

# Biyomühendislik Lisans- I.Öğretim

**Genel Toplam      Ders Adedi: -944      T: -949,5      U: -549      Kredi: -1243      ECTS: -1263      T + U: -1498,5**

| 1.YARIYIL |           |                                                  |    |   |       |      |
|-----------|-----------|--------------------------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                                         | T  | U | Kredi | ECTS |
| 1         | PHY 1305  | Physics I                                        | 2  | 2 | 3     | 6    |
| 2         | CHE 1313  | General Chemistry                                | 2  | 2 | 3     | 6    |
| 3         | TUR 1111  | Turkish I                                        | 2  | 0 | 2     | 2    |
| 4         | HIS 1101  | Atatürk's Principles and History of Revolution I | 2  | 0 | 2     | 2    |
| 5         | MTH 1305  | Mathematics I                                    | 4  | 0 | 4     | 7    |
| 6         | ENG 1135  | Professional English I                           | 2  | 0 | 2     | 4    |
| 7         | BIE 1111  | Introduction to Bioengineering                   | 2  | 0 | 2     | 2    |
| 8         | BIE 1121  | General Biology                                  | 3  | 0 | 3     | 4    |
| Toplam:   |           |                                                  | 19 | 4 | 21    | 33   |

| 2.YARIYIL |           |                                                   |    |   |       |      |
|-----------|-----------|---------------------------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                                          | T  | U | Kredi | ECTS |
| 1         | MTH 1306  | Mathematics II                                    | 4  | 0 | 4     | 7    |
| 2         | TUR 1112  | Turkish II                                        | 2  | 0 | 2     | 2    |
| 3         | HIS 1102  | Atatürk's Principles and History of Revolution II | 2  | 0 | 2     | 2    |
| 4         | PHY 1306  | Physics II                                        | 2  | 2 | 3     | 6    |
| 5         | ENG 1136  | Professional English II                           | 2  | 0 | 2     | 4    |
| 6         | BIE 1114  | Organic Chemistry                                 | 2  | 0 | 2     | 3    |
| 7         | ENG 1100  | Computer Aided Technical Drawing                  | 2  | 2 | 3     | 4    |
| 8         | ENG 1138  | Engineering Mechanics                             | 3  | 0 | 3     | 4    |
| Toplam:   |           |                                                   | 19 | 4 | 21    | 32   |

| 3.YARIYIL |           |                               |    |   |       |      |
|-----------|-----------|-------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                      | T  | U | Kredi | ECTS |
| 1         | MTH 2303  | Differential Equation         | 4  | 0 | 4     | 7    |
| 2         | ENG 2115  | Social Responsibility Project | 1  | 0 | 1     | 1    |
| 3         | BIE 2127  | General Microbiology          | 2  | 2 | 3     | 5    |
| 4         | BIE 2115  | Stoichiometry                 | 2  | 2 | 3     | 4    |
| 5         | BIE 2113  | Biomaterials                  | 3  | 0 | 3     | 3    |
| 6         | BIE 2123  | Biochemistry                  | 3  | 0 | 3     | 4    |
| 7         | BIE 2125  | Basic Computer Programming    | 2  | 2 | 3     | 4    |
| 8         | BIE 2129  | Physical Chemistry            | 3  | 0 | 3     | 3    |
| Toplam:   |           |                               | 20 | 6 | 23    | 31   |

| 4.YARIYIL |           |                                  |    |   |       |      |
|-----------|-----------|----------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                         | T  | U | Kredi | ECTS |
| 1         | MTH 2302  | Numerical Methods in Engineering | 4  | 0 | 4     | 6    |
| 2         | ENG 3140  | Engineering Economy              | 2  | 0 | 2     | 3    |
| 3         | ENG 3120  | Statistics                       | 3  | 0 | 3     | 4    |
| 4         | ENG 2164  | Thermodynamics                   | 2  | 2 | 3     | 5    |
| 5         | ENG 2166  | Fluid Mechanics                  | 2  | 2 | 3     | 5    |
| 6         | BIE 2118  | Molecular Biology                | 3  | 0 | 3     | 4    |
| 7         | BIE 2122  | Biopolymers                      | 3  | 0 | 3     | 3    |
| Toplam:   |           |                                  | 19 | 4 | 21    | 30   |

| 5.YARIYIL |           |                                   |    |   |       |      |
|-----------|-----------|-----------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                          | T  | U | Kredi | ECTS |
| 1         | ENG 3100  | Engineering Management and Ethics | 2  | 0 | 2     | 3    |
| 2         | BIE 3113  | Bioprocess Engineering            | 2  | 2 | 3     | 5    |
| 3         | BIE 3117  | Bioengineering Lab. I             | 0  | 4 | 2     | 4    |
| 4         | BIE 3003  | Summer Practice - I               | 0  | 0 | 0     | 5    |
| 5         | ENG 3133  | Heat Transfer                     | 3  | 1 | 3,5   | 5    |
| 6         | BIE 3001  | Technical Elective Courses-I      | 6  | 0 | 6     | 8    |
| Toplam:   |           |                                   | 17 | 7 | 16,5  | 30   |

| 6.YARIYIL |           |                                        |    |   |       |      |
|-----------|-----------|----------------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                               | T  | U | Kredi | ECTS |
| 1         | BIE 3118  | Bioengineering Lab. II                 | 0  | 4 | 2     | 5    |
| 2         | CBU 4405  | Job Safety and Workers' Health-I       | 2  | 0 | 2     | 2    |
| 3         | BIE 3122  | Bioreaction Engineering                | 3  | 0 | 3     | 5    |
| 4         | BIE 3126  | Biomedical Engineering and Instruments | 4  | 0 | 4     | 6    |
| 5         | ENG 3134  | Biomechanics                           | 3  | 0 | 3     | 5    |
| 6         | ENG 3136  | Mass Transfer                          | 2  | 0 | 2     | 3    |
| 7         | BIE 3002  | Technical Elective Courses - II        | 3  | 0 | 0     | 4    |
| Toplam:   |           |                                        | 17 | 4 | 19    | 30   |

| 7.YARIYIL |           |                                       |    |   |       |      |
|-----------|-----------|---------------------------------------|----|---|-------|------|
| No        | Ders Kodu | Ders Adı                              | T  | U | Kredi | ECTS |
| 1         | BIE 4101  | Biotechnology and Genetic Engineering | 3  | 0 | 3     | 5    |
| 2         | CBU 4406  | Job Safety and Workers' Health-II     | 2  | 0 | 2     | 2    |
| 3         | BIE 4119  | Bioengineering Design                 | 3  | 0 | 3     | 4    |
| 4         | BIE 4117  | Bioprocess Dynamics and Control       | 3  | 0 | 3     | 5    |
| 5         | BIE 4123  | Physiology                            | 3  | 0 | 3     | 4    |
| 6         | BIE 4111  | Graduation Project I                  | 3  | 0 | 3     | 4    |
| 7         | BIE 4001  | Technical Elective Courses - III      | 3  | 0 | 3     | 4    |
| 8         | SEC 1000  | Non - Technical Elective Courses      | 2  | 0 | 2     | 2    |
| Toplam:   |           |                                       | 22 | 0 | 22    | 30   |

| 8.YARIYIL |           |                                  |   |   |       |      |
|-----------|-----------|----------------------------------|---|---|-------|------|
| No        | Ders Kodu | Ders Adı                         | T | U | Kredi | ECTS |
| 1         | BIE 4110  | Vocational Training in Workplace | 5 | 0 | 5     | 20   |
| 2         | BIE 4122  | Graduation Project II            | 3 | 0 | 3     | 10   |
| Toplam:   |           |                                  | 8 | 0 | 8     | 30   |

# Biyomühendislik Lisans- I.Öğretim

**Genel Toplam      Ders Adedi: -944      T: -949,5      U: -549      Kredi: -1243      ECTS: -1263      T + U: -1498,5**

| BIE 3001 – Technical Elective Courses - I |           |                                                   |     |   |       |      |
|-------------------------------------------|-----------|---------------------------------------------------|-----|---|-------|------|
| No                                        | Ders Kodu | Ders Adı                                          | T   | U | Kredi | ECTS |
| 1                                         | BIE 3201  | Biomechanics                                      | 3   | 0 | 3     | 4    |
| 2                                         | BIE 3207  | Hazardous Waste Treatment Techniques              | 3   | 0 | 3     | 4    |
| 3                                         | BIE 3208  | Biological Processes                              | 3   | 0 | 3     | 4    |
| 4                                         | BIE 3211  | Ecology                                           | 3   | 0 | 3     | 4    |
| 5                                         | BIE 3213  | Cancer Biology                                    | 3   | 0 | 3     | 4    |
| 6                                         | BIE 3214  | Enzyme Technology                                 | 3   | 0 | 3     | 4    |
| 7                                         | BIE 3215  | Virology                                          | 3   | 0 | 3     | 4    |
| 8                                         | BIE 3216  | Artificial Organ Technology                       | 3   | 0 | 3     | 4    |
| 9                                         | BIE 3217  | Immunology                                        | 3   | 0 | 3     | 4    |
| 10                                        | BIE 3218  | Living Cell Culture                               | 3   | 0 | 3     | 4    |
| 11                                        | BIE 3219  | Food Microbiology                                 | 3   | 0 | 3     | 4    |
| 12                                        | BIE 4202  | Medical Genetic                                   | 3   | 0 | 3     | 4    |
| 13                                        | BIE 4204  | Genomic and Proteomic                             | 3   | 0 | 3     | 4    |
| 14                                        | BIE 4208  | Biomarker and System                              | 3   | 0 | 3     | 4    |
| 15                                        | BIE 4209  | Molecular Genetic                                 | 3   | 0 | 3     | 4    |
| 16                                        | BIE 4210  | Biosensors                                        | 3   | 0 | 3     | 4    |
| 17                                        | BIE 4211  | Microbial Genetic                                 | 3   | 0 | 3     | 4    |
| 18                                        | BIE 4213  | Cell Biology                                      | 3   | 0 | 3     | 4    |
| 19                                        | BIE 4214  | Bioinformatics                                    | 3   | 0 | 3     | 4    |
| 20                                        | CBU 4401  | Girişimcilik                                      | 3   | 0 | 3     | 4    |
| 21                                        | BIE 4232  | Biomimicking with Liquid Crystals                 | 3   | 0 | 3     | 4    |
| 22                                        | BIE 4233  | Liquid Crystals in Biological Structures          | 3   | 0 | 3     | 4    |
| 23                                        | BIE 4234  | Microfluidics in Bioengineering Applications      | 3   | 0 | 3     | 4    |
| 24                                        | BIE 4235  | Electrochemistry                                  | 3   | 0 | 3     | 4    |
| 25                                        | BIE 4240  | Industrial Bioreactors and Scale-Up               | 3   | 0 | 3     | 4    |
| 26                                        | BIE 4242  | Microalgal Technologies                           | 3   | 0 | 3     | 4    |
| 27                                        | BIE 4243  | Photobioreactors and Applications                 | 3   | 0 | 3     | 4    |
| 28                                        | BIE 4244  | Biodesign as A Sustainable Design Methodology     | 3   | 0 | 3     | 4    |
| 29                                        | BIE 4245  | Biobased Economy                                  | 3   | 0 | 3     | 4    |
| 30                                        | BIE 4246  | Bio-fuel Production Technologies                  | 3   | 0 | 3     | 4    |
| 31                                        | BIE 4247  | Supercritical Fluid Technologies                  | 3   | 0 | 3     | 4    |
| 32                                        | BIE 4248  | Environmental Biotechnology                       | 3   | 0 | 3     | 4    |
| 33                                        | BIE 3221  | Molecular Modelling                               | 3   | 0 | 3     | 4    |
| 34                                        | BIE 3223  | Tissue Engineering                                | 3   | 0 | 3     | 4    |
| 35                                        | BIE 3224  | Mathematical Application in Bioengineering System | 3   | 0 | 3     | 4    |
| 36                                        | BIE 3225  | Experimental animal models                        | 3   | 0 | 3     | 4    |
| 37                                        | BIE 3226  | In vitro models for preclinical studies           | 3   | 0 | 3     | 4    |
| 38                                        | BIE 3227  | Biosimilars                                       | 3   | 0 | 3     | 4    |
| Toplam:                                   |           |                                                   | 114 | 0 | 114   | 152  |

| BIE 3002 – Technical Elective Courses - II |           |                                                   |     |   |       |      |
|--------------------------------------------|-----------|---------------------------------------------------|-----|---|-------|------|
| No                                         | Ders Kodu | Ders Adı                                          | T   | U | Kredi | ECTS |
| 1                                          | BIE 3201  | Biomechanics                                      | 3   | 0 | 3     | 4    |
| 2                                          | BIE 3207  | Hazardous Waste Treatment Techniques              | 3   | 0 | 3     | 4    |
| 3                                          | BIE 3208  | Biological Processes                              | 3   | 0 | 3     | 4    |
| 4                                          | BIE 3211  | Ecology                                           | 3   | 0 | 3     | 4    |
| 5                                          | BIE 3213  | Cancer Biology                                    | 3   | 0 | 3     | 4    |
| 6                                          | BIE 3214  | Enzyme Technology                                 | 3   | 0 | 3     | 4    |
| 7                                          | BIE 3215  | Virology                                          | 3   | 0 | 3     | 4    |
| 8                                          | BIE 3216  | Artificial Organ Technology                       | 3   | 0 | 3     | 4    |
| 9                                          | BIE 3217  | Immunology                                        | 3   | 0 | 3     | 4    |
| 10                                         | BIE 3218  | Living Cell Culture                               | 3   | 0 | 3     | 4    |
| 11                                         | BIE 3219  | Food Microbiology                                 | 3   | 0 | 3     | 4    |
| 12                                         | BIE 4202  | Medical Genetic                                   | 3   | 0 | 3     | 4    |
| 13                                         | BIE 4204  | Genomic and Proteomic                             | 3   | 0 | 3     | 4    |
| 14                                         | BIE 4208  | Biomarker and System                              | 3   | 0 | 3     | 4    |
| 15                                         | BIE 4209  | Molecular Genetic                                 | 3   | 0 | 3     | 4    |
| 16                                         | BIE 4210  | Biosensors                                        | 3   | 0 | 3     | 4    |
| 17                                         | BIE 4211  | Microbial Genetic                                 | 3   | 0 | 3     | 4    |
| 18                                         | BIE 4213  | Cell Biology                                      | 3   | 0 | 3     | 4    |
| 19                                         | BIE 4214  | Bioinformatics                                    | 3   | 0 | 3     | 4    |
| 20                                         | CBU 4401  | Girişimcilik                                      | 3   | 0 | 3     | 4    |
| 21                                         | BIE 4232  | Biomimicking with Liquid Crystals                 | 3   | 0 | 3     | 4    |
| 22                                         | BIE 4233  | Liquid Crystals in Biological Structures          | 3   | 0 | 3     | 4    |
| 23                                         | BIE 4234  | Microfluidics in Bioengineering Applications      | 3   | 0 | 3     | 4    |
| 24                                         | BIE 4235  | Electrochemistry                                  | 3   | 0 | 3     | 4    |
| 25                                         | BIE 4240  | Industrial Bioreactors and Scale-Up               | 3   | 0 | 3     | 4    |
| 26                                         | BIE 4242  | Microalgal Technologies                           | 3   | 0 | 3     | 4    |
| 27                                         | BIE 4243  | Photobioreactors and Applications                 | 3   | 0 | 3     | 4    |
| 28                                         | BIE 4244  | Biodesign as A Sustainable Design Methodology     | 3   | 0 | 3     | 4    |
| 29                                         | BIE 4245  | Biobased Economy                                  | 3   | 0 | 3     | 4    |
| 30                                         | BIE 4246  | Bio-fuel Production Technologies                  | 3   | 0 | 3     | 4    |
| 31                                         | BIE 4247  | Supercritical Fluid Technologies                  | 3   | 0 | 3     | 4    |
| 32                                         | BIE 4248  | Environmental Biotechnology                       | 3   | 0 | 3     | 4    |
| 33                                         | BIE 3221  | Molecular Modelling                               | 3   | 0 | 3     | 4    |
| 34                                         | BIE 3223  | Tissue Engineering                                | 3   | 0 | 3     | 4    |
| 35                                         | BIE 3224  | Mathematical Application in Bioengineering System | 3   | 0 | 3     | 4    |
| 36                                         | BIE 3225  | Experimental animal models                        | 3   | 0 | 3     | 4    |
| 37                                         | BIE 3226  | In vitro models for preclinical studies           | 3   | 0 | 3     | 4    |
| 38                                         | BIE 3227  | Biosimilars                                       | 3   | 0 | 3     | 4    |
| Toplam:                                    |           |                                                   | 114 | 0 | 114   | 152  |

# Biyomühendislik Lisans- I.Öğretim

**Genel Toplam      Ders Adedi: -944      T: -949,5      U: -549      Kredi: -1243      ECTS: -1263      T + U: -1498,5**

| <b>BIE 4001 – Technical Elective Courses - III</b> |                  |                                                   |            |          |              |             |
|----------------------------------------------------|------------------|---------------------------------------------------|------------|----------|--------------|-------------|
| <b>No</b>                                          | <b>Ders Kodu</b> | <b>Ders Adı</b>                                   | <b>T</b>   | <b>U</b> | <b>Kredi</b> | <b>ECTS</b> |
| 1                                                  | BIE 3201         | Biomechanics                                      | 3          | 0        | 3            | 4           |
| 2                                                  | BIE 3207         | Hazardous Waste Treatment Techniques              | 3          | 0        | 3            | 4           |
| 3                                                  | BIE 3208         | Biological Processes                              | 3          | 0        | 3            | 4           |
| 4                                                  | BIE 3211         | Ecology                                           | 3          | 0        | 3            | 4           |
| 5                                                  | BIE 3213         | Cancer Biology                                    | 3          | 0        | 3            | 4           |
| 6                                                  | BIE 3214         | Enzyme Technology                                 | 3          | 0        | 3            | 4           |
| 7                                                  | BIE 3215         | Virology                                          | 3          | 0        | 3            | 4           |
| 8                                                  | BIE 3216         | Artificial Organ Technology                       | 3          | 0        | 3            | 4           |
| 9                                                  | BIE 3217         | Immunology                                        | 3          | 0        | 3            | 4           |
| 10                                                 | BIE 3218         | Living Cell Culture                               | 3          | 0        | 3            | 4           |
| 11                                                 | BIE 3219         | Food Microbiology                                 | 3          | 0        | 3            | 4           |
| 12                                                 | BIE 4202         | Medical Genetic                                   | 3          | 0        | 3            | 4           |
| 13                                                 | BIE 4204         | Genomic and Proteomic                             | 3          | 0        | 3            | 4           |
| 14                                                 | BIE 4208         | Biomarker and System                              | 3          | 0        | 3            | 4           |
| 15                                                 | BIE 4209         | Molecular Genetic                                 | 3          | 0        | 3            | 4           |
| 16                                                 | BIE 4210         | Biosensors                                        | 3          | 0        | 3            | 4           |
| 17                                                 | BIE 4211         | Microbial Genetic                                 | 3          | 0        | 3            | 4           |
| 18                                                 | BIE 4213         | Cell Biology                                      | 3          | 0        | 3            | 4           |
| 19                                                 | BIE 4214         | Bioinformatics                                    | 3          | 0        | 3            | 4           |
| 20                                                 | CBU 4401         | Girişimcilik                                      | 3          | 0        | 3            | 4           |
| 21                                                 | BIE 4232         | Biomimicking with Liquid Crystals                 | 3          | 0        | 3            | 4           |
| 22                                                 | BIE 4233         | Liquid Crystals in Biological Structures          | 3          | 0        | 3            | 4           |
| 23                                                 | BIE 4234         | Microfluidics in Bioengineering Applications      | 3          | 0        | 3            | 4           |
| 24                                                 | BIE 4235         | Electrochemistry                                  | 3          | 0        | 3            | 4           |
| 25                                                 | BIE 4240         | Industrial Bioreactors and Scale-Up               | 3          | 0        | 3            | 4           |
| 26                                                 | BIE 4242         | Microalgal Technologies                           | 3          | 0        | 3            | 4           |
| 27                                                 | BIE 4243         | Photobioreactors and Applications                 | 3          | 0        | 3            | 4           |
| 28                                                 | BIE 4244         | Biodesign as A Sustainable Design Methodology     | 3          | 0        | 3            | 4           |
| 29                                                 | BIE 4245         | Biobased Economy                                  | 3          | 0        | 3            | 4           |
| 30                                                 | BIE 4246         | Bio-fuel Production Technologies                  | 3          | 0        | 3            | 4           |
| 31                                                 | BIE 4247         | Supercritical Fluid Technologies                  | 3          | 0        | 3            | 4           |
| 32                                                 | BIE 4248         | Environmental Biotechnology                       | 3          | 0        | 3            | 4           |
| 33                                                 | BIE 3221         | Molecular Modelling                               | 3          | 0        | 3            | 4           |
| 34                                                 | BIE 3223         | Tissue Engineering                                | 3          | 0        | 3            | 4           |
| 35                                                 | BIE 3224         | Mathematical Application in Bioengineering System | 3          | 0        | 3            | 4           |
| 36                                                 | BIE 3225         | Experimental animal models                        | 3          | 0        | 3            | 4           |
| 37                                                 | BIE 3226         | In vitro models for preclinical studies           | 3          | 0        | 3            | 4           |
| 38                                                 | BIE 3227         | Biosimilars                                       | 3          | 0        | 3            | 4           |
| <b>Toplam:</b>                                     |                  |                                                   | <b>114</b> | <b>0</b> | <b>114</b>   | <b>152</b>  |

Biyomühendislik  
Lisans- I.Öğretim

**Genel Toplam      Ders Adedi: -944      T: -949,5      U: -549      Kredi: -1243      ECTS: -1263      T + U: -1498,5**

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| SEC 1000 - Non - Technical Elective Courses |           |                              |   |   |       |      |
|---------------------------------------------|-----------|------------------------------|---|---|-------|------|
| No                                          | Ders Kodu | Ders Adı                     | T | U | Kredi | ECTS |
| 1                                           | SEC 3202  | Engineering Documentaries    | 2 | 0 | 2     | 2    |
| 2                                           | SEC 3216  | Report Writing Techniques    | 2 | 0 | 2     | 2    |
| 3                                           | SEC 3229  | Photography                  | 2 | 0 | 2     | 2    |
| 4                                           | SEC 3232  | Chess                        | 2 | 0 | 2     | 2    |
| 5                                           | SEC 3237  | Table Tennis                 | 2 | 0 | 2     | 2    |
| 6                                           | SEC 3241  | Football                     | 2 | 0 | 2     | 2    |
| 7                                           | SEC 3242  | Handball                     | 2 | 0 | 2     | 2    |
| 8                                           | SEC 3243  | Percussion                   | 2 | 0 | 2     | 2    |
| 9                                           | SEC 3256  | Technology Management        | 2 | 0 | 2     | 2    |
| 10                                          | SEC 3257  | Innovation Management        | 2 | 0 | 2     | 2    |
| 11                                          | SEC 3259  | Intellectual Property Rights | 2 | 0 | 2     | 2    |
| 12                                          | SEC 3260  | Project Training             | 2 | 0 | 2     | 2    |
| 13                                          | SEC 3261  | Amateur Fishing              | 2 | 0 | 2     | 2    |