Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Mathematical Physics I	FZK215	3. Semester	3 + 2	4.0	6.0

Prerequisites	None
Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Melis ULU DOĞRU
Instructors	Assist. Prof. Dr. Melis ULU DOĞRU
Assistants	
Course Objectives	The course includes the differential equations, types of differential equations, solution methods for differential equations, mathematica and physical applications of differential equations
Course Content	Differential equations, types of Differential equations, Ordinary Differential equations, partial Differential equations, linearity of Differential equations, degrees and order of Differential equations vanishing the arbitrary constant, Separable variables differential equations and their solutions homogenous and non-homogenous differential equations and their solutions Exact and non-exact differential equations and their solutions Linear differential equations, reductable to linear differential equations and their solutions First-order higher degrees differential equations and theis solutions Homogenous differential equations wit constant coffiecients, non- Homogenous differential equations with constant coffiecients and their solutions. Special methods for differential equations with constant coffiecients Differential equations with variable cofficient Legendre differential equations, Cauchy Differential equations and their solutions Second order differential equations with variable cofficient and their solutions states of differential equations with dependent and independent variables Total differential method Physical applications of differential equations
Course Learning Outcomes	1) classify the differential equations. 2) use solution methods of first order ordinary differential equations. 3) understand explicit methods of solving higherorder linear differential equations. 4) analyze series solutions of linear differential equations. 5) solve systems of linear differential equations. 6) solve higher order none linear differantial equations.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials

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

1. Week	Differential equations, types of Differential equations, Ordinary Differential equations, partial Differential equations, linearity of Differential equations, degrees and order of Differential equations	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
2. Week	vanishing the arbitrary constant, Separable variables differential equations and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
3. Week	homogenous and non-homogenous differential equations and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
4. Week	Exact and non-exact differential equations and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
5. Week	Linear differential equations, reductable to linear differential equations and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
6. Week	First-order higher degrees differential equations and theis solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
7. Week	Homogenous differential equations wit constant coffiecients, non-Homogenous differential equations with constant coffiecients and their solutions. midterm exam	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
8. Week	Special methods for differential equations with constant coffiecients	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
9. Week	Differential equations with variable cofficient	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
10. Week	Legendre differential equations, Cauchy Differential equations and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
11. Week	Second order differential equations with variable cofficient and their solutions	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
12. Week	states of differential equations with dependent and independent variables	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
13. Week	Total differential method	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
14. Week	Physical applications of differential equations	Oral lectures with interactive discussions, Homeworks,	

		Applications, Pratic	
15. Week	general review	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	
16. Week	general review, final exam	Oral lectures with interactive discussions, Homeworks, Applications, Pratic	

RESOURCES

Recommended Sources
Mathematical Methods for Physicists (fifth edition), by G.B. Arfken and H.J. Weber (Harcourt Academic Press, 2001)
Fizikte Matematik Yöntemler,Coşkun Önem,Birsen Yayınevi(1982)
Complex Variables and Applications, by R.V. Churchill, J.W. Brown, and R.F. Verhey (McGraw-Hill, 1974)
Mathematical Methods of Physics, by J. Matthews and R.L. Walker (Benjamin, 1970)

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Mid-term 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
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5	DK6
PY1	1	1	1	1	1	1	1
PY2	5	5	5	5	5	5	5
PY3	1	1	1	1	1	1	1
PY4	1	1	1	1	1	1	1
PY5	5	5	5	5	5	5	5
PY6	5	5	5	5	5	5	5
PY7	1	1	1	1	1	1	1

PY8	1	1	1	1	1	1	1
PY9	1	1	1	1	1	1	1
PY10	1	1	1	1	1	1	1
PY11	1	1	1	1	1	1	1
PY12	1	1	1	1	1	1	1
PY13	1	1	1	1	1	1	1
PY14	2	2	2	2	2	2	2
PY15	4	4	5	4	4	5	4

*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	5	70
Final Exam Preparation	1	15	15
Mid Term Exam 1	1	2	2
Assignment 1	12	3	36
Final Exam	1	2	2
Mid Term Exam Preparation	1	15	15
Further Study	14	1	14
		Total Workload	154
		Total Workload / 25.5 (s)	6.04
		ECTS Credit of the Course	6