

EK 2: DETAYLI MÜFREDAT DERS PLANI-EN

ALANYA ALAADDIN KEYKUBAT UNIVERSITY
RAFET KAYIŞ FACULTY OF ENGINEERING
DEPARTMENT OF GENETICS AND BIOENGINEERING
GENETICS AND BIOENGINEERING (%100 ENGLISH) BACHELOR (D.E.)
2020/2021 DETAILED EDUCATION TEACHING CURRICULUM

I. YEAR**I. SEMESTER**

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|---------------------|--|------------------|-----------------|-----------------|------------------|------------------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| TDB 101 | Turkish Language I | 2 | 0 | 0 | 2 | 2 | C | Turkish | N | - | N | - | N | - | - |
| GBM 101 | Biology I | 3 | 0 | 0 | 7 | 7 | C | English | N | - | N | - | N | - | - |
| GBM 101L | Biology I Lab | 0 | 0 | 2 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 103 | Physics I | 3 | 0 | 1 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 105 | Mathematics I | 4 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 107 | Chemistry | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 107L | Chemistry Lab | 0 | 0 | 2 | 1 | 1 | C | English | N | - | N | - | N | - | - |
| GBM 109 | Introduction to Computer and Info. Systems | 1 | 1 | 0 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 111 | Engineering Ethics | 1 | 0 | 0 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| <u>TOTAL</u> | | <u>17</u> | <u>1</u> | <u>5</u> | <u>30</u> | <u>30</u> | | | | | | | | | |

I. YEAR**II. SEMESTER**

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|-------------|--|-------------|---|---|--------------|------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| TDB 102 | Turkish Language II | 2 | 0 | 0 | 2 | 2 | C | Turkish | N | - | N | - | N | - | - |
| GBM 102 | Introduction to Scientific Programming | 2 | 2 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 104 | Int. to Genetics and Bioengineering | 2 | 0 | 0 | 3 | 3 | C | English | N | - | N | - | N | - | - |
| GBM 106 | Biology II | 3 | 0 | 0 | 7 | 7 | C | English | N | - | N | - | N | - | - |
| GBM 106L | Biology II Lab | 0 | 0 | 2 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 108 | Mathematics II | 4 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 110 | Physics II | 3 | 0 | 1 | 5 | 5 | C | English | N | - | N | - | N | - | - |

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| | | | | | | | | | | | | | | | |
|---------------------|---|------------------|-----------------|-----------------|------------------|------------------|-----------|----------------|----------|----------|----------|----------|----------|----------|----------|
| SEC 102 | ELECTIVE COURSE I (OUT OF AREA)* | 2 | 0 | 0 | 2 | 2 | CE | English | N | - | N | - | Y | - | 1 |
| <u>TOTAL</u> | | <u>18</u> | <u>2</u> | <u>3</u> | <u>30</u> | <u>30</u> | | | | | | | | | |

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II. YEAR**III. SEMESTER**

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|---------------------|--|------------------|-----------------|-----------------|------------------|------------------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| ATA 101 | Principles of Ataturk and Turkish Revolution History I | 2 | 0 | 0 | 2 | 2 | C | Turkish | N | - | N | - | N | - | - |
| GBM 203 | Cell Biology | 3 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 203L | Cell Biology Lab | 0 | 0 | 2 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 205 | Genetics | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 207 | Differential Equations | 4 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 209 | Thermodynamics | 3 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 211 | Organic Chemistry | 2 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| SEC 201 | ELECTIVE COURSE II (OUT OF AREA)* | 2 | 0 | 0 | 2 | 2 | CE | English | N | - | N | - | Y | - | 1 |
| <u>TOTAL</u> | | <u>19</u> | <u>0</u> | <u>2</u> | <u>30</u> | <u>30</u> | | | | | | | | | |

II. YEAR**IV. SEMESTER**

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|----------------|---|-------------|----------|----------|--------------|----------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| ATA 102 | Principles of Ataturk and Turkish Revolution History II | 2 | 0 | 0 | 2 | 2 | C | Turkish | N | - | N | - | N | - | - |
| GBM 202 | Biomaterials | 3 | 0 | 0 | 3 | 3 | C | English | N | - | N | - | N | - | - |
| GBM 204 | Molecular Biology and Genetics | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 206 | Microbiology | 2 | 0 | 2 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 208 | Heat and Mass Transfer | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 210 | Prob. And Statistics | 2 | 2 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 212 | Biochemistry I | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| SEC 202 | Elective Course III (Out of Area) | 3 | 0 | 0 | 4 | 4 | CE | English | N | - | N | - | Y | - | 1 |

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|--------------|--|-----------|----------|----------|-----------|-----------|---|---------|---|---|---|---|---|---------|---|
| SEC 202.1 | Report Writing and Presentation Skills | | | | | | | | | | | | | | |
| SEC 202.2 | Trends in Food Science | 3 | 0 | 0 | 4 | 4 | E | English | N | - | N | - | Y | SEC 202 | 2 |
| SEC 202.3 | Waste Management and Sustainability | | | | | | | | | | | | | | |
| TOTAL | | 24 | 2 | 2 | 34 | 30 | | | | | | | | | |

III. YEAR

V. SEMESTER

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL KREDİ | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|----------------|--|-------------|----------|----------|-------------|-----------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| GBM 301 | Bioreactors | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | A |
| GBM 303 | Biotechnology | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| GBM 305 | Genetic Engineering I | 3 | 0 | 0 | 6 | 6 | C | English | N | - | N | - | N | - | - |
| GBM 305L | Genetic Engineering I Lab | 0 | 0 | 4 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 307 | Biochemistry II | 3 | 0 | 0 | 4 | 4 | C | English | N | - | N | - | N | - | - |
| SEC 301 | Elective Course IV (Technical Course) | 3 | 0 | 0 | 5 | 5 | CE | English | N | - | N | - | Y | - | 2 |
| SEC 301.1 | Cytogenetics | | | | | | | | | | | | | | |
| SEC 301.2 | Cancer Biology | | | | | | | | | | | | | | |
| SEC 301.3 | Fluid Mechanics | | | | | | | | | | | | | | |
| SEC 301.4 | Human Genetics | | | | | | | | | | | | | | |
| SEC 301.5 | Functional Foods | | | | | | | | | | | | | | |
| SEC 301.6 | Epigenetics | | | | | | | | | | | | | | |
| TOTAL | | 18 | 0 | 4 | 30 | 30 | | | | | | | | | |

III. YEAR

VI. SEMESTER

| COURSE CODE | COURSE NAME | COURSE HOUR | LOCAL | ECTS | COURSE | TEACHING | SIDE | SIDE | PRECONDITI | PRECONDITI | GROUP | GROUP | DESCRIPTION |
|-------------|-------------|-------------|-------|------|--------|----------|------|------|------------|------------|-------|-------|-------------|
|-------------|-------------|-------------|-------|------|--------|----------|------|------|------------|------------|-------|-------|-------------|

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| COURSE CODE | COURSE NAME | T | P | L | CREDIT | ECTS | TYPE | LANGUAGE | CONDITION STATUS | CONDITION CODE | ON STATUS | ON CODE | STATUS | COURSE CODE | N CODE |
|----------------|---|-----------|----------|----------|-----------|-----------|-----------|----------|------------------|----------------|-----------|---------|----------|-------------|----------|
| GBM 302 | Genetic Engineering II | 3 | 0 | 0 | 6 | 6 | C | English | N | - | N | - | N | - | - |
| GBM 302L | Genetic Engineering II Lab | 0 | 0 | 4 | 3 | 3 | C | English | N | - | N | - | N | - | - |
| GBM 304 | Separation and Purification Processes | 2 | 0 | 0 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| GBM 306 | Molecular Cell Biology | 3 | 0 | 0 | 5 | 5 | C | English | N | - | N | - | N | - | - |
| GBM 308 | Internship | 0 | 0 | 0 | 0 | 0 | C | English | N | - | N | - | N | - | A |
| SEC 302 | Elective Course V (Technical Course) | 3 | 0 | 0 | 5 | 5 | CE | English | N | - | N | - | Y | - | 2 |
| SEC 302.1 | Microbial and Viral Genetics | 3 | 0 | 0 | 5 | 5 | E | English | N | - | N | - | Y | SEC 302 | - |
| SEC 302.2 | Neurobiology | | | | | | | | | | | | | | |
| SEC 302.3 | Developmental Biology | | | | | | | | | | | | | | |
| SEC 302.4 | Nutrition in Health and Disease | | | | | | | | | | | | | | |
| SEC 302.5 | Toxicology | | | | | | | | | | | | | | |
| SEC 302.6 | Immunology | | | | | | | | | | | | | | |
| SEC 304 | Elective Course VI (Out of Area) | 3 | 0 | 0 | 4 | 4 | CE | English | N | - | N | - | Y | - | 1 |
| SEC 304.1 | Scientific Research Methods | 3 | 0 | 0 | 4 | 4 | E | English | H | - | H | - | Y | SEC 304 | - |
| SEC 304.2 | Technology and R&D | | | | | | | | | | | | | | |
| SEC 304.3 | Business Planning | | | | | | | | | | | | | | |
| SEC 304.4 | Entrepreneurship | | | | | | | | | | | | | | |
| TOTAL | | 17 | 0 | 4 | 30 | 30 | | | | | | | | | |

IV. YEAR

VII. SEMESTER

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|-------------|-------------|-------------|---|---|--------------|------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |

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|------------------|---|-----------|----------|----------|-----------|-----------|-----------|----------------|----------|----------|----------|----------|----------|----------|----------|
| GBM 401 | Genetics and Bioengineering Design | 0 | 2 | 0 | 4 | 4 | C | English | N | - | Y | - | N | - | 4 |
| GBM 403 | Bioinformatics | 3 | 0 | 0 | 7 | 7 | C | English | N | - | N | - | N | - | - |
| ISG 401 | Occup. Health and Safety I | 2 | 0 | 0 | 2 | 2 | C | English | N | - | N | - | N | - | - |
| SEC 401 | Elective Course VII (Out of Area)* | 2 | 0 | 0 | 2 | 2 | CE | English | N | - | N | - | Y | - | 1 |
| SEC 403 | Elective Course VIII (Design Course) | 3 | 0 | 0 | 5 | 5 | CE | English | N | - | N | - | Y | - | 3 |
| <i>SEC 403.1</i> | <i>Cell Culture Techniques</i> | 3 | 0 | 0 | 5 | 5 | E | English | N | - | N | - | E | SEC 403 | - |
| <i>SEC 403.2</i> | <i>Pharmacogenetics</i> | | | | | | | | | | | | | | |
| <i>SEC 403.3</i> | <i>Industrial Biotechnology</i> | | | | | | | | | | | | | | |
| <i>SEC 403.4</i> | <i>Clinical Biochemistry</i> | | | | | | | | | | | | | | |
| <i>SEC 403.5</i> | <i>Genomics and Proteomics</i> | | | | | | | | | | | | | | |
| <i>SEC 403.6</i> | <i>Plant Biotechnology</i> | | | | | | | | | | | | | | |
| TOTAL | | 16 | 2 | 0 | 30 | 30 | | | | | | | | | |

IV. YEAR
VIII. SEMESTER

| COURSE CODE | COURSE NAME | COURSE HOUR | | | LOCAL CREDIT | ECTS | COURSE TYPE | TEACHING LANGUAGE | SIDE CONDITION STATUS | SIDE CONDITION CODE | PRECONDITION STATUS | PRECONDITION CODE | GROUP STATUS | GROUP COURSE CODE | DESCRIPTION CODE |
|------------------|--|-------------|----------|----------|--------------|----------|-------------|-------------------|-----------------------|---------------------|---------------------|-------------------|--------------|-------------------|------------------|
| | | T | P | L | | | | | | | | | | | |
| GBM 402 | Graduation Project | 0 | 6 | 0 | 8 | 8 | C | English | N | - | Y | GBM 401 | N | - | 5 |
| GBM 404 | Nanotechnology | 3 | 0 | 0 | 6 | 6 | C | English | N | - | N | - | N | - | - |
| ISG 402 | Occup. Health and Safety II | 1 | 0 | 0 | 1 | 1 | C | English | N | - | N | - | N | - | - |
| SEC 402 | Elective Course IX (Design Course) | 3 | 0 | 0 | 5 | 5 | CE | English | N | - | N | - | Y | - | 3 |
| <i>SEC 402.1</i> | <i>Molecular Signaling Pathways and Cancer</i> | 3 | 0 | 0 | 5 | 5 | E | English | N | - | N | - | Y | SEC 402 | - |
| <i>SEC 402.2</i> | <i>Biosensors</i> | | | | | | | | | | | | | | |
| <i>SEC 402.3</i> | <i>Gene Therapy</i> | | | | | | | | | | | | | | |
| <i>SEC 402.4</i> | <i>Molecular Pharmacology</i> | | | | | | | | | | | | | | |
| <i>SEC 402.5</i> | <i>Stem Cells</i> | | | | | | | | | | | | | | |
| <i>SEC 402.6</i> | <i>Nutraceuticals</i> | | | | | | | | | | | | | | |
| <i>SEC 402.7</i> | <i>Drug Delivery Systems</i> | | | | | | | | | | | | | | |

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TOTAL**13****6****0****30****30**

**Abbreviations: T: Theoretical, P: Practice, L: Laboratory, C: Compulsory, E: Elective, CE: Compulsory Elective, Y: Yes, N: No*

DESCRIPTIONS

1 Only 1 (one) course from the related group must be selected.

2 Only 2 (two) courses from the related group must be selected.

3 Only 3 (three) courses from the related group must be selected.

4 In order to take this course (GBM 401 Genetics and Bioengineering Design), the student must have succeeded at least one course from the sixth semester.

5 In order to take this course (GBM 402 Graduation Project), the student must have succeeded in GBM 401 Genetics and Bioengineering Design with a grade of CC or better.

A Students must complete their workplace training (internships) provided that they are at least 20 working days from the third grade. Those who complete their workplace education are considered successful from this course. The workplace education course does not participate in the grade point average.

* Appropriate elective course list has been enclosed.

