Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Electromagnetic Theory	FZK348	6. Semester	4 + 2	5.0	9.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. İsmail TARHAN
Instructors	Prof. Dr. İsmail TARHAN
Assistants	
Course Objectives	The fundamental objective of this course is to discuss topics of fundamental concepts of electrostatics, magnetostatic fields and effect of the fields on static and moving charge, solutions of boundary value problems and derivations of Maxwell equations will be discussed.
Course Content	Topics to be covered in this course include are electrostatic; electric field, Gauss Law, electric potential, electrostatic energy, conductors, solution of Laplace equation in cartesian coordinates, solution of Laplace equation in spherical and cylindrical coordinates, multipole expansion, electric fields in dielectric media, magnetostatic, Biot-Savart law, ampere law, magnetic vector potential, magnetic fields in matter, electrodynamics; electromotive force, Faraday law, maxwell equations.
Course Learning Outcomes	1) 2) Interpret the fundamental concepts of electromagnetic fields, 3) Describe Maxwell's Equations in static and dynamics forms 4) Write Maxwell's Equations in static and dynamics forms 5) Describe Maxwell's Equations in static and dynamics form, 6) Analyze electrostatics of macroscopic media and dielectrics, 7) Interpret magnetostatics and Faraday's Law, 8) Analyze electromagnetic waves and wave propagation.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Electrostatic; electric field, Gauss Law, electric potential	Oral lectures with interactive discussions, researches and homeworks.	

Quick Access

Physics
- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

Course Information
- Course Information
- Weekly Course Content
- Resources
- Assessment
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

2. Week	Work and electrostatic energy, conductors	Oral lectures with interactive discussions, researches and homeworks.	
3. Week	Solution of Laplace equation in cartesian coordinates (boundary value solutions in electrostatics)	Oral lectures with interactive discussions, researches and homeworks.	
4. Week	Solution of Laplace equation in spherical and cylindrical coordinates	Oral lectures with interactive discussions, researches and homeworks.	
5. Week	Solution of Laplace equation in spherical and cylindrical coordinates	Oral lectures with interactive discussions, researches and homeworks.	
6. Week	Multipole expansion	Oral lectures with interactive discussions, researches and homeworks.	
7. Week	Electric fields in dielectric media	Oral lectures with interactive discussions, researches and homeworks.	
8. Week	Mid-term Exam	Written exam	
9. Week	Magnetostatic	Oral lectures with interactive discussions, researches and homeworks.	
10. Week	Biot-Savart Law	Oral lectures with interactive discussions, researches and homeworks.	
11. Week	Ampere Law	Oral lectures with interactive discussions, researches and homeworks.	
12. Week	Magnetic vector potential	Oral lectures with interactive discussions, researches and homeworks.	
13. Week	Magnetic fields in matter	Oral lectures with interactive discussions, researches and homeworks.	
14. Week	Elektrodinamik; elektromotor kuvveti, Faraday yasası	Oral lectures with interactive discussions, researches and homeworks.	
15. Week	Maxwell Equations	Oral lectures with interactive discussions, researches and homeworks.	
16. Week	Final Exam	Written Exam	

RESOURCES

Recommended Sources
Griffiths D. J., Introduction to Electrodynamics, Prentice Hall, 3rd Edition, 1999
Jackson, J. D., "Classical Electrodynamics ", Wiley, 3rd Edition, 1999.
Reitz, J., Milford, F., and Christy, R., "Foundations of Electromagnetic Theory", Addison-Wesley, 4th Ed., 1993.

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Mid-term exam + Assignment + Research & Project and Presentation 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
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

*DK = Course's Contrubution.

	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)
Class Hours (14 weeks)	14	6	84
Final Exam Preparation	1	25	25
Mid Term Exam Preparation	1	15	15
Further Study	14	3	42
Assignment 1	12	4	48
Final Exam	1	2	2
Presentation/Seminar	1	3	3
Mid Term Exam 1	1	2	2
Total Workload			221
			8.67

Total Workload / 25.5 (s)	
ECTS Credit of the Course	9