



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

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|--|---|--|----------------------|---|---|----------------------------------|---|------------|---|
| Course Title | | Fundamentals of Mechatronics | | | | | | | |
| Course Code | | MTR151 | | Course Level | | Short Cycle (Associate's Degree) | | | |
| ECTS Credit | 4 | Workload | 100 (<i>Hours</i>) | Theory | 1 | Practice | 1 | Laboratory | 0 |
| Objectives of the Course | | he student will be able to 1. define the main topics of physics science. 2. contrast physics science and technology, 3. apply their physics knowledge to the field of study, 4. evaluate the devices and their designs in the field of their their study, 5. solve various problems in the field of their study, | | | | | | | |
| Course Content | | Moment, the moment of a force, Balance; equilibrium conditions, simple machines, Uniform Linear, Uniformly Linear Motion, Friction, Motion on friction surfaces, Work and Energy, Energy Conservation, Power, Momentum and impulses, collisions, electric and electromagnetic general information | | | | | | | |
| Work Placement | | N/A | | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Explanation (Presentation), Demonstration | | | | | |
| Name of Lecturer(s) | | Ins. Merve MUTİ İSTEK | | | | | | | |

Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---------------------|----------|----------------|
| Midterm Examination | 1 | 40 |
| Final Examination | 1 | 70 |

Recommended or Required Reading

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| Week | Weekly Detailed Course Contents | |
|------|---------------------------------|---|
| 1 | Theoretical | Description of the course, dimensions, unit systems Vectors, vectoral calculation, force and resultants |
| 2 | Theoretical | Moment, Moment of a force, equilibrium, simple machines |
| 3 | Theoretical | Newton's laws of motions, Velocity, acceleration |
| 4 | Theoretical | Motion with constant velocity, motion with constant acceleration |
| 5 | Theoretical | Friction and motion under friction |
| 6 | Theoretical | Work and Energy, Conservation of the energy, power |
| 7 | Theoretical | Momentum and impuls, collisions |
| 8 | Theoretical | Midterm Exam |
| 9 | Theoretical | Electric charges, Coulomb's Law, Electric field |
| 10 | Theoretical | Electrical potential and capacitance |
| 11 | Theoretical | Magnetism, magnetic field sources |
| 12 | Theoretical | Faraday's Law and inductance |
| 13 | Theoretical | Electromagnetic waves |
| 14 | Theoretical | Basic Optics |

Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---------------------------------------|----------|-------------|----------|----------------|
| Lecture - Theory | 14 | 2 | 1 | 42 |
| Lecture - Practice | 14 | 2 | 1 | 42 |
| Midterm Examination | 1 | 8 | 1 | 9 |
| Final Examination | 1 | 6 | 1 | 7 |
| Total Workload (Hours) | | | | 100 |
| [Total Workload (Hours) / 25*] = ECTS | | | | 4 |

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

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| 1 | Students will be able to define the main topics of physics science |
| 2 | Students will be able to contrast physics science and technology, |



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|---|--|
| 3 | Students will be able to apply their physics knowledge to the field of study |
| 4 | Students will be able to evaluate the devices and their designs in the field of their thei |
| 5 | Students will be able to solve various problems in the field of their study |

Programme Outcomes (Mechatronics)

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|----|--|
| 1 | TECHNICAL FOREIGN LANGUAGE |
| 2 | BASICS OF MECHATRONICS |
| 3 | TECHNICAL DRAWING |
| 4 | DOING BASIC MECHANIC PROSESES |
| 5 | CHOOSE THE MATERIALS |
| 6 | DOING MECHANICAL SYSTEM DESIGN |
| 7 | SET UP A HYDRAULIC OR PNEUMATIC SYSTEMS |
| 8 | DOING COMPUTER AIDED MECHANICAL DESIGN |
| 9 | USING FLEXIBLE PRODUCING SYSTEMS |
| 10 | USING COMPUTER AIDED MACHINE TOOLS |
| 11 | DOING ELECTRICAL AND ELECTRONICAL |
| 12 | SET UP ELECTRICAL AND ELECTRONICAL CIRCUITS |
| 13 | SET UP LOGICAL CIRCUITS |
| 14 | DOING COMPUTER AIDED ELECTRONICAL CIRCUITS DESIGN |
| 15 | SET UP ELECTRICAL MOTORS |
| 16 | SET UP MICROCONTROLLER CIRCUITS |
| 17 | SET UP CONTROL SYSTEMS |
| 18 | COMMUNICATE CONTROL SYSTEMS |
| 19 | DOING INDUSTRIAL ROBOTIC PROGRAMMING AND MAINTENANCE |
| 20 | WRITING COMPUTER PROGRAMME |
| 21 | Ability to use the methods and techniques of career planning and discussing the effects of character traits on career preferences. |
| 22 | Ability to plan a career in their own profession. |

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

| | L1 | L2 | L3 | L4 | L5 |
|----|----|----|----|----|----|
| P2 | 5 | 5 | 5 | 5 | 5 |

