|                  |   |        |     |   |    |           | Faculty of E | Üsküdar Univers<br>ngineering and Ni<br>ient of Chemical I<br>22-2023 Academi<br>(100% English) | atural Sciences<br>Engineering<br>c Year                     |        |     |        |     |        |      |
|------------------|---|--------|-----|---|----|-----------|--------------|---|--|--------|-----|--------|-----|--------|------|
|                  |   |        |     |   |    |           |              | YEAR ONE  |  |        |     |        |     |        |      |
|                  | 1st Term  |        |     |   |    |           |              |   | 2nd Term   |        |     |        |     |        |      |
| Code             | Course Name   | T      | Р   | L | С  | ECTS      | Prerequisite | Code  | Course Name  | Т      |     | Р      | L   | С      | ECT  |
| PHYS101          | Physics I*  | 3      | 0   | 2 | 4  | 6         |              | PHYS102   | Physics II*  | 3      |     | 0      | 2 ' | 4      | 6    |
| MATH101          | Calculus I*   | 3      | 2   | 0 | 4  | 6         |              | MATH102   | Calculus II*   | 3      |     |        |     | 4      | 6    |
| CHEM101          | General Chemistry I *   | 3      | 0   | 2 | 4  | 6         |              | CHEM102   | General Chemistry II*  | 3      |     |        |     | 4      | 6    |
| CHE105           | Computer Aided Engineering Graphics*                          | 2      | 0   | 2 | 3  | 4         |              | CHE102  | Introduction to Chemical Engineering                         | 3      |     |        |     | 3      | 4    |
| RPSC109          | Positive Psychology and Communication Skills                  | 3      | 0   | 0 | 3  | 5         |              | MBG154  | General Biology*   | 2      |     |        |     | 3      | 4    |
| RCUL101          | University Culture I*   | 0      | 2   | 0 | 1  | 1         |              | RCUL102   | University Culture II*                                       | 0      |     |        |     | 1      | 1    |
| TURK101          | Turkish Language I  | 2      | 0   | 0 | 2  | 3         |              | TURK102   | Turkish Language II  | 2      |     |        |     | 2      | 3    |
| Total Credits    |   | 16     | 4   | 6 | 21 | 31        |              | Total Credits   |  | 16     | 5 4 | 1      | 6 2 | 1      | 30   |
|                  |   |        |     |   |    |           |              | YEAR TWO  |  |        |     |        |     |        |      |
|                  | 3rd Term  |        |     |   |    |           |              |   | 4th Term   |        | _   | _      |     |        | _    |
| Code             | Course Name   | T      | Р   | 1 | C  | ECTS      | Prerequisite | Code  | Course Name  | Т      |     | 5      |     | c      | ECT: |
| CHE201           | Mass and Energy Balances                                      | 3      | 2   | 0 | 4  | 5         |              | CHE204  | Chemical Engineering Thermodynamics *                        | 2      |     |        |     | 3      | 5    |
| CHE221           | Introduction to Programming for Chemical                      | 2      | 0   | 2 | 3  | 4         |              | CHE206  | Fluid Mechanics and Applications                             | 3      | Т   | 0      | 0   | 3      | 5    |
| CHEM203          | Physical Chemistry  | 3      | 0   | 0 | 3  | 4         |              | CHE292  | Summer Practice I**  | 0      |     | 0      | 0 1 | 0      | 5    |
| MATH203          | Differential Equations  | 2      | 2   | 0 | 3  | 5         |              | CHEM104   | Organic Chemistry*   | 3      |     |        |     | 4      | 6    |
| RPRE104          | Entrepreneurship and Project Culture                          | 2      | 0   | 0 | 2  | 3         |              | MATH204   | Statistics   | 3      |     |        |     | 3      | 5    |
| ATA101           | Principles of Atatürk and History of Turkish<br>Revolution I  | 2      | 0   | 0 | 2  | 3         |              | ATA102  | Principles of Atatürk and History of Turkish Revolution      | ı II 2 |     | )      | 0 : | 2      | 3    |
| ENG101           | English I   | 3      | 0   | 0 | 3  | 3         |              | ENG102  | English II   | 3      |     | 0      | 0 : | 3      | 3    |
| XXXXXXX          | Social Elective I   | 3      | 0   | 0 | 3  | 5         |              |   |  |        | ш   |        |     |        |      |
| Total Credits    |   | 20     | 4   | 2 | 23 | 32        |              | Total Credits   |  | 10     | 5   | 2      | 2 1 | 18     | 32   |
|                  |   |        |     |   |    |           |              | YEAR THREE  |  |        |     |        |     |        |      |
|                  | 5th Term  |        |     |   |    |           |              |   | 6th Term   |        |     |        |     |        |      |
| Code             | Course Name   | Т      | Р   | L | C  | ECTS      | Prerequisite | Code  | Course Name  | Т      |     | Р      |     |        | ECT  |
| CHE301           | Heat Transfer   | 3      | 0   | 0 | 3  | 5         |              | CHE310  | Mass Transfer  | 3      |     |        |     | 3      | 5    |
| CHE307           | Chemical Reaction Engineering- I*                             | 2      | 2   | 0 | 3  | 5         |              | CHE312  | Chemical Reaction Engineering-II*                            | 2      |     |        |     | 3      | 5    |
| E211             | Engineering Economics   | 3      | 0   | 0 | 3  | 4         |              | CHE330  | Chemical Engineering Laboratory I*                           | 1      |     |        |     | 3      | 4    |
| CHEXXX           | Departmental Elective I (Project Based)                       | 3      | 0   | 0 | 3  | 5         |              | CHE392  | Summer Practice II**   | 0      |     |        |     | 0      | 5    |
| XXXXXX           | Social Elective II  | 3      | 0   | 0 | 3  | 5         |              | CHEXXX  | Departmental Elective II (Project Based) Social Elective III | 3      |     |        |     | 3      | 5    |
| XXXXXXX          | Field Elective I  | 3      | 0   | 0 | -  |           |              |   | Social Elective III  | 3      | -   | _      | _   | _      | _    |
| Total Credits    |   | 17     | 2   | 0 | 18 | 29        |              | Total Credits   |  | 1      | 2   | 2      | 4 1 | 15     | 29   |
|                  |   |        |     |   |    |           |              | YEAR FOUR   |  |        |     |        |     |        |      |
|                  | 7th Term  | -      |     |   |    | Leone     |              |   | 8th Term   |        |     |        | _   | - 1    | -    |
| Code             | Course Name   | 7<br>2 | P 2 | 0 | 3  | ECTS<br>5 | Prerequisite | Code  | Course Name  | Т      |     | P<br>R |     | c<br>s | ECT  |
| CHE491<br>CHE403 | Graduation Project* Chemical Process Control                  | 3      | 0   | 0 | 3  | 5         |              | CHE492<br>CHEXXX  | Graduation Thesis*  Departmental Elective V                  | 1      |     |        |     | 3      | 5    |
|                  |   |        |     |   | -  |           |              |   | Departmental Elective V                                      |        | т.  |        |     |        |      |
| CHE421           | Mathematical Modeling for Chemical Engineering                | 3      | 0   | 0 | 3  | 5         |              | CHEXXX  | Departmental Elective VI                                     | 3      | _   | _      | _   | 3      | 5    |
| CHE431<br>CHEXXX | Chemical Engineering Laboratory II* Departmental Elective III | 3      | 0   | 4 | 3  | 5         |              | XXXXXX  | Field Elective II Field Elective III                         | 3      |     |        |     | 3      | 5    |
|                  |   |        |     |   |    |           |              |   |  |        |     |        |     |        |      |

| CHEXXX        | Departmental Elective IV                                | 2  | ٥                      | ٥       | 2  | 5  |  | 1     | DHS402                            | Occupational Health and Safety II     | 2  | 0 | ٥ | 2  |
|---------------|---|----|------------------------|---------|----|----|--|-------|-----------------------------------|---------------------------------------|----|---|---|----|
|               | Occupational Health and Safety I                        | 2  | 0                      | 0       | 2  | 2  |  | ľ     | Occupational Health and Sarcty II |                                       | 1  |   |   | _  |
| Total Credits |   | 17 | 2                      | 4       | 20 | 31 |  | T     | Total Credits                     |                                       | 15 | 8 | 0 | 19 |
|               |   |    |                        |         |    |    |  |       |                                   |                                       |    |   |   |    |
|               | Total Course Credits for Graduation                     |    | 155<br>129<br>28<br>24 |         |    | 1  |  | Ш     |                                   |                                       |    |   |   |    |
|               | Total Theoretical Hours                                 |    |                        |         |    | 1  |  | I۴    | These courses are                 | under the Applied Course status.      |    |   |   |    |
|               | Total Applied Course hours                              |    |                        |         |    | 1  |  | l I** | *These courses an                 | e under the Internship Course status. |    |   |   |    |
|               |   |    |                        |         |    | 1  |  | Ш     |                                   |                                       |    |   |   |    |
| 2022-2023     | Total Laboratory Hours                                  |    |                        |         |    |    |  |       |                                   |                                       |    |   |   |    |
| 2022-2023     | Total Laboratory Hours Total Course ECTS for Graduation | 1  | 2                      | 11      |    | 1  |  | Ш     |                                   |                                       |    |   |   |    |
| 2022-2023     |   |    | - 6                    | 11<br>0 |    |    |  |       |                                   |                                       |    |   |   |    |

| 2022-2023 | Total Laboratory Hours                      |      |   | 24 |   |      |              | 1                          |  |        |        |        |       |        |  |  |  |
|-----------|---|------|---|----|---|------|--------------|----------------------------|--|--------|--------|--------|-------|--------|--|--|--|
|           | Total Course ECTS for Graduation            |      |   | 41 |   |      |              | I                          |  |        |        |        |       |        |  |  |  |
|           | Total Elective Courses ECTS                 |      |   | 50 |   |      |              |                            |  |        |        |        |       |        |  |  |  |
|           | Elective Course Ratio                       |      | 2 | 5% |   |      |              |                            |  |        |        |        |       |        |  |  |  |
|           |   |      |   |    |   |      |              |                            |  |        |        |        |       |        |  |  |  |
|           |   |      |   |    |   |      |              | Elective Course Pool       |  |        |        |        |       |        |  |  |  |
|           | Departmental Elective Cou                   | rses |   |    |   |      |              | Elective Foreign Languages |  |        |        |        |       |        |  |  |  |
| Code      | Course Name                                 | T    | Р | L  | С | ECTS | Prerequisite | Code                       | Course Name  | т      | Р      | L      | С     | ECTS   |  |  |  |
| CHE213    | Physical Chemistry Laboratory               | 0    | 0 | 4  | 3 | 5    |              | ARB123                     | Arabic I   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE202     | Organic Chemistry - II                      | 3    | 0 | 0  | 3 | 5    | CHEM104      | ARB124                     | Arabic II  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE303     | Introduction to Nanotechnology              | 3    | 0 | 0  | 3 | 5    |              | CHN123                     | Chinese I  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE305     | Sustainable and Renewable Energy            | 3    | 0 | 0  | 3 | 5    |              | CHN124                     | Chinese II   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE311     | Transport Phenomena in Chemical Engineering | 3    | 0 | 0  | 3 | 5    |              | ESP123                     | Spanish I  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE314     | Separation Processes                        | 3    | 0 | 0  | 3 | 5    |              | ESP124                     | Spanish II   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE323     | Introduction to Biological Science - II     | 3    | 0 | 0  | 3 | 5    |              | FRN123                     | French I   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE313     | Structural Biology                          | 3    | 0 | 0  | 3 | 5    |              | FRN124                     | French II  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| HE325     | Nanostructured Materials                    | 3    | 0 | 0  | 3 | 5    |              | GER123                     | German I   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| CHE306    | Fermentation Technology                     | 3    | 0 | 0  | 3 | 5    |              | GER124                     | German II  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| CHE308    | Data Mining in Chemical Engineering         | 3    | 0 | 0  | 3 | 5    |              | RSN123                     | Russian I  | 3      | 0      | 0      | 3     | 5      |  |  |  |
| CHE405    | Biotechnology and Special Applications      | 3    | 0 | 0  | 3 | 5    |              | RSN124                     | Russian II   | 3      | 0      | 0      | 3     | 5      |  |  |  |
| CHE406    | Bioinformatics for Engineers                | 3    | 0 | 0  | 3 | 5    |              |                            | Field Elective Courses   |        |        |        |       |        |  |  |  |
| CHE408    | Special Topics in Chemical Engineering      | 3    | 0 | 0  | 3 | 5    |              |                            |  | _      |        |        | _     |        |  |  |  |
| CHE409    | Principles and Practice of Drug Development | 3    | 0 | 0  | 3 | 5    |              |                            | rses, any departmental elective course having appropriate<br>aral Sciences can be elected. | credi  | ts tro | m oth  | er de | partme |  |  |  |
| CHE414    | Drug Design                                 | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE416    | Protein Engineering for Chemical Engineers  | 3    | 0 | 0  | 3 | 5    |              |                            | Social Elective Courses  |        |        |        |       |        |  |  |  |
| CHE461    | Petroleum Refinery Engineering              | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE462    | Natural Gas Engineering                     | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE463    | Petrochemical Technology                    | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE465    | Photocatalysis                              | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| HE321     | Fundamentals of Biochemistry                | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE451    | Water Treatment Technology                  | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| HE471     | Polymer Technology                          | 3    | 0 | 0  | 3 | 5    | _            | For Social Elective co     | urses any course having appropriate credits from other fac                                 | ulties | can    | se ele | cted. |        |  |  |  |
| CHE446    | Material Science and Engineering            | 3    | 0 | 0  | 3 | 5    |              |                            |  |        |        |        |       |        |  |  |  |
| CHE447    | Catalysis and Catalytic Processes           | 3    | 0 | 0  | 3 | 5    |              | I                          |  |        |        |        |       |        |  |  |  |
| CHE448    | Instrumental Analysis                       | 3    | 0 | 0  | 3 | 5    |              | 1                          |  |        |        |        |       |        |  |  |  |

| CHE449 | Engineering Thermodynamics       | 3 | 0 | 0 | 3 | 5 | CHE204 |
|--------|----------------------------------|---|---|---|---|---|--------|
| CHE453 | Chemical Technology              | 3 | 0 | 0 | 3 | 5 |        |
| CHE455 | Gas Purification Technology      | 3 | 0 | 0 | 3 | 5 |        |
| CHE457 | Recycling Technology             | 3 | 0 | 0 | 3 | 5 |        |
| CHE450 | Energy Management                | 3 | 0 | 0 | 3 | 5 |        |
| CHE433 | Chemical Engineering Design - I  | 3 | 0 | 0 | 3 | 5 |        |
| CHE434 | Chemical Engineering Design - II | 3 | 0 | 0 | 3 | 5 | CHE433 |

Important notes to be taken into consideration before registrations

1) Both chemical and chemical & biological engineering students will follow the same program, startin

2) Major and minor applications will only be accepted towards chemical engineering, starting fro