

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY  
COURSE SYLLABUS

| Course Details                        |   |          |                 |                     |
|---------------------------------------|---|----------|-----------------|---------------------|
| <b>Code</b>                           | <b>Academic Year</b>  |          |                 | <b>Semester</b>     |
| BIO111                                | 1   |          |                 | 1                   |
| <b>Title</b>                          | <b>T</b>  | <b>A</b> | <b>L</b>        | <b>ECTS</b>         |
| Biology                               | 2   | 1        | 2               | 6                   |
| <b>Language</b>                       | German  |          |                 |                     |
| <b>Level</b>                          | <b>Undergraduate</b>  | X        | <b>Graduate</b> | <b>Postgraduate</b> |
| <b>Department / Program</b>           | Molecular Biotechnology   |          |                 |                     |
| <b>Forms of Teaching and Learning</b> | Face-to-Face  |          |                 |                     |
| <b>Course Type</b>                    | <b>Compulsory</b>   | X        | <b>Elective</b> |                     |
| <b>Objectives</b>                     | Starting with an introduction to the eukaryotic cell, students learn fundamentals of the structure and diversity of higher animals and plants with an emphasis on structures, tissues, and organs and their structuring principles  |          |                 |                     |
| <b>Content</b>                        | 1) Introduction to micro- and cell biology<br>2) Cellular bases of life<br>3) Chemical elements of the structure and function of plant and animal cells<br>4) Structure and function of cell membrane<br>5) Cellular energy production: photosynthesis, cellular respiration<br>6) Control of cellular activity<br>7) Cell reproduction<br>8) Genetic basis of life |          |                 |                     |
| <b>Prerequisites</b>                  | -   |          |                 |                     |
| <b>Coordinator</b>                    | Dr. Ayşe Hande Nayman   |          |                 |                     |
| <b>Lecturer(s)</b>                    | Dr. Ayşe Hande Nayman   |          |                 |                     |
| <b>Assistant(s)</b>                   | Research Assistant Semih Alpsoy, Research Assistant Şeyma İş  |          |                 |                     |
| <b>Work Placement</b>                 | -   |          |                 |                     |
| Recommended or Required Reading       |   |          |                 |                     |
| <b>Books / Lecture Notes</b>          | 1) Biology (Textbook) N. A. Campbell, J. B. Reece, L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, R. B. Jackson; Pearson Education, Inc.; 2008.<br>2) Biology, Neil A. Campbell /Jane B. Reece, Pearson Publishing<br>3) Biology, Purves, 2012, Jürgen Markl (ed.) Springer International Publishing  |          |                 |                     |
| <b>Other Sources</b>                  |   |          |                 |                     |
| Additional Course Material            |   |          |                 |                     |
| <b>Documents</b>                      |   |          |                 |                     |
| <b>Assignments</b>                    |   |          |                 |                     |
| <b>Exams</b>                          |   |          |                 |                     |
| Course Composition                    |   |          |                 |                     |

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|                                |     |   |
|--------------------------------|-----|---|
| Mathematics and Basic Sciences |     | % |
| Engineering                    |     | % |
| Engineering Design             |     | % |
| Social Sciences                |     | % |
| Educational Sciences           |     | % |
| Natural Sciences               | 100 | % |
| Health Sciences                |     | % |
| Expert Knowledge               |     | % |

**Assessment**

| Activity     | Count | Percentage (%) |
|--------------|-------|----------------|
| Midterm Exam | 1     | 35             |
| Quiz         | 0     | 0              |
| Assignments  | 2     | 15             |
| Attendance   | 0     | 0              |
| Recitations  | 0     | 0              |
| Projects     | 0     | 0              |
| 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    | 1        | 14                |
| Assignments                                  | 2     | 20       | 40                |
| Presentation / Seminar Preparation           | 0     | 0        | 0                 |
| Midterm Exam                                 | 1     | 2        | 2                 |
| Recitations                                  | 14    | 2        | 28                |
| Laboratory                                   | 0     | 0        | 0                 |
| Projects                                     | 0     | 0        | 0                 |
| Final Exam                                   | 1     | 2        | 2                 |
| <b>Total Work Load</b>                       |       |          | <b>114</b>        |
| <b>ECTS Points (Total Work Load / Hours)</b> |       |          | <b>4</b>          |

**Learning Outcomes**

|   |  |
|---|--|
| 1 | The student defines basic terms of biology.  |
| 2 | The student explains the contribution of physical and chemical principles to the field of biology. |

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|   |   |
|---|---|
| 3 | The student defines the building blocks of living organisms, the cell architecture and its organelles including their functions.          |
| 4 | The student explains the basic principles that ensure the operation of living systems o molecular, cellular, organ and organismal levels. |
| 5 | The student defines the basic mecahnisms that govern the transmission of traits and the emergence of species.                             |
| 6 | The student can transfer biological principles to other fields of natural sciences.   |

**Weekly Content**

|    |   |
|----|---|
| 1  | Chemical fundamentals of life   |
| 2  | Introduction to biology and its key issues                                |
| 3  | Water and life/Carbon and the molecular diversity of life                 |
| 4  | Structure and function of biological macromolecules                       |
| 5  | Cells and their organelles/Structure and function of biological membranes |
| 6  | Introduction to metabolism/Cellular respiration and fermentation          |
| 7  | Photosynthesis  |
| 8  | Cell cycle, mitosis, meiosis  |
| 9  | Transmission of genetic traits/From gene to protein                       |
| 10 | Regulation of gene expression   |
| 11 | Viruses/Genetic engineering in biotechnology                              |
| 12 | Evolution theory/Emergence of species                                     |
| 13 | Introduction to plants and plant physiology                               |
| 14 | Introduction to animals and animal physiology                             |

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

|   | P1 | P2 | P3 | P4 | P5 | P6 | P7 |
|---|----|----|----|----|----|----|----|
| 1 | 5  | 3  | 5  | 3  | 2  | 0  | 5  |
| 2 | 5  | 3  | 0  | 3  | 2  | 0  | 5  |
| 3 | 5  | 3  | 0  | 3  | 2  | 0  | 5  |
| 4 | 5  | 3  | 0  | 3  | 2  | 0  | 5  |
| 5 | 5  | 3  | 0  | 3  | 2  | 0  | 5  |
| 6 | 5  | 3  | 5  | 3  | 2  | 5  | 5  |

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

<https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5707>

**Compiled by:** Research Assistant Şeyma İş

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