

|  |          | Republic of Iraq - Ministry of Higher Education and Scientific Research<br>Al-Muthanna University<br>Bachelor's degree in Chemical Engineering (First cycle)<br>Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25hr<br>Program Curriculum (2023 - 2024) |                               |                                |                           |                     | جمهورية العراق - وزارة التعليم العالي والبحث العلمي<br>جامعة المثنى<br>بكالوريوس في الهندسة الكيميائية (الدورة الأولى)<br>أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوروبية - كل وحدة اوروبية = ٢٥ ساعة<br>المنهاج الدراسي للعام ٢٠٢٣-٢٠٢٤ |             |             |            |            |             |             |              |              |            |  |                             |                             |        |
|---------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|---------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|------------|------------|-------------|-------------|--------------|--------------|------------|-------------------------------------------------------------------------------------|-----------------------------|-----------------------------|--------|
| Level                                                                           | Semester | No.                                                                                                                                                                                                                                                                 | Module Code                   | Module Name in English         | اسم المادة الدراسية       | Language            | SSWL (hr/w)                                                                                                                                                                                                                                 |             |             |            |            | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem   | ECTS       | Module Type                                                                         | Prerequisite Module(s) Code |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           |                     | CL (hr/w)                                                                                                                                                                                                                                   | Lect (hr/w) | Lab (hr/w)  | Pr (hr/w)  | Tut (hr/w) |             |             |              |              |            |                                                                                     |                             | Semn (hr/w)                 |        |
| UGI                                                                             | One      | 1                                                                                                                                                                                                                                                                   | UNI003                        | Arabic Language                | اللغة العربية             | Arabic              | 2                                                                                                                                                                                                                                           |             |             |            |            |             | 3           | 33           | 17           | 50         | 2.00                                                                                | S                           |                             |        |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | UNI004                        | Computer I                     | الحاسبات I                | English             | 1                                                                                                                                                                                                                                           |             | 2           |            | 1          |             | 3           | 63           | 12           | 75         | 3.00                                                                                | S                           |                             |        |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | ENG001                        | Mathematics I                  | الرياضيات I               | English             | 3                                                                                                                                                                                                                                           |             |             |            | 1          |             | 3           | 63           | 87           | 150        | 6.00                                                                                | B                           |                             |        |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | ENG003                        | Engineering drawing            | رسم الهندسي               | English             | 1                                                                                                                                                                                                                                           |             |             | 2          |            |             | 3           | 48           | 77           | 125        | 5.00                                                                                | B                           |                             |        |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE112                        | Physics                        | الفيزياء                  | English             | 2                                                                                                                                                                                                                                           |             |             |            | 1          |             | 3           | 48           | 102          | 150        | 6.00                                                                                | B                           |                             |        |
|                                                                                 |          | 6                                                                                                                                                                                                                                                                   | CHE113                        | Chemical Eng. Principle I      | مبادئ هندسة كيميائية I    | English             | 3                                                                                                                                                                                                                                           |             |             |            | 1          |             | 3           | 63           | 137          | 200        | 8.00                                                                                | C                           |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           | Total               | 12                                                                                                                                                                                                                                          | 0           | 2           | 2          | 4          | 0           | 18          | 318          | 432          | 750        | 30                                                                                  | 20                          |                             |        |
|                                                                                 | Two      | Semester                                                                                                                                                                                                                                                            | No.                           | Module Code                    | Module Name in English    | اسم المادة الدراسية | Language                                                                                                                                                                                                                                    | SSWL (hr/w) |             |            |            |             | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem | ECTS                                                                                | Module Type                 | Prerequisite Module(s) Code |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           |                     |                                                                                                                                                                                                                                             | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  | Semn (hr/w) |              |              |            |                                                                                     |                             |                             |        |
|                                                                                 |          | 1                                                                                                                                                                                                                                                                   | UNI001                        | English Language I             | اللغة الإنكليزية I        | English             | 2                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 33           | 17         | 50                                                                                  | 2.00                        | S                           |        |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | UNI006                        | Human Rights and Democracy     | حقوق الانسان والديمقراطية | Arabic              | 2                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 33           | 17         | 50                                                                                  | 2.00                        | S                           |        |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | ENG002                        | Workshops                      | ورش هندسية                | Arabic              | 1                                                                                                                                                                                                                                           |             |             |            | 2          |             |             |              | 45           | 55         | 100                                                                                 | 4.00                        | S                           |        |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | ENG005                        | Mathematics II                 | الرياضيات II              | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | B                           | ENG001 |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE122                        | Chemistry                      | الكيمياء                  | English             | 3                                                                                                                                                                                                                                           |             |             | 3          |            | 2           |             | 3            | 123          | 77         | 200                                                                                 | 8.00                        | B                           |        |
| 6                                                                               | CHE123   | Chemical Eng. Principle II                                                                                                                                                                                                                                          | مبادئ هندسة كيميائية II       | English                        | 3                         |                     |                                                                                                                                                                                                                                             |             |             | 1          |            | 3           | 63          | 137          | 200          | 8.00       | C                                                                                   | CHE113                      |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               | Total                          |                           | 14                  | 0                                                                                                                                                                                                                                           | 3           | 2           | 4          | 0          | 15          | 360         | 390          | 750          | 30         | 23                                                                                  |                             |                             |        |
| UGII                                                                            | Three    | 1                                                                                                                                                                                                                                                                   | UNI0010                       | The Crimes of the Baath regime | جرائم حزب البعث           | Arabic              | 2                                                                                                                                                                                                                                           |             |             |            |            |             | 3           | 33           | 17           | 50         | 2.00                                                                                | S                           |                             |        |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | ENG004                        | Engineering Statistics         | الإحصاء الهندسي           | English             | 1                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 33           | 17         | 50                                                                                  | 2.00                        | S                           |        |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE211                        | Engineering Mathematics I      | الرياضيات الهندسية I      | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 37         | 100                                                                                 | 4.00                        | B                           | ENG121 |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE212                        | Fluid Flow I                   | جريان موائع I             | English             | 2                                                                                                                                                                                                                                           |             | 2           |            |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE213                        | Physical chemistry I           | الكيمياء الفيزيائية I     | English             | 2                                                                                                                                                                                                                                           |             | 2           |            |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          | 6                                                                                                                                                                                                                                                                   | CHE214                        | Chemical Eng. Principle III    | مبادئ هندسة كيميائية III  | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | C                           | CHE123 |
|                                                                                 |          | 7                                                                                                                                                                                                                                                                   | CHE216                        | Pollution                      | التلوث                    | English             | 2                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 33           | 67         | 100                                                                                 | 4.00                        | S                           |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                | Total                     |                     | 15                                                                                                                                                                                                                                          | 0           | 4           | 0          | 5          | 0           | 21          | 381          | 369          | 750        | 30                                                                                  | 24                          |                             |        |
|                                                                                 | Four     | Semester                                                                                                                                                                                                                                                            | No.                           | Module Code                    | Module Name in English    | اسم المادة الدراسية | Language                                                                                                                                                                                                                                    | SSWL (hr/w) |             |            |            |             | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem | ECTS                                                                                | Module Type                 | Prerequisite Module(s) Code |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           |                     |                                                                                                                                                                                                                                             | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  | Semn (hr/w) |              |              |            |                                                                                     |                             |                             |        |
|                                                                                 |          | 1                                                                                                                                                                                                                                                                   | UNI002                        | English Language II            | اللغة الإنكليزية II       | English             | 2                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 33           | 17         | 50                                                                                  | 2.00                        | S                           | UNI001 |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | UNI005                        | Computer II                    | الحاسبات II               | English             | 1                                                                                                                                                                                                                                           |             |             | 2          |            | 1           |             | 3            | 63           | 12         | 75                                                                                  | 3.00                        | S                           | UNI004 |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE221                        | Engineering Mathematics II     | الرياضيات الهندسية II     | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | B                           | CHE211 |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE222                        | Fluid Flow II                  | جريان موائع II            | English             | 2                                                                                                                                                                                                                                           |             |             | 2          |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           | CHE212 |
| 5                                                                               |          | CHE223                                                                                                                                                                                                                                                              | Physical chemistry II         | كيمياء فيزيائية II             | English                   | 2                   |                                                                                                                                                                                                                                             |             | 2           |            | 1          |             | 3           | 78           | 72           | 150        | 6.00                                                                                | C                           | CHE213                      |        |
| 6                                                                               |          | CHE225                                                                                                                                                                                                                                                              | Properties of materials       | خواص المواد                    | English                   | 2                   |                                                                                                                                                                                                                                             |             |             |            | 1          |             | 3           | 48           | 77           | 125        | 5.00                                                                                | S                           |                             |        |
| 7                                                                               | UNI011   | Arabic Language                                                                                                                                                                                                                                                     | اللغة العربية II              | Arabic                         | 2                         |                     |                                                                                                                                                                                                                                             |             |             |            |            | 3           | 33          | 17           | 50           | 2.00       | S                                                                                   |                             |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     | Total                         |                                | 14.00                     | 0.00                | 6.00                                                                                                                                                                                                                                        | 0.00        | 5.00        | 0.00       | 21.00      | 396.00      | 354.00      | 750.00       | 30.00        | 25         |                                                                                     |                             |                             |        |
| UGIII                                                                           | Five     | 1                                                                                                                                                                                                                                                                   | CHE311                        | Engineering analysis           | تحليلات الهندسية          | English             | 2                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 48           | 27         | 75                                                                                  | 3.00                        | B                           | CHE221 |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | CHE312                        | Mass transfer I                | انتقال كتلة I             | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE313                        | Heat transfer I                | انتقال حرارة I            | English             | 2                                                                                                                                                                                                                                           |             | 2           |            |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE314                        | Industrial management          | الإدارة الصناعية          | English             | 2                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 33           | 42         | 75                                                                                  | 3.00                        | S                           |        |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE315                        | Reactor design I               | تصميم مفاعلات I           | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          | 6                                                                                                                                                                                                                                                                   | CHE316                        | Thermodynamic I                | الترمودينمك I             | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 87         | 150                                                                                 | 6.00                        | C                           |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                | Total                     |                     | 15                                                                                                                                                                                                                                          | 0           | 2           | 0          | 5          | 0           | 18          | 348          | 402          | 750        | 30                                                                                  | 22                          |                             |        |
|                                                                                 | Six      | Semester                                                                                                                                                                                                                                                            | No.                           | Module Code                    | Module Name in English    | اسم المادة الدراسية | Language                                                                                                                                                                                                                                    | SSWL (hr/w) |             |            |            |             | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem | ECTS                                                                                | Module Type                 | Prerequisite Module(s) Code |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           |                     |                                                                                                                                                                                                                                             | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  | Semn (hr/w) |              |              |            |                                                                                     |                             |                             |        |
|                                                                                 |          | 1                                                                                                                                                                                                                                                                   | CHE321                        | Numerical methods              | طرق عددية                 | English             | 2                                                                                                                                                                                                                                           |             |             | 2          |            |             |             | 3            | 63           | 62         | 125                                                                                 | 5.00                        | B                           | CHE311 |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | CHE322                        | Mass transfer II               | انتقال كتلة II            | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 62         | 125                                                                                 | 5.00                        | C                           | CHE312 |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE323                        | Heat transfer II               | انتقال حرارة II           | English             | 2                                                                                                                                                                                                                                           |             |             | 2          |            | 1           |             | 3            | 78           | 47         | 125                                                                                 | 5.00                        | C                           | CHE313 |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE324                        | Reactor design II              | تصميم مفاعلات II          | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 62         | 125                                                                                 | 5.00                        | C                           | CHE315 |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE325                        | Thermodynamic II               | الترمودينمك II            | English             | 3                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 63           | 62         | 125                                                                                 | 5.00                        | C                           | CHE316 |
| 6                                                                               | CHE326   | Equipment design I                                                                                                                                                                                                                                                  | تصميم معدات I                 | English                        | 3                         |                     |                                                                                                                                                                                                                                             |             |             | 1          |            | 3           | 63          | 62           | 125          | 5.00       | C                                                                                   |                             |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     | Total                         |                                | 16                        | 0                   | 4                                                                                                                                                                                                                                           | 0           | 5           | 0          | 18         | 393         | 357         | 750          | 30           | 25         |                                                                                     |                             |                             |        |
| UGIV                                                                            | Seven    | 1                                                                                                                                                                                                                                                                   | ENG006                        | Engineering Project I          | مشروع هندسي I             | English             | 2                                                                                                                                                                                                                                           |             |             |            |            |             | 3           | 33           | 92           | 125        | 5.00                                                                                | C                           |                             |        |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | CHE411                        | Unit operation I               | تشغيل وحدات I             | English             | 2                                                                                                                                                                                                                                           |             | 2           |            | 1          |             | 3           | 78           | 72           | 150        | 6.00                                                                                | C                           |                             |        |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE412                        | Process control I              | سيطرة عمليات I            | English             | 2                                                                                                                                                                                                                                           |             | 2           |            | 1          |             | 3           | 78           | 72           | 150        | 6.00                                                                                | C                           |                             |        |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE413                        | Equipment design II            | تصميم معدات II            | English             | 3                                                                                                                                                                                                                                           |             |             |            | 1          |             | 3           | 63           | 62           | 125        | 5.00                                                                                | C                           | CHE326                      |        |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE414                        | Computer application           | تطبيقات الحاسوب           | English             | 2                                                                                                                                                                                                                                           |             | 2           |            |            |             | 3           | 63           | 37           | 100        | 4.00                                                                                | B                           |                             |        |
|                                                                                 |          | 6                                                                                                                                                                                                                                                                   | CHE416                        | Petroleum refining I           | تكسير نفط I               | English             | 2                                                                                                                                                                                                                                           |             | 1           |            |            | 1           | 3           | 63           | 37           | 100        | 4.00                                                                                | B                           |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                | Total                     |                     | 13                                                                                                                                                                                                                                          | 0           | 7           | 0          | 4          | 0           | 18          | 378          | 372          | 750        | 30                                                                                  | 24                          |                             |        |
|                                                                                 | Eight    | Semester                                                                                                                                                                                                                                                            | No.                           | Module Code                    | Module Name in English    | اسم المادة الدراسية | Language                                                                                                                                                                                                                                    | SSWL (hr/w) |             |            |            |             | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem | ECTS                                                                                | Module Type                 | Prerequisite Module(s) Code |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     |                               |                                |                           |                     |                                                                                                                                                                                                                                             | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  | Semn (hr/w) |              |              |            |                                                                                     |                             |                             |        |
|                                                                                 |          | 1                                                                                                                                                                                                                                                                   | UNI007                        | Ethics                         | أخلاقيات المهنة           | Arabic              | 1                                                                                                                                                                                                                                           |             |             |            |            |             |             | 3            | 18           | 7          | 25                                                                                  | 1.00                        | S                           |        |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                   | ENG006                        | Engineering Project II         | مشروع هندسي II            | English             | 2                                                                                                                                                                                                                                           |             |             |            |            | 1           |             | 3            | 33           | 167        | 200                                                                                 | 8.00                        | C                           | ENG006 |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                   | CHE421                        | Unit operation II              | تشغيل وحدات II            | English             | 2                                                                                                                                                                                                                                           |             |             | 2          |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           | CHE411 |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                   | CHE422                        | Process control II             | سيطرة عمليات II           | English             | 2                                                                                                                                                                                                                                           |             | 2           |            |            | 1           |             | 3            | 78           | 72         | 150                                                                                 | 6.00                        | C                           | CHE412 |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                   | CHE423                        | Petroleum refining II          | تكسير نفط II              | English             | 2                                                                                                                                                                                                                                           |             |             | 1          |            | 2           |             | 3            | 78           | 47         | 125                                                                                 | 5.00                        | B                           | CHE416 |
| 6                                                                               | CHE424   | Chemical and Petrochemical Indu                                                                                                                                                                                                                                     | صناعات كيميائية وبتروكيميائية | English                        | 2                         |                     |                                                                                                                                                                                                                                             |             |             |            |            | 3           | 33          | 67           | 100          | 4.00       | B                                                                                   |                             |                             |        |
|                                                                                 |          |                                                                                                                                                                                                                                                                     | Total                         |                                | 11                        | 0                   | 5                                                                                                                                                                                                                                           | 0           | 4           | 0          | 18         | 318         | 432         | 750          | 30           | 20         |                                                                                     |                             |                             |        |