

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

| Course Details | | | | |
|--|---|----------|-----------------|---------------------|
| Code | Academic Year | | | Semester |
| NWI203 | 2 | | | 3 |
| Title | T | A | L | ECTS |
| Design Techniques I: Technical Drawing and CAD | 1 | 2 | 1 | 6 |
| Language | German | | | |
| Level | Undergraduate | X | Graduate | Postgraduate |
| Department / Program | Materials Science and Technology | | | |
| Forms of Teaching and Learning | Face to face | | | |
| Course Type | Compulsory | | Elective | X |
| Objectives | <p>Information students will receive:</p> <ul style="list-style-type: none"> • Technical Drawing Principles as Design and Manufacturing Information Source • Parts Creation and Sizing • Three Dimensional Computer Aided Design Introduction • Introduction to Design Hierarchy and Design Methodology in Production Process • Methodical Approach and Process in Creating Simple Parts • Tolerance and Compliance <p>The skills to be acquired by the students:</p> <ul style="list-style-type: none"> • Basic Skill about the Implementation of the Engineering Approach Format and the Working Techniques in Creating Simple Designs • Ability to create Design Drawings Independently Based on Given Boundary Conditions <p>Competencies:</p> <ul style="list-style-type: none"> • Competence about the solution and analysis of a simple technical problem | | | |
| Content | <p>Lecture:</p> <ul style="list-style-type: none"> • Technical Drawing Principles as Design and Manufacturing Information Source • Parts Creation and Sizing • Introduction to Design Hierarchy and Design Methodology in Production Process (Construction Process and Production Modularization) • Introduction to Standard / Norm Information • Tolerance <p>Applications:</p> <ul style="list-style-type: none"> • Manually Creating Technical Drawings of Given Bodies Considering Boundary and Connection Conditions • Modeling with 3D Computer Aided Design Environment <p>Laboratory:</p> <ul style="list-style-type: none"> • Detailed Design with All Required Drawings • Modeling with 3D Computer Aided Design Environment | | | |
| Prerequisites | | | | |
| Coordinator | | | | |

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| | | | |
|--|---|-----------------|--------------------------|
| Lecturer(s) | Asist Prof.Dr. Mete BUDAKLI | | |
| Assistant(s) | Ismail KÜLCÜ Research Assist. Ahmet Ugur BATUK Research Assist. Süleyman SISMAN Research Assist. Sefer Arda SERBES | | |
| Work Placement | No | | |
| Recommended or Required Reading | | | |
| Books / Lecture Notes | D.C. Planchard ve M.P. Planchard, Engineering Design with SolidWorks 2014 and Video | | |
| Other Sources | Schlecht, Berthold: Maschinenelemente 1. Pearson Studium, München, 2007 DIN-Normen; & Quot; Tabellenbuch Metall & quot; ; Europa-Verlag 2014 Course notes are available in electronic environment. Drawing tools, Autodesk Inventor | | |
| Additional Course Material | | | |
| Documents | | | |
| Assignments | | | |
| Exams | | | |
| Course Composition | | | |
| Mathematics und Basic Sciences | | | 10% |
| Engineering | | | 10% |
| Engineering Design | | | 80% |
| Social Sciences | | | % |
| Educational Sciences | | | % |
| Natural Sciences | | | % |
| Health Sciences | | | % |
| Expert Knowledge | | | % |
| Assessment | | | |
| Activity | Count | | Percentage (%) |
| Midterm Exam | 1 | | 40 |
| Quiz | | | |
| Assignments | | | |
| Attendance | | | |
| Recitations | | | |
| Projects | | | |
| Final Exam | 1 | | 60 |
| | | Total | 100 |
| ECTS Points and Work Load | | | |
| Activity | Count | Duration | Work Load (Hours) |
| Lectures | 14 | 1 | 14 |
| Self-Study | 14 | 4 | 56 |

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| | | | |
|--|----|----|------------|
| Assignments | 5 | 10 | 50 |
| Presentation / Seminar Preparation | | | |
| Midterm Exam | 1 | 2 | 2 |
| Recitations | 14 | 2 | 28 |
| Laboratory | 14 | 1 | 14 |
| Projects | | | |
| Final Exam | 1 | 2 | 2 |
| Total Work Load | | | 166 |
| ECTS Points (Total Work Load / Hours) | | | 6 |

Learning Outcomes

| | |
|----|---|
| 1 | To acquire sufficient knowledge about mathematics, science and mechanical engineering and to apply the theoretical and practical knowledge in these fields to model and solve engineering problems. |
| 2 | Ability to identify, define, formulate and solve complex engineering problems, and to select and apply appropriate analysis and modeling methods in mechanical engineering for this purpose. |
| 3 | Experiment design, experimentation, data collection, analysis and interpretation of results for engineering problems. |
| 4 | Understanding of two-dimensional views of 3D objects (conjugate projection, auxiliary and cross-section) in terms of vertical projection |
| 5 | Dimensioning of 2D technical drawings and recognition of tolerances |
| 6 | Understanding technical drawing standards and practices applied in the industry |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

Weekly Content

| | |
|---|--|
| 1 | Introduction to Design Methods |
| 2 | Product Design Process |
| 3 | Principles of Methodical Design |
| 4 | Introduction to Design Process with Autodesk Inventor I Introduction to Design Process with Autodesk Inventor II |
| 5 | Introduction to Design Process with Autodesk Inventor III |
| 6 | Introduction to Design Process with Autodesk Inventor IV |
| 7 | Technical drawing |
| 8 | Creating Assembly Design with Autodesk Inventor I Creating Assembly Design with Autodesk Inventor II |
| 9 | Standards / Norms |

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| | |
|----|--|
| 10 | Creating Assembly Design with Autodesk Inventor III Creating Assembly Design with Autodesk Inventor IV |
| 11 | Computer Aided Design Introduction and Design I Computer Aided Design Introduction and Design II |
| 12 | Computer Aided Design Introduction and Design III Computer Aided Design Introduction and Design IV |
| 13 | |
| 14 | |
| 15 | |

Contribution of Learning Outcomes to Program Objectives (1-5)

| | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 |
|-----|----|----|----|----|----|----|----|----|
| All | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |

Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

Compiled by:

Date of Compilation: