuation methods for environmental costs and benefits Economics of protected areas, genetic reserves, and natural wonders

	Economics principles in waste management Economical principles in industrial and hazardous wastes Effects of environmental politics in environmental economics Consumption without exhaustion of natural resources and environmental planning in economics
Course Learning Outcomes	1) Define the difference between classical economy and economic order that takes environmental quality into account 2) List the problems in economy as a result of environmental degradation 3) Recollect the effects of optimum level of environmental degradation on the economy 4) Calculate cost-benefit analysis and cost-effectiveness analysis 5) Explain the effects of environmental policy on environmental economy

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Development of ideas on natural resources and the environment (an introduction)		
2. Week	Economics and policies in fisheries (catch and fish farms)		
3. Week	Economics and policies in forestry (natural forests and commercial forests)		
4. Week	Agriculture and the environment (short term and long term economical and ecological effects)		
5. Week	Economics and policies in mining, petroleum and natural gas (c		
6. Week	Economics of environmental degradation and policies (public health, agricultural activities, aesthetics, tourism, etc.). Cost analysis		
7. Week	International (transboundary) environmental problems		
8. Week	Ecosystem protection approaches in developing and industrialized nations		
9. Week	Valuation methods for environmental costs and benefits (Holistic approach)		
10. Week	Economics of protected areas, genetic reserves, and natural wonders		

11. Week	Economics principles in waste management		
12. Week	Economical principles in industrial and hazardous wastes		
13. Week	Effects of environmental politics in environmental economics		
14. Week	Consumption without exhaustion of natural resources and environmental planning in economics		
15. Week	Final Exam	Evaluation	
16. Week	Final Exam	Evaluation	

Resources

Recommended Sources
Colstad, C. D. (2010) Environmental Economics. (2. Baskı. Oxford University Press, ABD
Tietenberg, T. ve Lewis, L. (2008) Environmental and Natural Resource Economics. (8. Baskı). Addison-Wesley, ABD

Assessment

Measurement and Evaluation Methods and Techniques
Assignments' return appropriately, active participation in class, performance in class, class attendance and project submissions will be evaluated together.

Course Category

Course Category	Percentage
Support Courses	% 4

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	

Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.		X				
Function and take responsibility individually and on multi-disciplinary teams.			X			
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.					X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.					X	
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Mid Term Exam 1	1	1	1
Assignment 1	4	1	4

Assignment 2	3	3	9
Application/Practice	1	6	6
Research&Project	2	4	8
Preliminary Study	14	1	14
Class Hours (14 weeks)	14	2	28
		Total Workload	71
		Total Workload / 25.5 (s)	2.78
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Industrial Ecology (Endüstriyel Ekoloji)	ENV-4015	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	
Instructors	
Assistants	
Course Objectives	The main goal of this course is to give students an overview knowledge of theory, analytical methodology and practical challenges in the field of industrial ecology. Emphasis is given to the understanding of how environmental assessment and improvements are carried out with support from systems analytical methods such as material flow, risk, life cycle, energy, and eco-efficiency analyses.
Course Content	Biological and industrial ecosystems, anthropogenic resource cycles in space and time, energy in industrial ecology, water in industrial ecology, social dimensions of industrial ecology, life cycle assessments, material flows of national economies, earth system engineering and management.
Course Learning Outcomes	1) Define and describe industrial ecology. 2) Express the relationships between production, consumption, sustainability, and industrial ecology. 3) Show how industrial ecology serves as a framework for the consideration of environmental and sustainability-related aspects of science and technology 4) Introduce quantitative analytical methods and investigate their application and implications to industrial ecology.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to industrial ecology	Lecturing, reading	
2. Week	Biological and industrial ecosystems	Lecturing, reading	
3. Week	Anthropogenic resource cycles in space and time	Lecturing, reading, problem solving	
4. Week	Energy in industrial ecology	Lecturing, reading,	
5. Week	Water in industrial ecology	Lecturing, reading, problem solving	

6. Week	Social dimension of industrial ecology	Lecturing, reading, project	
7. Week	Sustainable engineering and design for environmental	Lecturing, reading, problem solving	
8. Week	Midterm	Written exam	
9. Week	Life cycle assessment	Lecturing, reading, project	
10. Week	Life cycle assessment	Lecturing, reading, problem solving	
11. Week	Material flows of national economies	Lecturing, reading, project	
12. Week	Modeling in industrial ecology	Lecturing, reading, problem solving	
13. Week	Modeling in industrial ecology	Lecturing, reading, project	
14. Week	Earth systems engineering and management	Lecturing, reading, problem solving	
15. Week	Final Exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
1. Industrial Ecology and Sustainable Engineering, by T.E. Graedel and B.R. Allenby. 2010. 2. Taking Stock of Industrial Ecology, eds. Clift and Druckman, 2016. Available open access: http://link.springer.com/book/10.1007%2F978-3-319-20571-7.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Project and presentation	1	20

Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.		X				
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.		X				
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					

Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.						X
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Final Exam Preparation	1	5	5
Project and presentation	1	20	20
Mid Term Exam 1	1	2	2
Preliminary Study	14	1	14
Class Hours (14 weeks)	14	2	28
Mid Term Exam Preparation	1	5	5
Quiz 1			
		Total Workload	76
		Total Workload / 25.0 (s)	3.04
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Indoor Air Quality (İç Ortam Hava Kalitesi)	ENV-4021	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Sibel MENTEŞE
Instructors	Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Comparing the biological, organic, and inorganic sources, affecting the building health. Thermal comfort parameters and physical parameters influencing the indoor air quality. Case studies on “healthy buildings” conducted in Turkey (including Occupational safety and health of workers) and worldwide; numerous quality and certification systems (LEED, Blue angel, GUT, etc.).
Course Content	Biological, organic, and inorganic sources, affecting the building health. Thermal comfort parameters and physical parameters influencing the indoor air quality. Case studies on “healthy buildings” conducted in Turkey (including Occupational safety and health of workers) and worldwide; numerous quality and certification systems (LEED, Blue angel, GUT, etc.).
Course Learning Outcomes	1) Defines the scope of indoor air quality and indoor air pollutants 2) Classifies the indoor air pollutants according to their compositions and sources 3) Plans indoor air pollution minimization

	4) Designs the best-available techniques to treat the indoor air pollutants 5) Explains the quality of indoor air according to acceptable limit values 6) Lists the green building design procedure 7) Relates the indoor air quality with energy saving purposes in buildings

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The scope of indoor air quality	lecture, project, seminar	Textbooks, legislation, related standards and applications
2. Week	The types and sources of common indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
3. Week	Organic indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
4. Week	Biological indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
5. Week	Inorganic indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
6. Week	Radioactive indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
7. Week	Thermal indoor comfort parameters and physical parameters influencing the air quality	lecture, project, seminar	Textbooks, legislation, related standards and applications

8. Week	Influence of outdoor air pollution to indoor air quality	lecture, project, seminar	Textbooks, legislation, related standards and applications
9. Week	Current occupational and non-occupational limit values and recommendations for meeting safety indoor air quality conditions	lecture, project, seminar	Textbooks, legislation, related standards and applications
10. Week	Minimization techniques of indoor air pollution	lecture, project, seminar	Textbooks, legislation, related standards and applications
11. Week	Measurement techniques of indoor air pollutants	lecture, project, seminar	Textbooks, legislation, related standards and applications
12. Week	Green building design steps	lecture, project, seminar	Textbooks, legislation, related standards and applications
13. Week	Green building certification and rating systems (e.g. LEED)	lecture, project, seminar	Textbooks, legislation, related standards and applications
14. Week	Association between energy conservation in the buildings and indoor air quality	lecture, project, seminar	Textbooks, legislation, related standards and applications
15. Week	Final exam	individual work	Textbooks, legislation, related standards, applications and course notes
16. Week	Final exam	individual work	Textbooks, legislation, related standards,

			applications and course notes

Resources

Recommended Sources
Godish, T. Indor Environmental Quality, 2001, CRC Press.
Hess-Kosa, K., Indoor Air Quality: sampling methodologies, 2002, CRC Press.
Regulations and related standards. Best practices in green building design.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework		
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Engineering Design	% 50
Engineering Sciences	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	12	12
Mid Term Exam Preparation	1	10	10
Preliminary Study	11	1	11
Research & Project	1	10	10
Mid Term Exam 1	1	2	2
		Total Workload	75
		Total Workload / 25.5 (s)	3.00
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Water Pollution Control (Su Kirliliği Kontrolü)	ENV-4021	7. semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	The properties of pollutants are understood. The impacts of pollution on water quality are determined. Sources and fates of water pollutants are identified. Their transport in surface and groundwater is examined based on theoretical and mathematical models.
Course Content	Water quality parameters, scaling and corrosion, open carbonate system, saprobic system, thermal pollution, microbial pollution, eutrophication, modeling surface and groundwater pollution, developing water quality standards..
Course Learning Outcomes	1) Provide knowledge of basic science and engineering. 2) Understand assessing pollution characteristics of surface water and groundwater. 3) Learn about transport and distribution of pollutants in air, water, and soil phases at equilibrium and transient conditions. 4) Provide necessary engineering tools to control the pollution from spreading to uncontaminated sites. 5) Learn how to draw water quality standards. 6) Learn how to apply basic theoretical models to stream, river, lake, and groundwater pollution.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecturing	
2. Week	Water quality parameters	Lecturing, reading	

3. Week	Water quality parameters	Lecturing, reading	
4. Week	Scaling and corrosion	Lecturing, reading	
5. Week	Open carbonate system	Lecturing, reading, problem solving	
6. Week	Saprobic system	Lecturing, reading	
7. Week	Carbonate chemistry	Lecturing, reading, problem solving	
8. Week	Midterm	Written exam	
9. Week	Thermal pollution	Lecturing, reading	
10. Week	Microbial pollution and disinfection	Lecturing, reading, problem solving	
11. Week	Modeling stagnant water pollution	Lecturing, reading, problem solving	
12. Week	Modeling stream water pollution	Lecturing, reading, problem solving	
13. Week	Toxic and epidemiological studies	Lecturing, reading	
14. Week	Water quality standards	Lecturing, reading, problem solving	
15. Week	Final	Written exam	
16. Week	Final	Written exam	

Resources

Recommended Sources
Richard Helmer, R., Hespanhol (1997) Water Pollution Control - A Guide to the Use of Water Quality Management Principles, World Health Organization, London.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.			X			
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					

Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.		X				
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Final Exam Preparation	1	10	10
Mid Term Exam Preparation	1	5	5
Preliminary Study	14	2	28
Mid Term Exam 1	1	2	2
		Total Workload	75
		Total Workload / 25 (s)	3.00
		ECTS Credit of the Course	3

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Anaerobic Treatment and Bioenergy (Anaerobik Arıtma ve Biyoenerji)	ENV-4023	7. Semester	2 + 0	2.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Nilgün AYMAN ÖZ
Instructors	Prof. Dr. Nilgün AYMAN ÖZ
Assistants	
Course Objectives	This course covers basic principles of anaerobic biotechnology, mechanism of anaerobic processes including kinetics, microbiology and biochemistry, treatment applications, inhibition in anaerobic treatment, design and control of the anaerobic reactors, bioenergy from waste and renewable resources.
Course Content	
Course Learning Outcomes	1) explain basic concepts of anaerobic biotechnology 2) define anaerobic metabolism and steps of the biochemical pathways 3) know major organisms playing role in anaerobic systems 4) list monitoring and control parameters of the anaerobic systems 5) defines inhibitory substances and inhibition phenomena in anaerobic digestion/treatment 6) categorize anaerobic reactors 7) design anaerobic reactors used in the wastewater treatment and waste digestion.

	8) explain bioenergy production from different sources

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction- Fundamentals of anaerobic biotechnology	Lecturing, Reading	
2. Week	Biochemistry, microbiology and kinetics of anaerobic digestion	Lecturing, Reading	
3. Week	Influence of environmental factors and toxic substances on anaerobic systems and inhibition	Lecturing, Reading	
4. Week	Process monitoring and control.	Lecturing, Reading,	
5. Week	Molecular techniques used in anaerobic biotechnology	Lecturing, Reading	
6. Week	Anaerobic reactors	Lecturing, Reading	
7. Week	Anaerobic reactor configurations; completely stirred tank reactor, contact reactor,	Lecturing, Reading	
8. Week	Mid-term		
9. Week	Upflow sludge-bed reactors, expanded granular sludge bed reactors,	Lecturing, Reading,	
10. Week	Hybrid and fluidized- bed reactors, anaerobic filters, anaerobic sequencing batch reactors,	Lecturing, Reading	
11. Week	Two-phase systems.	Lecturing, Reading,	
12. Week	Bioenergy production-from waste, sludge, manure and energy crops.	Lecturing, Reading,	
13. Week	Biogas processing and utilization as an energy source.	Lecturing, Reading, Presentations	
14. Week	Biohydrogen production, biofuels, microbial fuel cells.	Lecturing, Reading, Presentations	
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Environmental Anaerobic Technology: Applications and New Developments, Herbert H. P. Fang, Imperial College, 2010.
Anaerobic Biotechnology for Bioenergy Production Principles and Applications, Samır Kumar Khanal, Wiley, 2008
Environmental Bioengineering - Lawrence K. Wang, Joo-Hwa Tay, Stephen Tiong Lee Tay - 2010
Anaerobik Biyoteknoloji ve Atık Arıtımındaki Uygulamalar, İ. Öztürk, Su Vakfı Yayınları, 2000. Selected articles

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	1	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	3	100

Course Category

Course Category	Percentage
Engineering Sciences	% 40
Engineering Design	% 60

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes	Relations

Contribution Level	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.					X	
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Presentation/Seminar	1	5	5
Mid Term Exam Preparation	1	5	5
Final Exam Preparation	1	5	5
Class Hours (14 weeks)	14	2	28
Mid Term Exam 1	1	1	1
Further Study	14	1	14
Preliminary Study	14	1	14
Assignment	1	5	5
		Total Workload	75
		Total Workload / 25 (s)	3
		ECTS Credit of the Course	3

8. DÖNEM

DERS PLANLARI VE İÇERİKLERİ

8.Yarıyıl							
Ders Kodu	Ders Adı	Ders Tipi	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-4002	Industrial Wastewater Treatment	Zorunlu	1	2	0	2	3
ENV-4004	Hazardous Waste Management	Zorunlu	1	2	0	2	5
ENV-4006	Water Treatment	Zorunlu	2	3	0	4	5
ENV-4008	Term Project II	Zorunlu	0	2	0	1	3
ENV-4026	Solid Waste Laboratory	Zorunlu	0	0	2	1	2
SEC-4002	Mesleki Seçmeli Ders Grubu	Bölüm Seçmeli				6	12
		Toplam :	4	9	2	16	30

Mesleki Seçmeli Ders Grubu - SEC-4002 Bölüm Seçmeli						
Ders Kodu	Ders Adı	Teorik	Uygulama	Laboratuvar	Yerel Kredi	AKTS
ENV-4010	Exposure and Risk Assessment	2	0	0	2	4
ENV-4012	Watershed Planning	2	0	0	2	4
ENV-4014	Solid Waste Recycling Technologies	2	0	0	2	4
ENV-4016	Energy, Sustainability and the Environment	2	0	0	2	4
ENV-4018	Advanced Treatment Technologies	2	0	0	2	4
ENV-4020	Sludge Management	2	0	0	2	4
ENV-4022	Engineering Ethics	2	0	0	2	4
ENV-4024	Treatment Plant Hydraulics	2	0	0	2	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Industrial Wastewater Treatment (Endüstriyel Atıksuların Arıtılması)	ENV-4002	8. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Nilgün AYMAN ÖZ
Instructors	Prof. Dr. Nilgün AYMAN ÖZ
Assistants	
Course Objectives	To give a description of industrial pollution and industrial system, characteristics and treatment of industrial wastewaters, related regulations, pollution control, process/pollution profile, flow measurement equipment and examples of different industries. Topics also

	includes detailed discussion on types of preliminary, physical, chemical, and biological treatment used in the treatment of the industrial wastewaters.
Course Content	This course covers description of industrial pollution and industrial system, characteristics and treatment of industrial wastewaters, related regulations, pollution control, process/pollution profile, flow measurement equipment and examples of different industries. Topics also includes detailed discussion on types of preliminary, physical, chemical, and biological treatment used in the treatment of the industrial wastewaters.
Course Learning Outcomes	1) Explain characteristics and classification of industrial wastewaters according to their sources 2) Summarize legal regulations for the treatment of industrial wastewater in Turkey are necessary. 3) Develop a process profile for a facility by analyzing the amounts of water used in the process of an industrial facility and the wastewater generated. 4) Develop a pollution profile for significant contaminant parameters 5) Design a treatment facility for an industry based on process and pollution profile. 6) Estimate combined treatment methods (preliminary/physical/chemical/biological/advanced) for the elimination of specific pollutants. 7) Describe characteristics of the wastewaters of different industries 8) Determine appropriate treatment facility for the treatment of different industrial wastewaters.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	General: The course content, assignments and determination of homework Introduction to industrial pollution and industrial system designs	Lecturing, ReadingLecture	
2. Week	Characterization of industrial wastewaters, sources and properties. Industrial wastewater regulations in water pollution and control regulation.	Lecturing, ReadingLecture	
3. Week	Pollution and process profile, reduction of pollution loads and in-plant control.	Lecturing, ReadingLecture	

4. Week	Process selection for industrial wastewater. Flow measurement methods.	Lecturing, Reading, assignmentLecture	
5. Week	Treatment methods: Pre-treatment process in industrial wastewater	Lecturing, ReadingLecture	
6. Week	Treatment methods: Physicochemical treatment applications	Lecturing, ReadingLecture	
7. Week	Treatment methods: Biological treatment applications, alternative treatment approaches in industrial wastewater treatment.	Lecturing, ReadingLecture	
8. Week	Mid-term		
9. Week	Examination of industries: food industry; milk and dairy products industry, sugar,	Lecturing, Reading, PresentationLecture	
10. Week	Examination of industries: meat and meat products industry	Lecturing, Reading, PresentationsLecture	
11. Week	Examination of industries: chemical industries	Lecturing, Reading, PresentationsLecture	
12. Week	Examination of industries: textile industry,	Lecturing, Reading, PresentationsLecture	
13. Week	Examination of industries: paper industry, leather and metal industry	Lecturing, Reading, PresentationsLecture	
14. Week	Site visit		
15. Week	Final		
16. Week	Final		

Resources

Recommended Sources
Harry M. Freeman., Industrial pollution prevention handbook , New York : McGraw-Hill, c1995.
Talha Gönüllü, Endüstriyel Kirlenme Kontrolü, Cilt 1, Birsen Yayınevi, 2004.
Industrial water pollution control, W.Wesley Eckenfelder, Jr., McGraw- Hill series, Second edition, 1989.
Wastewater engineering, treatment, disposal and reuse, Metcallf Eddy, McGraw- Hill series, Third edition, 1991

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework	1	20
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	3	100

Course Category

Course Category	Percentage
Engineering Sciences	% 40
Engineering Design	% 60

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	

Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Presentation/Seminar	1	5	5
Mid Term Exam Preparation	1	15	15
Final Exam Preparation	1	20	20
Class Hours (14 weeks)	14	3	42
Mid Term Exam 1	1	2	2

Further Study	14	2	28
Research&Project	1	15	15
Preliminary Study	14	1	14
		Total Workload	125
		Total Workload / 25 (s)	5
		ECTS Credit of the Course	5

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Hazardous Waste Management (Tehlikeli Atıkların Kontrolü)	ENV-4004	8. Semester	1 + 2	2.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	

Course Objectives	To make a definition of hazardous waste, occurrence of problem and approaches. Disposal, fate and traces of hazardous waste. Sources and generation of hazardous waste. Transfer and transport of hazardous waste. Hazardous waste management, determination and listing. Treatment, storing and disposal of hazardous waste. Hazardous waste treatment techniques. Reducing, reusing and recycling of hazardous waste. Thermal, physical and chemical methods. Hazardous waste landfilling and rehabilitation. Laws and legislations on hazardous waste. Case studies.
Course Content	Hazardous waste, occurrence of problem and approaches. Disposal, fate and traces of hazardous waste. Sources and generation of hazardous waste. Transfer and transport of hazardous waste. Hazardous waste management, determination and listing. Treatment, storing and disposal of hazardous waste. Hazardous waste treatment techniques. Reducing, reusing and recycling of hazardous waste. Thermal, physical and chemical methods. Hazardous waste landfilling and rehabilitation. Laws and legislations on hazardous waste. Case studies.
Course Learning Outcomes	1) Classifies the hazardous wastes and compares with hazardous materials 2) Defines the exposure assessment and risk management 3) Plans hazardous waste handling according to waste minimization principles 4) Designs the best-available treatment and disposal techniques for hazardous wastes 5) Explains the monitoring methods of disposed hazardous wastes over time 6) Defines the fate of hazardous waste, spilling in soil, air and water sources 7) Plans the good applicable emergency plans for handling the hazardous wastes in case of an accident

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Sources and effects of hazardous wastes and materials	lectures, assignment, project, seminar	

2. Week	Exposure and risk assessment	lectures, assignment, project, seminar	
3. Week	Waste minimization techniques	lectures, assignment, project, seminar	
4. Week	Classification criteria for wastes as “hazardous”	lectures, assignment, project, seminar	
5. Week	Sampling, preservation, and handling of hazardous wastes	lectures, assignment, project, seminasr	
6. Week	Transportation procedures of hazardous waste according to international and national legislations	lectures, assignment, project, seminar	
7. Week	Liquid-hazardous waste treatment procedures (biological and chemical methods)	lectures, assignment, project, seminar	
8. Week	Gaseous-hazardous waste treatment procedures (absorption, adsorption, and flaring)	lectures, assignment, project, seminar	
9. Week	Solid-hazardous waste treatment procedures and dispersion of hazardous wastes between soil and water sources	lectures, assignment, project, seminar	
10. Week	Liquid hazardous waste treatment procedures and land disposal techniques	lectures, assignment, project, seminar	
11. Week	Thermal destruction methods (combustion, gasification, liquefication, and wet oxidation)	lectures, assignment, project, seminar	
12. Week	Remedial actions for surface water and groundwater control	lectures, assignment, project, seminar	

13. Week	Remedial actions for air pollution control (particulate and gaseous wastes)	lectures, assignment, project, seminar	
14. Week	Radioactivity and nuclear wastes	lectures, assignment, project, seminar	
15. Week	Final exam	individual work	
16. Week	Final exam	individual work	

Resources

Recommended Sources
LaGrega, M., Buckingham, P.L., Evans, J.C. Hazardous Waste Management ISE 2e, McGraw Hill, 2001.
Corbitt, RA, Hazardous Waste, in:Standard Handbook of Environmental Engineering, McGraw Hill, 2004.

Assessment

Measurement and Evaluation Methods and Techniques		
Midterms1-2, Project, Case-studies1-5, Seminar, Final exam		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

Course Category

Course Category	Percentage

Engineering Sciences	% 70
Engineering Design	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	**Relations**					
	0	**1**	**2**	**3**	**4**	**5**
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.						X
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.				X		
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Mid Term Exam Preparation	1	10	10
Final Exam Preparation	1	15	15
Mid Term Exam	2	3	6
Further Study	1	15	15
Assignment	5	2	10
Preliminary Study	1	15	15
Class Hours (14 weeks)	14	3	42
		Total Workload	116
		Total Workload / 25.5 (s)	4.55
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Water Treatment (İçme Sularının Arıtılması)	ENV-4006	8. Semester	2 + 2	3.0	5.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Çetin KANTAR
Instructors	Prof. Dr. Çetin KANTAR
Assistants	
Course Objectives	The main objective of the course is to teach the key components of a treatment plant as well as the basic design criteria for all components.
Course Content	Drinking water pollutants and characteristics, treatment flow charts, aeration, rapid/flash mixing systems, flocculation basin, sedimentation, fitration, disinfection
Course Learning Outcomes	1) Describe the sources of drinking water pollutants and their physical and chemical properties. 2) Apply the appropriate treatment method to the removal of a specific pollutant based on the type and properties of pollutants. 3) Establish a treatment flowchart 4) Apply the fundamental principles of national and international environmental laws to drinking water treatment. 5) Perform calculations for chemical dosages 6) Apply the knowledge of basic criteria for establishing dimensions for treatment units.

	7) Function on a team or work individually to carry out a treatment plant design project. 8) Perform cost analysis for water treatment projects and be able to present his/her work.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Purpose of drinking water treatment, the selection of treatment methods (e.g., guides for source selection, chemical and physical pollutant properties, process flow charts)	Lecture, discussion	
2. Week	Aeration (purpose, considerations, types of aeration equipment, principles of aeration, design of aeration processes, example design calculations))	Lecture, discussion, design problem solution	
3. Week	Aeration (purpose, considerations, types of aeration equipment, principles of aeration, design of aeration processes, example design calculations)	Lecture, discussion, sample problem solution	
4. Week	Coagulation (flash mixing, types and selection guide for flash mixing equipment, considerations, design criteria, chemicals and application sequence and points, discussion of alternatives, example design calculations)	Lecture, discussion, sample problem solution	
5. Week	Coagulation (flash mixing, types and selection guide for flash mixing equipment, considerations, design criteria, chemicals and application sequence and points, discussion of alternatives, example design calculations)	Lecture, discussion, problem solution	
6. Week	Coagulation (flocculation, types of flocculation equipment, chemicals, discussion of alternatives, design criteria, and example design calculations, basic hydraulics)	Lecture, sample problem solution	
7. Week	Sedimentation (clarification) process (purpose, considerations, clarifier types and properties)	Lecture, sample problem solution	
8. Week	Sedimentation (clarification) process (selection guides for some basic types of clarifiers, design criteria, discussion of alternatives, example design calculations, basic hydraulics)	Lecture	

9. Week	Sedimentation (clarification) process (selection guides for some basic types of clarifiers, design criteria, discussion of alternatives, example design calculations, basic hydraulics)	Lecture, discussion, example design calculations	
10. Week	Filtration (purpose, considerations, type and selection guide)	Lecture	
11. Week	Filtration (basic hydraulics, design criteria, example design calculations, operation and maintenance)	Lecture, discussion, example design calculations	
12. Week	Filtration (basic hydraulics, design criteria, example design calculations, operation and maintenance)	Lecture, discussion, example design calculations	
13. Week	Disinfection process (purpose, considerations, alternative disinfectants, design criteria, example design calculations)	Lecture, discussion, example design calculations	
14. Week	Disinfection process (purpose, considerations, alternative disinfectants, design criteria, example design calculations)	Lecture, discussion, example design calculations	
15. Week	Final exam	Written exam	
16. Week	Final exam	Written exam	

Resources

Recommended Sources
1) Integrated Design and Operation of Water Treatment Facilities, Susumu Kawamura, John Wiley&Sons, Inc. 2000. 2) Water Treatment Plant Design, American Water Works Association/American Society of Civil Engineers, 1998.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20

Homework	8	10
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Design	% 90
Engineering Sciences	% 10

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.						X

Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.				X		
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.			X			
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.		X				

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Homework	8	2	16
Final Exam Preparation	1	14	14
Class Hours (14 weeks)	14	4	56
Mid Term Exam Preparation	1	14	14
Project(s)	1	30	30
		Total Workload	130
		Total Workload / 25.5 (s)	5.09
		ECTS Credit of the Course	5

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Term Project II (Bitirme Ödevi II)	ENV-4008	8. Semester	0 + 2	1.0	3.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Dr. Lect. Akın ALTEN
Instructors	Dr. Lect. Akın ALTEN Prof. Dr. Önder AYYILDIZ Prof. Dr. Çetin KANTAR Prof. Dr. Hasan Göksel ÖZDİLEK Prof. Dr. Nilgün AYMAN ÖZ Prof. Dr. Sibel MENTEŞE
Assistants	
Course Objectives	Hypothesis formation and testing it and evaluation of his/her work in the field of Environmental Engineering
Course Content	Hypothesis formation and testing it and evaluation of his/her work in the field of Environmental Engineering
Course Learning Outcomes	1) Define an environmental contamination problem he/she observes 2) List sources, results, impacts, fate in the future of environmental contamination problem 3) Define sampling/observation program on this environmental problem

	4) Sample/monitor the problem/situation scientifically 5) Analyse samples he/she collects, interpret the results 6) Use statistical methods or mathematical methods to interpret the analyses' results 7) Submit mid/all scientific/technical report of his/her own

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Meeting with students, discussion on what they can perform, selection of subjects	Discussion	
2. Week	Introduction of the report, literature review, preparation of experimental procedure	Discussion	
3. Week	Material request, collection of consumables, safety precautions	Discussion	
4. Week	Sampling and start of experiments/testing	Practice	
5. Week	Completion of literature review, relation of the work with examples in the world	Reading	
6. Week	Continuation of sampling and analyses	Practice	
7. Week	Continuation of sampling and analyses	Practice	
8. Week	Discussion on how to review experimental/test results	Discussion	
9. Week	Discussion on submission of results/report	Discussion	
10. Week	Continuation of sampling and analyses	Practice	
11. Week	Continuation of sampling and analyses	Practice	
12. Week	Statistical evaluation/mathematical methods used in the work	Making critique	
13. Week	Formation of the reports	Report writing	
14. Week	Submission of the reports	Report writing and presentation	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Related articles and books

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)		
Homework		
Quiz (zes)		
Project (s)	1	100
Laboratory		
Final exam		
Final makeup exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 30
Mathematics and Basic Sciences	% 30
Engineering Design	% 40

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5

Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.					X	
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.						X
Function and take responsibility individually and on multi-disciplinary teams.						X
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.				X		
Understand professional and ethical responsibility.				X		
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)

Class Hours (14 weeks)	14	2	28
Research&Project	1	47	47
		Total Workload	75
		Total Workload / 25.0 (s)	3
		ECTS Credit of the Course	3

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Exposure and Risk Assessment (Maruziyet ve Risk Değerlendirmesi)	ENV-4010	8. Semester	2 + 0	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	
Instructors	
Assistants	

Course Objectives	Calculation of the occurrence possibility and planning of interventions to any environmental risk by using environmental damage-hazard associations with certain doses. Environmental risk assessment and calculation techniques.
Course Content	Planning of an associations between environmental exposure and epidemiology with a model that shows response and future possible interventions. Bioaccumulation. Classification of risks that can be induced by hazardous chemicals and emergency response scenarios. Risk assessment and calculation techniques.
Course Learning Outcomes	1) Classifies the exposure ways to pollutants 2) Identifies the exposure assessment 3) Associates the dose-response curves 4) Defines the toxicity and potential toxic effects 5) Characterizes the risk 6) Distinguishes the hazardous wastes and toxic chemicals

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Scientific history of risk and engineer	lectures, discussion, reading	Textbooks, scientific literature
2. Week	Risk perception	lectures, discussion, reading	Textbooks, scientific literature
3. Week	Hazardous waste and toxic chemicals	lectures, discussion, reading	Textbooks, scientific literature
4. Week	Hazard assessment	lectures, discussion, reading	Textbooks, scientific literature
5. Week	Dose-response assessment	lectures, discussion, reading	Textbooks, scientific literature

6. Week	Bioaccumulation and food chain	lectures, discussion, reading	Textbooks, scientific literature
7. Week	Exposure assessment	lectures, discussion, reading	Textbooks, scientific literature
8. Week	Exposure routes to toxic compounds	lectures, discussion, reading	Textbooks, scientific literature
9. Week	Allowable exposure level calculation	lectures, discussion, reading	Textbooks, scientific literature
10. Week	Risk characterization	lectures, discussion, reading	Textbooks, scientific literature
11. Week	More complicated problems with at least two exposure routes	lectures, discussion, reading	Textbooks, scientific literature
12. Week	Related national regulations concerning the chemical and/or toxic compound exposure	lectures, discussion, reading	Textbooks, scientific literature
13. Week	Related regulations concerning the chemical and/or toxic compound exposure, worldwide	lectures, discussion, reading	Textbooks, scientific literature
14. Week	Important case-studies on national basis due to toxic/chemical exposure	lectures, discussion, reading	Textbooks, scientific literature
15. Week	Final exam	individual work	Textbooks, scientific literature
16. Week	Final exam	individual work	Textbooks, scientific literature

Resources

Recommended Sources

Mihelhic JR, Zimmermann JB. 2010. “Environmental Engineering”, John & Wiley Sons Inc., USA.
Hassanien MA. “Exposure and Risk Assessment of Chemical pollution - Contemporary Methodology”, 2009. Springer Science Media.
Neely WB. “Introduction to Chemical Exposure and Risk Assessment”, 1994. Lewis Publishers.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	30
Homework		
Quiz (zes)		
Project (s)	1	10
Laboratory		
Final Makeup Exam		
Other		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
Total		100

Course Category

Course Category	Percentage
Engineering Sciences	% 70
Engineering Design	% 30

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.					X	

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	14	14
Mid Term Exam Preparation	1	14	14
Mid Term Exam 1	1	3	3
Preliminary Study	4	6	24
		Total Workload	100
		Total Workload / 25 (s)	4.0
		ECTS Credit of the Course	4

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ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Watershed Planning (Havza Planlama)	ENV412	8. Semester	2 + 0	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	Assoc. Prof. Dr. Hasan Göksel ÖZDİLEK
Instructors	Assoc. Prof. Dr. Hasan Göksel ÖZDİLEK
Assistants	
Course Objectives	This course covers realization of watershed management focusing on environmental quality, protection and development of water resources, determination of protection-utilization principles.
Course Content	Basin protection principles, basin planning, basin inventory, developing workable management options, environmental and social impact assessment
Course Learning Outcomes	1) Explain importance of watersheds 2) Comment effects of watershed quality if changing conditions exist 3) Develop inventory for watershed quality 4) Explain effects of multipurpose use on watershed 5) Recollect steps to implement watershed protection plans 6) Explain effects of global climate change on watersheds

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Current issues in watershed management. Integrated watershed management	Lecturing and discussion	
2. Week	The watershed inventory. Physical features and landforms, climate, soils, streamflow, groundwater, water quality, plant and animal communities, land use, social and economic factors	Lecturing and discussion	
3. Week	Problem definition and Scoping	Lecturing and discussion	
4. Week	The consultation process. Public involvement techniques and processes	Lecturing and discussion	
5. Week	Developing workable management options.	Lecturing and discussion	
6. Week	Simple assessment methods: The streamshed inventory, scope, developing and screening management alternatives	Lecturing and discussion	

7. Week	Case study: Sarıçay (Çanakkale) – Mid term exam	Lecturing and case study	
8. Week	Detailed assessment methods	Lecturing and discussion	
9. Week	Costing and financing: costing major public works, benefit-cost analysis, existing legal frameworks for water and environmental management	Lecturing and discussion	
10. Week	Legal, institutional and administrative concerns. Transboundary water issues	Lecturing and discussion	
11. Week	Environmental and social impact assessment	Lecturing and discussion	
12. Week	Choosing the best plan	Lecturing and discussion	
13. Week	Implementing the plan	Lecturing and discussion	
14. Week	Importance of sustainable watershed management in the 21st century	Lecturing and discussion	

Resources

Recommended Sources
Heathcode, I. W. (2009): Integrated Watershed Management: Principles and Practice. John Wiley and Sons, Inc. Hoboken, NJ., USA

Assessment

Measurement and Evaluation Methods and Techniques
Attendance to class meetings, appropriate and full submission of assignments, active participation in class

Course Category

Course Category	Percentage
Engineering Sciences	% 3

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes	Relations

Contribution Level	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.						X
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.						X
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.						X
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.				X		
Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.					X	
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.			X			
Understand professional and ethical responsibility.			X			
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.				X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.						X

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	1	1
Assignment 1	6	1	6
Final Exam Preparation	1	6	6
Further Study	12	2	24
Mid Term Exam Preparation	1	4	4
Preliminary Study	10	2	20
Case Study	1	6	6
Class Hours (14 weeks)	16	2	32
Mid Term Exam 1	1	1	1
		Total Workload	100
		Total Workload / 25.5 (s)	3.92
		ECTS Credit of the Course	4

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Solid Waste Recycling Technologies (Katı Atık Geri Dönüşüm Teknolojileri)	ENV414	8. Semester	2 + 0	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of this course is to inform students about solid waste recycling technologies and facilities.
Course Content	This course comprises the unit operations for the separation (sorting) and processing of waste materials (size reduction, size separation, density separation, magnetic and electric field separation, compaction), fundamentals of thermal processing, thermal conversion technologies (combustion, pyrolysis, gasification, energy recovery systems), biological and chemical conversion technologies (aerobic composting, anaerobic digestion, acid hydrolysis, methanol production from methane), recycling of materials found in municipal solid waste (aluminum cans, paper and cardboard, plastics, glass, ferrous metals etc.)
Course Learning Outcomes	1) Select suitable unit operations for solid waste separation facilities 2) Draw suitable flow schemes for the separation of recyclable materials in domestic solid wastes 3) Explain the application areas of thermal methods such as incineration, pyrolysis and gasification 4) Explain the application areas of the chemical and biological conversion technologies. 5) Explain the recycling methods of aluminum cans, paper and cardboard, plastics, glass, ferrous metals

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Types of material recovery facilities	Lecturing	
2. Week	Site selection and design steps for material recovery facilities	Lecturing	
3. Week	Manual sorting units	Lecturing	
4. Week	Unit operations for the separation and processing of waste materials (size reduction, size separation)	Lecturing	
5. Week	Unit operations for the separation and processing of waste materials (density separation, magnetic separation)	Lecturing	
6. Week	Unit operations for the separation and processing of waste materials (electric field separation, compaction)	Lecturing	
7. Week	Numeriacal examples about equipment selection	Problem solving	
8. Week	Midterm Exam	Exam	
9. Week	Preparation of material balance inventory for separation facilities	Lecturing, Problem solving	
10. Week	Preparation of material balance inventory for separation facilities	Lecturing, Problem solving	
11. Week	Recycling of aluminum and paper-cardboard	Lecturing	
12. Week	Recycling of plastic and glass	Lecturing	
13. Week	Recycling of metals and aluminium	Lecturing	
14. Week	Incineration, pyrolysis, and gasification of solid wastes	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Tchobanoglous, G., Kreith, F. (2002). Handbook of Solid Waste Management. McGraw-Hill, Inc., USA.

John Pichtel (2014). Waste Management Practices Municipal, Hazardous, and Industrial (Second Edition). CRC Press, USA.
Worrell, William A. & Vesilind, P. Aarne (2010). Solid Waste Engineering. Cengage Learning, USA.
Rogoff, Marc J. & Williams, John F. (1994). Approaches To Implementing Solid Waste Recycling. Noyes Publications, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		
Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Engineering Design	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					

Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.	X					
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.	X					
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.				X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2

Midterm Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Preparation for Final Exam	1	15	15
Preparation for midterm exam	1	13	13
Preliminary Study	10	2	20
Homework	1	20	20
Research&Project			
		Total Workload	100
		Total Workload / 25.0 (s)	4.00
		ECTS Credit of the Course	4

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ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Energy, Sustainability and the Environment (Enerji, Sürdürülebilirlik ve Çevre)	ENV416	8. Semester	2+0	2	4

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face

Course Coordinator	Assoc. Prof. Dr. Hasan Göksel Özdilek
Instructors	Assoc. Prof. Dr. Hasan Göksel Özdilek
Assistants	
Course Objectives	
Course Content	Rapid population growth in developing countries and rising income in developed countries are causing increasing pressure on natural resources, especially energy sources, around the world. Therefore, energy resources and environment (quality of environment) to ensure optimum protection of the unresolved conflicts are in question. In this derste sustainability context, the optimal use of energy resources and the protection of the balance between environmental quality will be addressed.
Course Learning Outcomes	1. Know the importance of sustainable development of energy resources 2. Can analyze environmental problems arising from energy production and distribution 3. In the context of sustainability, it may be critical to maintain the quality of the environment and to ensure optimum use of energy resources.

Weekly Course Content

Week	Topics	Study Materials
1. Week	Energy sources	
2. Week	Principle of sustainability	
3. Week	Principle of protection	
4. Week	Development of environmental resources	
5. Week	Future prospect of electric energy	
6. Week	Electricity distribution lines and use of space, environmental problems	
7. Week	Renewable energy	
8. Week	Nuclear energy	
9. Week	Energy-saving	
10. Week	Energy use and environmental problems in the transportation sector	
11. Week	Enerji sektörünün küresel çevre sorunlarına katkısı	

12. Week	Energy Policy, carbon tax and future situation	
13. Week	The effectiveness of sustainability	
14. Week	Ecosystem services and energy sector	
15. Week	Final	
16. Week	Final	

Resources

Recommended Sources
1. Ristinen, R. A., Kraushaar, J. J., Brack, J. (2016). Energy and The Environment. Wiley, USA. ISBN: 978-1-119-17923-8 2. Vig, N. J. and Kraft, M. E. (2012). Environmental Policy: New Directions for the Twenty-first Century. CQ Press. Thousand Oaks, CA, USA. 3. Goodstein, E. and Polasky, S. (2017). Economics and the Environment (8th Edition). Wiley, USA. ISBN: 978-1-119-39774-8

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	25
Homework	3	5
Course Attendance	-	5
Research	1	5
Seminars	-	-
Quiz (zes)		-
Project (s)		-
Laboratory		-
Final Exam	1	60
Final Makeup Exam		
Other		

Total	-	100

Course Category

Course Category	Percentage
Engineering Design	
Mathematics and Basic Sciences	
Mathematics and Basic Sciences	

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.		X				
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.			X			
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.				X		
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	
Recognize the need for, and be able to engage in life-long learning for personal development on					X	

scientific/technological advances and contemporary issues.					
Understand professional and ethical responsibility.				X	
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.			X		
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X		

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	16	14x2	28
Doing Research	1	1x8	8
Homework	3	3x3	9
Case study	2	10	20
Preparation	12	12x2	24
Mid Term Exam Preparation	1	2	2
Midterm	1	2	2
Final	1	2	2
		Total Workload	95
		Total Workload / 25.0 (s)	3.72
		ECTS Credit of the Course-	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Advanced Treatment Technologies (İleri Arıtım Teknolojileri)	ENV418	8. Semester	2 + 0	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Önder AYYILDIZ
Instructors	Prof. Dr. Önder AYYILDIZ
Assistants	
Course Objectives	This course aims to understand the fundamentals of Advanced Treatment Technologies for the removal of contaminants or the detoxification of contaminated waters.
Course Content	The course content includes the performance and cost analysis of physicochemical methods such as adsorption, ion exchange, membranes, and air stripping, and Advanced Oxidation Processes (AOPs) such as Fenton reagent, photo oxidation, photo-catalytic oxidation, metallic catalysts, electrochemical treatment, and ultrasonic cavitation.

Course Learning Outcomes	1) Theoretically explain the operating principles of advanced water treatment methods. 2) Select a process and design it for a specific treatment efficiency. 3) Follow current developments for advanced water treatment technologies.

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecturing	
2. Week	Adsorption	Reading, lecturing	
3. Week	Ion exchange	Reading, lecturing	
4. Week	Membrane processes	Reading, lecturing, problem solving	
5. Week	Air stripping	Reading, lecturing	
6. Week	Fenton reagent	Reading, lecturing, problem solving	
7. Week	Photo oxidation	Reading, lecturing, problem solving	
8. Week	Midterm	Written exam	
9. Week	Photo catalytic oxidation	Reading, lecturing	
10. Week	Electrochemical treatment	Reading, lecturing, problem solving	
11. Week	Metallic catalysts	Reading, lecturing, problem solving	
12. Week	Ultrasonic treatment	Reading, lecturing	

13. Week	Ultrasonic treatment	Reading, lecturing, problem solving	
14. Week	Project presentations	Oral presentations	
15. Week	Project presentations	Oral presentations	
16. Week	Final	Written exam	

Resources

Recommended Sources
1. Faust, S.D. (1996) Chemistry of water treatment, Chelsea, MI : Ann Arbor Press. 2. Pontius, F.W. (1990) Water Quality and Treatment, AWWA, McGraw-Hill, Inc., New York, NY (ISBN 0-07-001540-6)

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	20
Homework		
Quiz (zes)		
Project (s)	1	20
Laboratory		
Total	2	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 100

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.				X		
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.					X	
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.			X			
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.					X	
Design and conduct experiments, collect, analyze and interpret data.				X		
Function and take responsibility individually and on multi-disciplinary teams.		X				
Communicate in written and oral forms in both Turkish and English.			X			
Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.			X			

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Presentation/Seminar	1	10	10
Research&Project	1	25	25
Final Exam Preparation	1	10	10
Mid Term Exam 1	1	2	2
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	10	10
Class Hours (14 weeks)	14	2	28
		Total Workload	101
		Total Workload / 25 (s)	4.04
		ECTS Credit of the Course	4

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ
MÜHENDİSLİK FAKÜLTESİ
ÇEVRE MÜHENDİSLİĞİ BÖLÜMÜ

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Sludge Management (Arıtma Çamurları Yönetimi)	ENV420	8. Semester	2 + 0	2.0	4.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)

Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Dr.Lect. Akın ALTEN
Instructors	Dr.Lect. Akın ALTEN
Assistants	
Course Objectives	The aim of the course is to inform students on the management of sludge originating from treatment plants.
Course Content	This course comprises the calculation of amount of sludge originating from treatment plants, sludge thickening (gravity, floatation, centrifugal), conditioning (chemical and thermal conditioning, elutriation, freeze-thaw), dewatering (natural systems, centrifugal dewatering, filtration systems), stabilization (anaerobic digestion, aerobic digestion, lime stabilization), heat drying, high temperature processes, composting, transportation, storage and utilization.
Course Learning Outcomes	1) Calculate the amount of sludge originating from treatment plant units 2) Describe sludge thickening methods and design roughly 3) Describe sludge conditioning methods and explain ways of choosing appropriate sludge conditioners 4) Describe sludge dewatering methods and choose appropriate method for a given treatment plant 5) Explain the sludge stabilization methods and design roughly 6) Explain the conveyance methods of sludge 7) Describe the storage alternatives of sludge 8) Explain the alternative utilization methods of sludge

Weekly Course Content

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to sludge management	Lecturing	
2. Week	Preperation of mass balance for treatment facilities	Lecturing, problem solving	
3. Week	Sludge quantities and characteristics	Lecturing, problem solving	
4. Week	Sludge quantities and characteristics	Lecturing, problem solving	
5. Week	Sludge thickening and design of thickeners	Lecturing	

6. Week	Sludge conditioning and selection of appropriate methods	Lecturing, problem solving	
7. Week	Alkaline stabilization and composting of sludge	Lecturing, problem solving	
8. Week	Midterm exam	Exam	
9. Week	Fundamentals of anaerobic digestion	Lecturing	
10. Week	Design of anaerobic reactors	Lecturing, problem solving	
11. Week	Fundamentals of aerobic digestion	Lecturing	
12. Week	Design of aerobic reactors	Lecturing, problem solving	
13. Week	Conveyance and storage of sludge	Lecturing	
14. Week	Alternative methods for sludge utilization	Lecturing	
15. Week	Final Exam	Exam	
16. Week	Final Exam	Exam	

Resources

Recommended Sources
Turovskiy, I.S. & Mathai, P.K. (2006). Wastewater Sludge Processing. John Wiley & Sons, Inc., USA.
Wang, Lawrence K., Shammas, Nazih K. & Hung, Yung-Tse (2007). Biosolids Treatment Processes. Humana Press, USA.
Girovich, Mark J. (Ed.) (1996). Biosolids Treatment and Management, Processes for Beneficial Use. Marcel Dekker, Inc., USA.
McFarland, Michael (2004). Biosolids Engineering. The McGraw-Hill Companies, USA.

Assessment

Measurement and Evaluation Methods and Techniques		
In-Term Studies	**Quantity**	**Percentage**
Midterm exam (s)	1	32
Homework	1	8
Quiz (zes)		
Project (s)		

Laboratory		
Final Exam	1	60
Final Makeup Exam		
Other		
Total	-	100

Course Category

Course Category	Percentage
Engineering Sciences	% 50
Engineering Design	% 50

CONTRIBUTION TO PROGRAMME OUTCOMES

Programme Outcomes Contribution Level	Relations					
	0	1	2	3	4	5
Apply knowledge of mathematics, science and engineering to solve environmental engineering problems.	X					
Identify, formulate and solve complex environmental engineering problems by selecting and using appropriate analytical and modeling methods.	X					
Analyze and design a system, component, or process under realistic constraints to meet the desired requirements by effectively using modern engineering methods.					X	
Use modern engineering techniques, skills, and tools necessary for environmental engineering practices.	X					
Design and conduct experiments, collect, analyze and interpret data.	X					
Function and take responsibility individually and on multi-disciplinary teams.	X					
Communicate in written and oral forms in both Turkish and English.					X	

Recognize the need for, and be able to engage in life-long learning for personal development on scientific/technological advances and contemporary issues.	X					
Understand professional and ethical responsibility.	X					
Demonstrate knowledge and proficiency in risk, project and change management, and knowledge in entrepreneurship, innovation and sustainable development.	X					
Understand the impact of engineering practices and solutions on health, environment and security in a global and societal context.	X					

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS credits and course workload

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	2	2
Midterm Exam	1	2	2
Class Hours (14 weeks)	14	2	28
Preparation for Final Exam	1	15	15
Preparation for midterm exam	1	15	15
Preliminary Study	10	2	20
Homework	1	15	15
Research&Project			
		Total Workload	97
		Total Workload / 25.5 (s)	3.88
		ECTS Credit of the Course	4

I.2 Öğretim Elemanların Özgeçmişleri

Prof.Dr. Çetin KANTAR: https://avesis.comu.edu.tr/ckantar/

Prof.Dr.Önder AYYILDIZ: https://avesis.comu.edu.tr/oayyildiz/

Prof.Dr.Hasan Göksel ÖZDİLEK:

Prof.Dr.Nilgün Ayman ÖZ: https://avesis.comu.edu.tr/nilgunayman/

Prof.Dr.Sibel MENTEŞE: https://avesis.comu.edu.tr/sibelm

Dr.Öğr.Üyesi Akın ALTEN: https://avesis.comu.edu.tr/aalten/

Arş.Gör.Dr. Çiğdem Öz YAŞAR: https://avesis.comu.edu.tr/cigdemoz

Arş.Gör.Kaan DİNÇER: https://avesis.comu.edu.tr/kaan.dincer

Arş.Gör.Ersin ORAK: https://avesis.comu.edu.tr/ersinorak

I.3 Donanım

Mühendislik Bölümü Şekil 7.1'de 17 numara ile gösterilen konumda bulunmaktadır. Bölüm binası sınıflar, laboratuvarlar ve idari kısım olmak üzere üç kısımdan oluşmaktadır.

Şekil 7.1 Çanakkale Onsekiz Mart Üniversitesi Terzioğlu Yerleşkesi

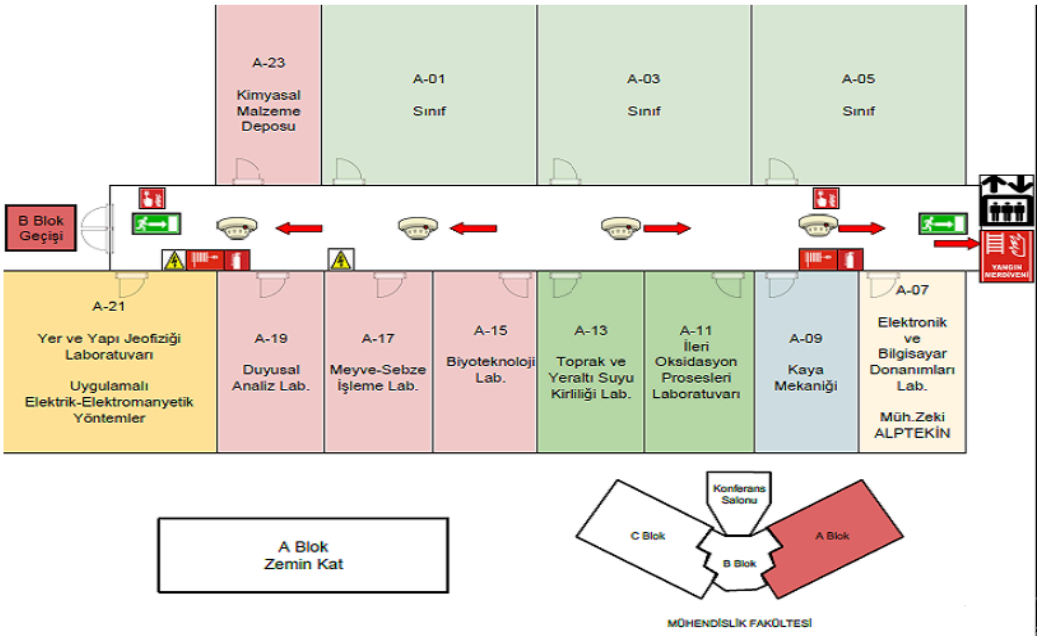
Eğitim için Kullanılan Alanlar ve Teçhizat

i) Sınıflar

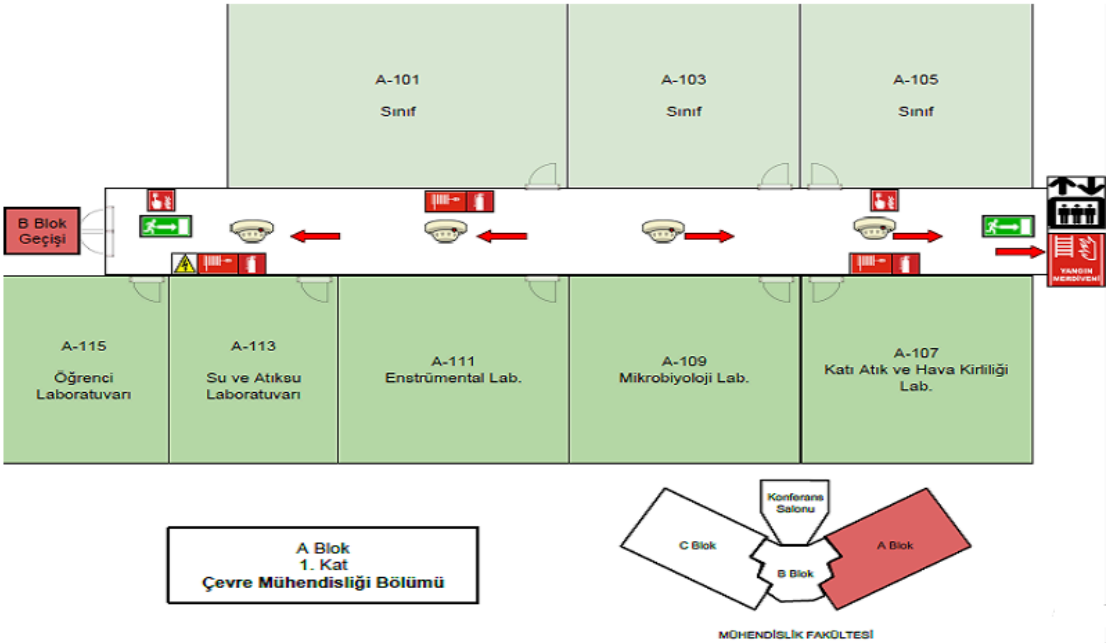
Çanakkale Onsekiz Mart Üniversitesi Çevre Mühendisliği Bölümü sınıfları Mühendislik Fakültesi A Blokta yer almaktadır. Bölümün kullanmakta olduğu 3 adet derslik bulunmaktadır. MF101 No'lu derslik 77 kişi kapasiteli, MF103 ve MF105 No'lu derslikler ise 42 kişi kapasitelidir. Bütün sınıflar pencereli olup bilgisayar ve ona bağlı projeksiyon cihazı bulunmaktadır.

ii) Laboratuvarlar

Bölümde 3 adet derslik ve 7 adet laboratuvar bulunmaktadır. Dersliklerin ve laboratuvarların listesi Tablo 01.1'de verilmişti. Laboratuvarların ve dersliklerin yerleşim planları ve yangın için çıkış kapıları Şekil 7.2 ve Şekil 7.3'te verilmiştir.



Şekil 7.2 Mühendislik Fakültesi A Blok Zemin Kat



Şekil 7.3 Mühendislik Fakültesi A Blok 1. Kat

Bölümümüz öğrencilerinin dersleri uygulamalı olarak görüp ve deney yapabilmeleri için 1 adet öğrenci laboratuvarı bulunmaktadır. Bunun dışında bilimsel araştırmalarda kullanılan Su-Atıksu, Enstrümental, Mikrobiyoloji, Hava Kirliliği-Katı Atık, Toprak-Yeraltı Suyu ve İleri Oksidasyon Laboratuvarları bulunmaktadır. Laboratuvarlarımızda bulunan cihazların cihaz listesi aşağıda verilmektedir:

Öğrenci Laboratuvarı

Öğrenci laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.4, Çevre Mühendisliği Bölümü öğrenci laboratuvarını göstermektedir (http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/ogrenci-laboratuvari.html)

Toplam Kjeldahl Azotu Cihazı
Distilasyon Cihazı
Kimyasal Oksijen İhtiyacı Yakma Ünitesi
Yağ-Gres Cihazı
Çalkalamalı Su Banyosu

Çalkalamalı Orbital Sallayıcı
Etüv
Kül Fırını
Çoklu Ölçüm Cihazı (pH, EC, ORP ve ÇO)
Termostatlı Kabin
Isıtmalı Tabla
pH Metre, Elektriksel İletkenlik Ölçüm Cihazı
Çeker Ocak
Bulanıklık Cihazı
Hassas Terazi
Isıtmalı Manyetik Karıştırıcı
Manyetik Karıştırıcı
Santrifüj
DR 5000 Spektrofotometre
Çözünmüş Oksijen Cihazı
Jar Test Düzeneği
Elek Sallayıcı
Nem Tayin Cihazı
Saf Su Cihazı
Buzdolabı

Şekil 7.4. Çevre Mühendisliği Bölümü Öğrenci Laboratuvarından Görünüm

Su-Atıksu Laboratuvarı

Su ve atıksu laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.5, su ve atıksu laboratuvarını göstermektedir
(http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/su-atiksulaboratuvari.html)
Etüv
Sıcaklık Kontrollü Karıştırıcılı Su Banyosu
Ultrasonik Banyo
Termoreaktör
Isıtıcılı Mantetik Karıştırıcı
Hassas Terazi
Gaz Ölçer

Şekil 7.5. Çevre Mühendisliği Bölümü Su-Atıksu Laboratuvarından Görünüm

Enstrümental Laboratuvarı

Enstrümental laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.6, enstrümantal laboratuvarını göstermektedir
(http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/enstrumental-laboratuvari.html)

Toplam Organik Karbon-Toplam Azot Cihazı
Gaz Kromatografi Cihazı
Atomik Absorpsiyon Cihazı

Şekil 7.6. Çevre Mühendisliği Bölümü Enstrümental Laboratuvarından Görünüm

Hava Kirliliği Laboratuvarı

Hava Kirliliği laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.7, hava kirliliği laboratuvarını göstermektedir
(http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/hava-kirliligi-laboratuvari.html)

Gaz Kromatografi-Alev İyonlaşma Detektörü
Thermal Desorber Ve Otomatik Analizörü
Düşük Hacimli Hava Gazı Ölçüm Pompası
İnkübatör
Havadaki CO2 Ölçüm Cihazı
Partikül Ölçüm Cihazı
Thermohygrometre
Dijital Rotametre
Havadaki Ozon Ölçüm Cihazı
Biyoimpaktör Seti

Solunum Fonksiyon Test Cihazı

Şekil 7.7. Çevre Mühendisliği Bölümü Hava Kirliliği Laboratuvarından Görünüm

Mikrobiyoloji Laboratuvarı

Mikrobiyoloji laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.8, mikrobiyoloji laboratuvarını göstermektedir (http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/mikrobiyoloji-laboratuvari.html)

Ultrasonik Homojenizatör
Otoklav (2 adet)
Alev Sanitasyon Sistemi
İnkubatör
Süzme Seti
Koloni Sayıcı
Sterilizasyon Kabini
Mikroskop
Santrifüj
Klor Dioksit Jeneratörü
Ultrasaf Su Cihazı
Buzdolabı
Gerçek Zamanlı PZR
Homojenizatör
Mikrosantrifüj

Şekil 7.8. Çevre Mühendisliği Bölümü Mikrobiyoloji Laboratuvarından Görünüm

Toprak-Yeraltı Suyu Laboratuvarı

Toprak-Yeraltı Suyu laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.9, toprak yeraltı suyu laboratuvarını göstermektedir
(http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/toprak-yeralti-suyu-laboratuvari.html)
Spektrofotometre
BiyoReaktör
Manyetik Karıştırıcı
Orbital Çalkalayıcı
Santrifüj
Pompa (2 adet)
Çoklu Ölçüm Cihazı
Fraksiyon Toplayıcı

Şekil 7.9. Çevre Mühendisliği Bölümü Toprak-Yeraltı Suyu Laboratuvarından Görünüm

İleri Oksidasyon Laboratuvarı

İleri oksidasyon laboratuvarında bulunan cihaz listesi aşağıda verilmektedir. Şekil 7.10, ileri oksidasyon laboratuvarını göstermektedir.
(http://cevre.muhendislik.comu.edu.tr/laboratuvarlarimiz/ilerioksidasyon-laboratuvari.html)
Ultrases Cihazı (20 kHz)
Ultrasonik Banyo (40 kHz)
Yüksek Frekanslı Ultrases Cihazı (583, 864 ve 1144 kHz)
Çoklu Ölçüm Cihazı (pH, EC, ORP ve ÇO)
Orbital Çalkalayıcı (2 adet)
Soğutmalı Su Banyosu
DR 2800 Spektrofotometre
Manyetik Karıştırıcı
Vorteks

Şekil 7.10. Çevre Mühendisliği Bölümü İleri Oksidasyon Laboratuvarından Görünüm