

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY  
COURSE SYLLABUS

| Course Details                        |   |          |                 |                      |                 |
|---------------------------------------|---|----------|-----------------|----------------------|-----------------|
| <b>Code</b>                           |   |          |                 | <b>Academic Year</b> | <b>Semester</b> |
| NWI107                                |   |          |                 | 1                    | 1               |
| <b>Title</b>                          | <b>T</b>  | <b>A</b> | <b>L</b>        | <b>ECTS</b>          |                 |
| Introduction to Natural Sciences      | 2   | 0        | 0               | 2                    |                 |
| <b>Language</b>                       | German  |          |                 |                      |                 |
| <b>Level</b>                          | <b>Undergraduate</b>  | <b>X</b> | <b>Graduate</b> | <b>Postgraduate</b>  |                 |
| <b>Department / Program</b>           | Materials Science and Technology  |          |                 |                      |                 |
| <b>Forms of Teaching and Learning</b> | Face to face  |          |                 |                      |                 |
| <b>Course Type</b>                    | <b>Compulsory</b>   | <b>X</b> | <b>Elective</b> |                      |                 |
| <b>Objectives</b>                     | The student will have a first overview of the field of materials science, molecular biotechnology and energy sciences.  |          |                 |                      |                 |
| <b>Content</b>                        | Material Science_ Basic terms and topics: Introduction to the "world of materials", crystals: structure and properties, structure, properties and applications of metallic materials, structure, properties and applications of oxidic materials, materials of electrical engineering and microelectronics, material applications in mechanical engineering, optical properties of new materials plastics.<br>Molecular Biotechnology_Basic Concepts and Topics<br>Energy Science_Basic Concepts and Topics |          |                 |                      |                 |
| <b>Prerequisites</b>                  |   |          |                 |                      |                 |
| <b>Coordinator</b>                    | None  |          |                 |                      |                 |
| <b>Lecturer(s)</b>                    | Asist Prof.Dr. Duygu Ekinci<br>Associate Prof.Dr. Can Murat Ünal  |          |                 |                      |                 |
| <b>Assistant(s)</b>                   | None  |          |                 |                      |                 |
| <b>Work Placement</b>                 | No  |          |                 |                      |                 |
| Recommended or Required Reading       |   |          |                 |                      |                 |
| <b>Books / Lecture Notes</b>          | W. D. Callister & D. G. Rethwisch: Material science and materials engineering: An Introduction, Wiley-VCH<br>Energy K. Heinloth Teubner 1983<br>Handouts  |          |                 |                      |                 |
| <b>Other Sources</b>                  |   |          |                 |                      |                 |
| Additional Course Material            |   |          |                 |                      |                 |
| <b>Documents</b>                      |   |          |                 |                      |                 |
| <b>Assignments</b>                    |   |          |                 |                      |                 |
| <b>Exams</b>                          |   |          |                 |                      |                 |
| Course Composition                    |   |          |                 |                      |                 |

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|                                |  |     |
|--------------------------------|--|-----|
| Mathematics und Basic Sciences |  | 20% |
| Engineering                    |  | 10% |
| Engineering Design             |  | %   |
| Social Sciences                |  | %   |
| Educational Sciences           |  | %   |
| Natural Sciences               |  | 60% |
| Health Sciences                |  | %   |
| Expert Knowledge               |  | 10% |

**Assessment**

| Activity     | Count | Percentage (%) |
|--------------|-------|----------------|
| Midterm Exam | 1     | 50             |
| Quiz         |       |                |
| Assignments  |       |                |
| Attendance   |       |                |
| Recitations  |       |                |
| Projects     |       |                |
| Final Exam   | 1     | 50             |
| <b>Total</b> |       | <b>100</b>     |

**ECTS Points and Work Load**

| Activity                                     | Count | Duration | Work Load (Hours) |
|--|-------|----------|-------------------|
| Lectures                                     | 14    | 2        | 28                |
| Self-Study                                   | 14    | 2        | 28                |
| Assignments                                  |       |          |                   |
| Presentation / Seminar Preparation           | 1     | 2        | 2                 |
| Midterm Exam                                 | 1     | 2        | 2                 |
| Recitations                                  |       |          |                   |
| Laboratory                                   |       |          |                   |
| Projects                                     |       |          |                   |
| Final Exam                                   | 1     | 2        | 2                 |
| <b>Total Work Load</b>                       |       |          | <b>62</b>         |
| <b>ECTS Points (Total Work Load / Hours)</b> |       |          | <b>2</b>          |

**Learning Outcomes**

|   |  |
|---|--|
| 1 | The students have a first overview of the field of materials science, molecular biotechnology and energy sciences. |
| 2 | Students can see the intersection points, which they can use selective.  |
| 3 |  |





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|                             |   |  |  |  |  |  |  |  |
|-----------------------------|---|--|--|--|--|--|--|--|
| 9                           |   |  |  |  |  |  |  |  |
| 10                          |   |  |  |  |  |  |  |  |
| 11                          |   |  |  |  |  |  |  |  |
| 12                          |   |  |  |  |  |  |  |  |
| <b>Contribution Level</b>   | 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High |  |  |  |  |  |  |  |
|                             |   |  |  |  |  |  |  |  |
| <b>Compiled by:</b>         |   |  |  |  |  |  |  |  |
| <b>Date of Compilation:</b> |   |  |  |  |  |  |  |  |