



**Benha University**  
**Faculty of Science**



Molecular Biology and Biotechnology

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**Faculty of Science**



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**BSc. Molecular Biology and Biotechnology**  
**Credited**



| <b>University Requirements</b>                       |   |                    |                     |                     |                     |
|--|---|--------------------|---------------------|---------------------|---------------------|
| <b>University Compulsory Courses: 4 Credit Hours</b> |   |                    |                     |                     |                     |
| <b>First level</b>                                   |   |                    |                     |                     |                     |
| <b>Course Code</b>                                   | <b>Course Title</b>                                   | <b>Theoretical</b> | <b>Practical</b>    | <b>Credit Hours</b> | <b>Prerequisite</b> |
| Uni 140  | Computer 1  | 1                  | 2                   | 2                   | —                   |
| Uni 115  | Foreign Language 1                                    | 1                  | —                   | 1                   | —                   |
| Uni 65   | Society Issues  | 1                  | 2                   | 1                   | —                   |
| <b>University Requirements</b>                       |   |                    |                     |                     |                     |
| <b>University Elective Courses: 4 Credit Hours</b>   |   |                    |                     |                     |                     |
| <b>First level</b>                                   |   |                    |                     |                     |                     |
| <b>Course Code</b>                                   | <b>Course Title</b>                                   | <b>Theoretical</b> | <b>Practical</b>    | <b>Credit Hours</b> | <b>Prerequisite</b> |
| Uni  | Computer 2  | 2                  | -                   | 2                   | -                   |
| Uni  | First Aid Skills                                      | 2                  | -                   | 2                   | -                   |
| Uni  | Computational Thinking                                | 2                  | -                   | 2                   | -                   |
| Uni  | Principles of Entrepreneurship and Project Management | 2                  | -                   | 2                   | -                   |
| <b>Faculty Requirements</b>                          |   |                    |                     |                     |                     |
| <b>Faculty Compulsory Courses: 28 Credit Hours</b>   |   |                    |                     |                     |                     |
| <b>First level</b>                                   |   |                    |                     |                     |                     |
| <b>Course Code</b>                                   | <b>Course Title</b>                                   | <b>Theoretical</b> | <b>Exc./ Pract.</b> | <b>Credit Hours</b> | <b>Prerequisite</b> |
| 1101 Mat   | General Math (1)                                      | 2                  | - /2                | 3                   | —                   |



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|          |                        |   |       |   |          |
|----------|------------------------|---|-------|---|----------|
| 1201 Mat | General Math (2)       | 2 | - / 2 | 3 | 1101 Mat |
| 1101 Phy | General Physics (1)    | 2 | - / 2 | 3 | -        |
| 1201 Phy | General Physics(2)     | 2 | - / 2 | 3 | 1101 Phy |
| 1101 Chm | General Chemistry(1)   | 2 | - / 2 | 3 | -        |
| 1201 Chm | General Chemistry(2)   | 2 | - / 2 | 3 | 1101 Chm |
| 1101 ZOO | General Zoology (1)    | 2 | - / 2 | 3 | -        |
| 1201     | General Zoology (2)    | 2 | - / 2 | 3 | 1101 ZOO |
| ZOO      | General Botany (1)     | 1 | - / 2 | 2 | -        |
| 1101 Bot | General Entomology (1) | 1 | - / 2 | 2 | -        |

**Faculty Requirements**

**Faculty Compulsory specialization Courses Courses: 30 Credit Hours**

| Course Code | Course Title                  | Theoretical | Pract. | Credit Hours | Prerequisite |
|-------------|-------------------------------|-------------|--------|--------------|--------------|
| Bio2125     | Cell Biology & Tissue culture | 2           | 2      | 3            | -            |
| Bio 2123    | Introduction to biotechnology | 1           | 2      | 2            | -            |
| Mic2224     | General Microbiology          | 1           | 2      | 2            | -            |



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|          |                             |   |   |   |         |
|----------|-----------------------------|---|---|---|---------|
| Bio2226  | Marine biotechnology        | 1 | 2 | 2 | -       |
| Bio2228  | Biochemistry                | 1 | 2 | 2 | -       |
| Bio3242  | Biotechnology management    | 2 | - | 2 | Bio2228 |
| Bio3246  | Cancer Biology              | 1 | 2 | 2 | Bio2125 |
| Mic4163  | Fermentation Technology     | 1 | 2 | 2 | -       |
| Bio4165  | Stem cell biology           | 1 | 2 | 2 | -       |
| Bio4167  | DNA Forensics               | 1 | 2 | 2 | -       |
| Bio4169  | Environmental Biotechnology | 1 | 2 | 2 | -       |
| Mic 2222 | Food Biotechnology          | 2 | - | 2 | -       |
| Com4161  | Bioinformatics              | 2 | 2 | 3 | Zoo3143 |
| Bio3141  | Immunology                  | 1 | 2 | 2 | -       |

**Faculty Requirements**

**Faculty Compulsory specialization Courses Courses: 30 Credit Hours**

| Course Code | Course Title | Theoretical | Pract. | Credit Hours | Prerequisite |
|-------------|--------------|-------------|--------|--------------|--------------|
|-------------|--------------|-------------|--------|--------------|--------------|



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| Zoo3244   | Animal Toxins         | 2           | 2      | 3            |              |
|---|-----------------------|-------------|--------|--------------|--------------|
| Zoo4266   | Pharmacogenetics      | 2           | 2      | 3            | Pha3248      |
| Zoo2127   | Genetics              | 2           | 2      | 3            |              |
| Zoo3143   | Genomics              | 2           | 2      | 3            | Zoo2121      |
| Zoo3145   | proteomics            | 2           | 2      | 3            | Bio2228      |
| Zoo3147   | Physiology            | 2           | 2      | 3            |              |
| Zoo2121   | Molecular Biology     | 2           | 2      | 3            |              |
| Pha3248   | Molecular Drug Design | 2           | 2      | 3            | Zoo3145      |
| Zoo4262   | Genomic analysis      | 2           | 2      | 3            | Com4161      |
| Zoo4264   | Epigenetics           | 2           | 2      | 3            | Zoo3143      |
| <b>Faculty Requirements</b>   |                       |             |        |              |              |
| <b>Faculty Elective Molecular Biology specialization Courses: 14 Credit Hours</b> |                       |             |        |              |              |
| Course Code   | Course Title          | Theoretical | Pract. | Credit Hours | Prerequisite |
| ZOO3250   | Advanced immunology   | 1           | 2      | 2            | -            |



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|          |                                  |   |   |   |   |
|----------|----------------------------------|---|---|---|---|
| Com3254  | Computer programming I           | 2 | 2 | 3 | - |
| ZOO2131  | Hematology                       | 1 | 2 | 2 | - |
| ZOO3153  | Molecular and Genetic diagnosis  | 2 | 2 | 3 | - |
| ZOO3155  | Genomics and protein engineering | 2 | 2 | 3 | - |
| ZOO3258  | Immunotherapy                    | 2 | 2 | 3 | - |
| ZOO 2129 | Vertebrate                       | 1 | 2 | 2 | - |
| ZOO2232  | Parasitology                     | 2 | 2 | 3 | - |
| ZOO3252  | Advanced physiology              | 2 | 2 | 3 | - |

**Faculty Requirements**

**Faculty Elective Biotechnology specialization Courses: 14 Credit Hours**

| Course Code | Course Title         | Theoretical | Pract. | Credit Hours | Prerequisite |
|-------------|----------------------|-------------|--------|--------------|--------------|
| Mat 2230    | Biostatistics        | 2           | 2      | 3            | -            |
| Bio3151     | Nanotechnology       | 2           | 2      | 3            | -            |
| Bio2137     | Host plant resistant | 1           | 2      | 2            | -            |



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| <b>Bio3149</b>  | <b>Clinical Biochemistry</b> | <b>2</b>           | <b>2</b>            | <b>3</b>            | <b>-</b>            |
|---|------------------------------|--------------------|---------------------|---------------------|---------------------|
| <b>Mic2234</b>  | <b>Bioremediation</b>        | <b>2</b>           | <b>-</b>            | <b>2</b>            | <b>-</b>            |
| <b>Pha3256</b>  | <b>Nanomedicine</b>          | <b>2</b>           | <b>2</b>            | <b>3</b>            | <b>-</b>            |
| <b>Bio3260</b>  | <b>Oncology tumor marker</b> | <b>2</b>           | <b>2</b>            | <b>3</b>            | <b>-</b>            |
| <b>Bio2135</b>  | <b>Invertebrates</b>         | <b>1</b>           | <b>2</b>            | <b>2</b>            | <b>-</b>            |
| <b>Bio2234</b>  | <b>Developmental biology</b> | <b>2</b>           | <b>2</b>            | <b>3</b>            | <b>-</b>            |
| <b>Faculty Elective outside of specialization Courses: 6 Credit Hours</b> |                              |                    |                     |                     |                     |
| <b>Course Code</b>  | <b>Course Title</b>          | <b>Theoretical</b> | <b>Exc./ Pract.</b> | <b>Credit Hours</b> | <b>Prerequisite</b> |
| <b>Chm2139</b>  | <b>Analytical Chemistry</b>  | <b>1</b>           | <b>2</b>            | <b>2</b>            | <b>-</b>            |
| <b>Chm2236</b>  | <b>Organic Chemistry</b>     | <b>1</b>           | <b>2</b>            | <b>2</b>            | <b>-</b>            |
| <b>Phy2238</b>  | <b>Biophysics</b>            | <b>1</b>           | <b>2</b>            | <b>2</b>            | <b>-</b>            |
| <b>Ent2242</b>  | <b>Medical Entomology</b>    | <b>1</b>           | <b>2</b>            | <b>2</b>            | <b>-</b>            |
| <b>Com2200</b>  | <b>Computer Graphics</b>     | <b>2</b>           | <b>-</b>            | <b>2</b>            | <b>-</b>            |
| <b>Faculty Graduation requirements: 6 Credit Hours</b>                    |                              |                    |                     |                     |                     |



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|                |                         |    |    |          |    |
|----------------|-------------------------|----|----|----------|----|
| <b>Zoo3262</b> | <b>Field training</b>   | -- | -- | <b>3</b> | -- |
| <b>Zoo4268</b> | <b>Research Project</b> | -- | -- | <b>3</b> | -- |