

## Chemistry Department

### Developed study plan - Bachelor of Chemistry program

|                         |                 |
|-------------------------|-----------------|
| Program sublevel code   | <b>645</b>      |
| Customization code      | <b>05310101</b> |
| Language of instruction | <b>Arabic</b>   |

|   |            |
|---|------------|
| The total number of study units for the program | <b>150</b> |
| Total courses for the program                   | <b>51</b>  |

|  |     |  |    |
|--|-----|--|----|
| Total academic units required by the university                      | 12  | Total course requirements of the university                                  | 6  |
| Total academic units required by the college                         | 19  | Total courses required by the college  | 5  |
| Total academic units required by the department                      | 119 | Total course requirements of the department                                  | 40 |
| The total number of compulsory academic units required for the major | 110 | The total number of courses required for the major's compulsory requirements | 37 |
| Total credits for elective major requirements                        | 9   | Total courses for elective major requirements                                | 3  |
| Statement of the duration of field training                          | -   | -  | -  |



## Courses

### Statement of the levels of the program's study plan (First year - 36 credit hours)

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 1     | 4                   | 12  | 14                        |

| No | Course name       | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|-------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                   |             |              | Theoretical   | Practical |               |                       |
| 1  | General Chemistry | CHEM1001    | 4            | 3             | 2         | -             | College               |
| 2  | Calculus 1        | MATH1001    | 4            | 3             | 2 (Tutu)  | -             | College               |
| 3  | Islamic Culture 1 | ISLM1001    | 2            | 2             | 0         | -             | Institution           |
| 4  | Language Skills   | ARAB1001    | 2            | 2             | 0         | -             | Institution           |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 2     | 4                   | 12  | 14                        |

| No | Course name                     | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|---------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                 |             |              | Theoretical   | Practical |               |                       |
| 1  | General Biology                 | BIO1001     | 4            | 3             | 2         | -             | College               |
| 2  | General Physics                 | PHYS1001    | 4            | 3             | 2         | -             | College               |
| 3  | Quranic recitation and Guidance | ISLM1003    | 2            | 2             | 0         | -             | Institution           |
| 4  | History of KSA                  | HIST1001    | 2            | 2             | 0         | -             | Institution           |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 3     | 5                   | 12  | 13                        |

| No | Course name                            | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|--|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |  |             |              | Theoretical   | Practical |               |                       |
| 1  | English Language                       | ENG1005     | 3            | 3             | 0         | -             | College               |
| 2  | Fundamentals of Digital Transformation | CS1002      | 2            | 2             | 0         | -             | Institution           |
| 3  | Islamic Culture 2                      | ISLM1002    | 2            | 2             | 0         | -             | Institution           |
| 4  | Organic Chemistry 1                    | CHEM1002    | 4            | 4             | 0         | -             | Program               |
| 5  | Practical Organic Chemistry 1          | CHEM1003    | 1            | 0             | 2         | -             | Program               |



### Statement of the levels of the program's study plan (Second year - 37 credit hours)

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 4     | 4                   | 12  | 15                        |

| No | Course name                         | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|-------------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                     |             |              | Theoretical   | Practical |               |                       |
| 1  | Chemistry of Main Group Elements    | CHEM1250    | 4            | 3             | 2         | -             | Program               |
| 2  | Chemistry of Solutions              | CHEM1251    | 3            | 2             | 2         | CHEM1001      | Program               |
| 3  | Safety and Security in Laboratories | CHEM1252    | 2            | 2             | 0         | -             | Program               |
| 4  | General Statistics                  | STAT1251    | 3            | 2             | 2 (Tutr)  | -             | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 5     | 4                   | 12  | 16                        |

| No | Course name                   | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|-------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                               |             |              | Theoretical   | Practical |               |                       |
| 1  | Transition Elements Chemistry | CHEM1253    | 4            | 3             | 2         | CHEM1250      | Program               |
| 2  | Organic Chemistry 2           | CHEM1254    | 3            | 3             | 0         | CHEM1002      | Program               |
| 3  | Practical Organic Chemistry 2 | CHEM1255    | 2            | 0             | 4         | -             | Program               |
| 4  | Physical Chemistry            | CHEM1256    | 3            | 2             | 2         | -             | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 6     | 4                   | 13  | 14                        |

| No | Course name                        | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|------------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                    |             |              | Theoretical   | Practical |               |                       |
| 1  | Principles of Analytical Chemistry | CHEM1257    | 4            | 3             | 2         | -             | Program               |
| 2  | Coordination Chemistry             | CHEM1258    | 3            | 3             | 0         | CHEM1253      | Program               |
| 3  | Kinetic Chemistry                  | CHEM1259    | 3            | 3             | 0         | -             | Program               |
| 4  | Principles of Industrial Chemistry | CHEM1260    | 3            | 3             | 0         | -             | Program               |



### Statement of the levels of the program's study plan (Third year - 37 credit hours)

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 7     | 4                   | 12  | 13                        |

| No | Course name                                 | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|---|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |   |             |              | Theoretical   | Practical |               |                       |
| 1  | Organic Chemistry of Heterocyclic Compounds | CHEM1500    | 3            | 3             | 0         | CHEM1254      | Program               |
| 2  | Principles of Spectroscopy                  | CHEM1501    | 4            | 3             | 2         | -             | Program               |
| 3  | Environmental Chemistry                     | CHEM1502    | 3            | 3             | 0         | -             | Program               |
| 4  | Principles of Toxicology                    | CHEM1503    | 2            | 2             | 0         | -             | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 8     | 4                   | 13  | 17                        |

| No | Course name                           | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|---------------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                       |             |              | Theoretical   | Practical |               |                       |
| 1  | Biochemistry 1                        | CHEM1504    | 4            | 3             | 2         | CHEM1002      | Program               |
| 2  | Inorganic Preparations                | CHEM1505    | 2            | 0             | 4         | CHEM1258      | Program               |
| 3  | Separation Methods and Chromatography | CHEM1506    | 4            | 3             | 2         | CHEM1257      | Program               |
| 4  | Introduction to Polymer Chemistry     | CHEM1507    | 3            | 3             | 0         | CHEM1002      | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 9     | 4                   | 12  | 16                        |

| No | Course name                       | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|-----------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                   |             |              | Theoretical   | Practical |               |                       |
| 1  | Organic Synthesis                 | CHEM1508    | 3            | 1             | 4         | CHEM1254      | Program               |
| 2  | Electrochemistry                  | CHEM1509    | 3            | 2             | 2         | CHEM1256      | Program               |
| 3  | Spectroscopy of Organic Compounds | CHEM1510    | 3            | 2             | 2         | CHEM1501      | Program               |
| 4  | Advanced Inorganic Chemistry      | CHEM1511    | 3            | 3             | 0         | CHEM1253      | Program               |



### Statement of the levels of the program's study plan (Fourth year - 40 credit hours)

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 10    | 5                   | 15  | 18                        |

| No | Course name                     | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|---------------------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                                 |             |              | Theoretical   | Practical |               |                       |
| 1  | Petroleum Chemistry             | CHEM1750    | 3            | 2             | 2         | -             | Program               |
| 2  | Surface Chemistry and Catalysis | CHEM1751    | 3            | 3             | 0         | CHEM1256      | Program               |
| 3  | Electroanalytical Chemistry     | CHEM1752    | 3            | 2             | 2         | CHEM1257      | Program               |
| 4  | Water Treatment                 | CHEM1753    | 3            | 2             | 2         | CHEM1257      | Program               |
| 5  | Elective 1                      | -           | 3            | 3             | 0         | -             | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 11    | 4                   | 12  | 16                        |

| No | Course name             | Course code | Credit hours | Contact hours |           | Prerequisites    | Types of requirements |
|----|-------------------------|-------------|--------------|---------------|-----------|------------------|-----------------------|
|    |                         |             |              | Theoretical   | Practical |                  |                       |
| 1  | Chemical Thermodynamics | CHEM1754    | 3            | 2             | 2         | CHEM1256         | Program               |
| 2  | Organic Reactions       | CHEM1755    | 3            | 3             | 0         | CHEM1254         | Program               |
| 3  | Graduation Project      | CHEM1756    | 3            | 0             | 6         | Passing 120 hrs. | Program               |
| 4  | Elective 2              | -           | 3            | 3             | 0         | -                | Program               |

| Level | Total level courses | The total number of academic units approved for the level | Total level contact hours |
|-------|---------------------|---|---------------------------|
| 12    | 5                   | 13  | 13                        |

| No | Course name       | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|-------------------|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |                   |             |              | Theoretical   | Practical |               |                       |
| 1  | Quantum Chemistry | CHEM1757    | 2            | 2             | 0         | CHEM1256      | Program               |
| 2  | Green Chemistry   | CHEM1758    | 2            | 2             | 0         | -             | Program               |
| 3  | Biochemistry 2    | CHEM1759    | 3            | 3             | 0         | CHEM1504      | Program               |
| 4  | Material Science  | CHEM1760    | 3            | 3             | 0         | CHEM1256      | Program               |
| 5  | Elective 3        | -           | 3            | 3             | 0         | -             | Program               |



## Elective courses

| No | Course name                                 | Course code | Credit hours | Contact hours |           | Prerequisites | Types of requirements |
|----|---|-------------|--------------|---------------|-----------|---------------|-----------------------|
|    |   |             |              | Theoretical   | Practical |               |                       |
| 1  | Chemistry of Natural Products               | CHEM1761    | 3            | 3             | 0         | CHEM1254      | Program               |
| 2  | Nuclear and Radioactive Chemistry           | CHEM1762    | 3            | 3             | 0         | CHEM1256      | Program               |
| 3  | Chemistry of Metal Extraction and Corrosion | CHEM1763    | 3            | 3             | 0         | CHEM1253      | Program               |
| 4  | Instrumental Analysis                       | CHEM1764    | 3            | 3             | 0         | CHEM1501      | Program               |
| 5  | Physical Chemistry of Polymers              | CHEM1765    | 3            | 3             | 0         | CHEM1256      | Program               |
| 6  | Applied Analytical Chemistry                | CHEM1766    | 3            | 3             | 0         | CHEM1501      | Program               |
| 7  | Physical Organic Chemistry                  | CHEM1767    | 3            | 3             | 0         | CHEM1254      | Program               |
| 8  | Organometallic Chemistry                    | CHEM1768    | 3            | 3             | 0         | CHEM1258      | Program               |
| 9  | Medicinal Chemistry                         | CHEM1769    | 3            | 3             | 0         | CHEM1254      | Program               |

