

(It will be applied from 2016-2017 Fall)

**İZMİR INSTITUTE OF TECHNOLOGY
GRADUATE SCHOOL OF ENGINEERING AND SCIENCES
DEPARTMENT OF BIOTECHNOLOGY AND BIOENGINEERING
CURRICULUM OF THE MS PROGRAM IN BIOTECHNOLOGY**

The Biotechnology M.S. Program is a jointly operated interdisciplinary program. The Curriculum is supported by the graduate courses available at the Departments of Molecular Biology and Genetics, Chemistry, Civil Engineering, Mechanical Engineering, Chemical Engineering, and Food Engineering as well as BTEC and BENG coded courses.

Core Courses

| | | |
|----------|----------------------------------|---------|
| BTEC 500 | M.S. Thesis | (0-1)NC |
| BTEC 598 | Seminar* | (0-2)NC |
| BTEC 507 | Fundamentals of Biotechnology I | (3-0)3 |
| BTEC 508 | Fundamentals of Biotechnology II | (3-0)3 |
| BTEC 510 | Ethical Issues in Life Sciences | (3-0)3 |
| BTEC 8XX | Special Studies** | (8-0)NC |

Elective Courses

| | | |
|----------|---------------------------------|---------|
| BTEC 580 | Special Topics in Biotechnology | (3-0)3 |
| BTEC 585 | Biosensors | (3-0)3 |
| BTEC 590 | Technical Report Writing | (2-0)NC |

*All M.S. students must register Seminar course until the beginning of their 4th semester.

** Students in Biotechnology program must register for the 8XX courses offered by the departments of their advisors.

Remaining credit requirements may be met by taking related courses in other departments and other interdisciplinary graduate programs.

Total credit (min.) :21
Number of courses with credit (min.): 7

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COURSE DESCRIPTIONS

- BTEC 500 M.S. Thesis (0-1)NC**
A research topic which can be experimental and/or theoretical has to be pursued. The requirements set by the İzmir Institute of Technology should be fulfilled.
- BTEC 507 Fundamentals of Biotechnology I (3-0)3**
Microorganisms, enzymes, metabolic pathways, and fundamental concepts including bioreactors, and separation and purification processes.
- BTEC 508 Fundamentals of Biotechnology II (3-0)3**
The principles in new biotechnology, DNA techniques, tissue culture. Basic molecular biology. Techniques for nucleic acids. The tools of gene manipulation. Biology of genetic engineering. Cloning strategies. Selection and screening of recombinants. The impacts of recombinant DNA technology. Research methods in biotechnology.
- BTEC 510 Ethical Issues in Life Sciences (3-0)3**
The course, in accordance with its aims, examines and elaborates on ethical issues in life sciences with a special emphasis on the ethical, social and environmental implications of animal and plant biotechnology. On the one hand, it focuses on the ethical issues that are relevant to the internal conduct, i.e., philosophical, epistemological and methodological procedures, of life sciences; and, on the other hand, it examines the questions regarding the ethical conduct of the researcher in research design, data collection, the evaluation of data, and the presentation of the findings.
- BTEC 580 Special Topics in Biotechnology (3-0)3**
Contents vary according to interests of students and instructors in charge. Contents may include advances in modern biotechnology, plant and animal cell cultures, modeling and simulation of bioreactors and metabolite production. Preparation of a literature review paper on the student's interest or research area will be required at the end of this course.
- BTEC 585 Biosensors (3-0)3**
Biosensors are modern bioanalytical devices, which are developed with a support of biology, physics, chemistry, biochemistry and engineering departments by combining the specificity features of biological materials or systems with the processing abilities of modern electronic techniques. The aim of this course is to give basic information about the biosensors to the students.
- BTEC 590 Technical Report Writing (2-0)NC**
Conducting research and preparing journal papers, reports and theses. Methods of research, procedures for drafting, outlining and revision, design of layout. Extensive writing practice with journal papers and reports.
- BTEC 598 Seminar (0-2)NC**
A seminar must be given by each student on his/her research area which is graded by academic member of staff. The topic of the seminar can be decided by the student and his/her supervisor.
- BTEC 8XX Special Studies (8-0)NC**
Graduate students supervised by the same faculty member study advanced topics under the guidance of their advisor.