#### V. Courses contributing to the program

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| **LEVEL ONE** |

**Semester (1): (17 Hours/Week)**

|  |  |  |  |  |  |
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| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT121 | ------ | Botany I | 2 | 2 | 3 |
| BT123 | ------ | Introduction to biotechnology | 1 | - | 1 |
| ZO125 | ------ | General Zoology I | 2 | 2 | 3 |
| CH127 | ------ | General Chemistry I | 2 | 2 | 3 |
| MA129 | ------ | Mathematics I | 1 | 2 | 2 |
| PH131 | ------ | General Physics I | 1 | 2 | 2 |
| UN133 | ------ | Scientific English | 2 | - | 2 |
|  |  | **Select 1 credit from the following modules** |  |  |  |
| UN135 | ------ | التعلــــــم الذاتــــــى | 1 | - | 1 |
| UN137 | ------ | General geology | 1 | - | 1 |
| UN139 | ------ | تاريخ وفلسفة العلوم | 1 | - | 1 |
|  |  |  |  |  | 17 |

**Semester (2): (17 Hours/Week)**

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| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT122 | ------ | Botany II | 2 | 2 | 3 |
| BT124 | ------ | Bio-membranes | 1 | - | 1 |
| ZO126 | ------ | General Zoology II | 2 | 2 | 3 |
| CH128 | ------ | General Chemistry II | 2 | 2 | 3 |
| MA130 | ------ | Mathematics II | 1 | 2 | 2 |
| PH132 | ------ | General Physics II | 1 | 2 | 2 |
| UN134 | ------ | اللغــــــــة العربيــــة | 2 | - | 2 |
|  |  | **Select 1 credit from the following modules** |  |  |  |
| UN136 | ------ | ثقافة الجودة | 1 | - | 1 |
| UN140 | ------ | القانون والمجتمع | 1 | - | 1 |
| UN138 | ------ | ثقافة بيئية | 1 | - | 1 |
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| **LEVEL TWO** |

**Semester (1): (17 Hours/Week)**

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| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT221 | BT122 | Viruses and Bacteria | 2 | 2 | 3 |
| BT223 | -------- | Mycology and plant pathology | 2 | 2 | 3 |
| BT225 | BT121 | Photosynthesis and respiration | 2 | 2 | 3 |
| BT227 | -------- | General ecology and biodiversity | 2 | 2 | 3 |
| BT229 | CH127 | Nanochemistry for biotechnology | 2 | - | 2 |
| BC231 | BT121 | Enzymes and cofactors | 2 | 2 | 3 |
|  |  |  |  |  | 17 |

**Semester (2): (17 Hours/Week)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Code | Preq. | Course title | Hours/Week | | | | |
| Lec. | Prac. | | Cred. | |
| BT222 | -------- | Algae and their applications | 2 | | 2 | | 3 |
| BT224 | -------- | Hormones | 2 | | 2 | | 3 |
| BT226 | BT122 | Molecular biology methods and genetic engineering | 2 | | 2 | | 3 |
| ZO228 | ZO125 | Toxicology | 2 | | - | | 2 |
| BC230 | CH128 | Basic metabolism | 2 | | 2 | | 3 |
| CH232 | -------- | Chemistry of dyes and Textile | 2 | | 2 | | 3 |
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| **LEVEL THREE** |

**Semester (1): (16 Hours/Week)**

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| --- | --- | --- | --- | --- | --- |
| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT321 | ------- | Bioremediation | 2 | - | 2 |
| BT323 | BT221 | Physiology of microorganisms | 2 | 2 | 3 |
| BT325 | BT224 | Cell and tissue culture | 2 | 2 | 3 |
| BT327 | BT225 | Molecular bases of plant stresses | 2 | - | 2 |
| ZO329 | ZO126 | Parasitology | 1 | 2 | 2 |
| BC331 | BC230 | Clinical biochemistry | 1 | 2 | 2 |
| BC333 | CH128 | Body fluid and biological functions | 2 | - | 2 |
|  |  |  |  |  | 16 |

**Semester (2): (16 Hours/Week)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT322 | BT226 | Genomics and proteomics | 2 | - | 2 |
| BT324 | BT327 | Biostatistics and Bioinformatics | 2 | 2 | 3 |
| ZO326 | ZO125 | Immunochemistry | 2 | 2 | 3 |
| ZO328 | ------ | Molecular embryology | 2 | 2 | 3 |
| BC330 | BC333 | Drug metabolism | 2 | - | 2 |
| CS332 | ------ | Introduction to programming | 2 | 2 | 3 |
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| **LEVEL FOUR** |

**Semester (1): (16 Hours/Week)**

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| --- | --- | --- | --- | --- | --- |
| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT421 | BT323 | Bioreactors | 2 | 2 | 3 |
| BT423 | BT222 | Biotechnology and bio-fuel production | 1 | 2 | 2 |
| BT425 | BT221 | Applied microbiology | 2 | 2 | 3 |
| BT427 | BT226 | Plant biotechnology | 2 | - | 2 |
|  |  | **Select 6 credits from the following modules** |  |  |  |
| BT429 | BT226 | Forensic biotechnology | 1 | 2 | 2 |
| BT431 | BT325 | Biotechnology and plant breeding | 2 | - | 2 |
| BT433 | ------- | Economics and marketing in biotechnology | 2 | - | 2 |
| BT435 | BT124 | Molecular aspects of cell signaling | 2 | - | 2 |
| BT437 | ------- | Scientific writing and presentations | 1 | 2 | 2 |
| ZO439 | BT329 | Animal biotechnology | 2 | - | 2 |
|  |  |  |  |  | 16 |

**Semester (2): (16 Hours/Week)**

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| --- | --- | --- | --- | --- | --- |
| Code | Preq. | Course title | Hours/Week | | |
| Lec. | Prac. | Cred. |
| BT422 | BT425 | Industrial and food microbiology | 2 | 2 | 3 |
| BT424 | ------- | Research project (biotechnology) | - | 6 | 3 |
| BT426 | BT227 | Environmental management and impact assessment | 2 | - | 2 |
| BT428 | BT226 | Bioethics and bio-safety in biotechnology | 2 | - | 2 |
|  |  | **Select 6 credits from the following modules** |  |  |  |
| BT430 | BT226 | Pharmaceutical biotechnology | 1 | 2 | 2 |
| BT432 | BT226 | Medical biotechnology | 2 | - | 2 |
| BT434 | CH126 | Biofertilizers and biopesticides | 2 | - | 2 |
| BT436 | BT223 | Plant pathogenicity | 2 | - | 2 |
| BT438 | ------- | Entrepreneurhip skills | 2 | - | 2 |
| BT440 | BT123 | Current topics in biotechnology | 2 | - | 2 |
|  |  |  |  |  | 16 |