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| **Benha University**  **Faculty of Science**  **جامعة بنهاDepartment of Zoology** | | | | | |
| **Course Specification**  **222 Z: Environmental safety** | | | | | | |
| **A- Affiliation** | | | | | | |
| **Relevant program:** | Biotechnology B.Sc. Program | | | | | |
| **Department offering the program:** | | | Department of Zoology | | | |
| **Department offering the course:** | | | Department of Zoology | | | |
| **Academic year/level:** | | | Second level | | | |
| **Date of specifications approval:** | | | |  | | |
| B - Basic information | | | | | | |
| **Title:** Enviromental safety. | | **Code:** 222 Z | | | **Year/level:** | |
| **Teaching Hours:** | | **Lectures:** 2 | | | **Tutorial:** | |
|  | | **Practical:** 2 | | | **Total:** 3 h/week | |
| C - Professional information | | | | | | |
| **1 – Course Learning Objectives:**  Environmental safety requires a new way of thinking about pollution and its drivers, scale, effects, and solutions. Many of today’s problems present challenges of great scope, spatial scale, and complexity. Some pose a new suite of emerging environmental threats, while others persist and have yet to be completely solved. | | | | | | |

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| **2 - Intended Learning Outcomes (ILOS)** |
| **a - Knowledge and understanding:**  On successful completion of the course, the student should be able to:  a 1- Memorise factors leading to environmental change.  a 2- Recognise reasons of air pollution and climate change.  a 3- Study water quality. |
| **b - Intellectual skills:**  On successful completion of the course, the student should be able to:  b1- Report nature of environmental problems.  b 2- Interpret challenges related to air pollution, water quality and climate change. |
| **c - Practical and professional skills:**  On successful completion of the course, the student should be able to:  c1- Analyse the reasons leading to environmental change.  c2- Select tools and technologies to detect air pollution and climate change.  c3- Make measurement of water quality. |
| **d - General skills:**  On successful completion of the course, the student should be able to:  d1- Arrange the idea.  d2- Work in team.  d3- Write reports  d4-Reasonable thinking. |

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| **3 - Contents** | | | |
| **Topic** | **Lecture hours** | **Tutorial hours** | **Practical hours** |
| 1 - The Changing Nature of Environmental Problems. | 2 | - | 2 |
| 2 -Major Factors Leading to Environmental Change. | 2 | - | 2 |
| 3 - Tools and Technologies to Address Challenges Related To Air Pollution and Climate Change. | 2 | - | 2 |
| 4 - Tools and Technologies to Address Challenges Related To Water Quality | 2 | - | 2 |
| 5 - Using New Science to Drive Safer Technologies and Products | 2 | - | 2 |
| 6 - Thinking for Producing and Applying Science for Decisions | 2 | - | 2 |
| Seminar. | 2 | - | 2 |
| 7 - Staying at the Leading Edge of Science | 2 | - | 2 |
| 8 - Strengthening Science Capacity | 2 | - | 2 |
| 9 - Enhancing Science Leadership | 2 | - | 2 |
| 10 -Improving Management and Use of Large Datasets. | 2 | - | 2 |
| 11 -Innovation. | 2 | - | 2 |
| 12- Strengthening Science in a Time of Tight Budgets. | 2 | - | 2 |
| Exam. | 2 | - | 2 |
| **Total hours** | **28** | - | **28** |

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| **4 - Teaching and Learning methods:** |

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| **Intended Learning Outcomes** | | | **Lecture** | **Presentations & Movies** | **Discussions & Seminars** | **Practical** | **Problem solving** | **Brain storming** |
| **Knowledge & Understanding** | a 1 | Memorise factors leading to environmental change. | x | x | x | 0 | 0 | x |
| a 2 | Recognise reasons of air pollution and climate change. | x | x | x | 0 | x | x |
| a 3 | Study water quality. | 0 | x | 0 | x | x | 0 |
| **Intellectual Skills** | b1 | Report nature of environmental problems. | 0 | x | 0 | x | x | x |
| b 2 | Interpret challenges related to air pollution, water quality and climate change. | x | 0 | 0 | x | x | x |
| **Practical and professional skills** | c1 | Analyse the reasons leading to  environmental change. | x | x | 0 | x | 0 | x |
| c2 | Select tools and technologies to detect air  pollution and climate change. | x | x | 0 | x | 0 | 0 |
| c3 | Make measurement of water quality. | 0 | x | 0 | x | x | 0 |
| **Genetal Skills** | d1 | Arrange the idea. | x | x | 0 | x | 0 | 0 |
| d2 | Work in team. | 0 | 0 | x | x | x | 0 |
| d3 | Write reports | 0 | 0 | x | 0 | x | x |
| d4 | Reasonable thinking. | 0 | x | 0 | 0 | x | x |

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| **5- Students’ Assessment Methods and Grading:** | | | |
| **Tools** | **To Measure** | **Time schedule** | **Grading** |
| Semester Work | a1, a2, a3, b1, b2 and d1 to d4 | Five week | 2 % |
| Mid-Term Exam | a1, a2, a3, b1 and b2 | sixth week | 10 % |
| Practical exams | c1, c2, c3,b1 and b2 | Fourteenth week | 30 % |
| Oral exam | a1, a2, a3, b1 and b2 | Fifteenth week | 10 % |
| Written exam | a1, a2, a3, b1 and b2 | Sixteenth week | 48 % |
| Total | | | 100 % |

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| **6- List of references:** |
| **6-1 Course notes**  Non  **6-2 Required books.**  Science for Environmental Protection  **6-3 Recommended books.**  Global Environmental Management Initiative (GEMI)  Integrated Environment, Safety, & Health Management Plan, edition 8,2013  **Web sites, etc.**  <http://www.epa.gov/>  www.gemi.org  [www.lbl.gov](http://www.lbl.gov)  [www.levistrauss.com](http://www.levistrauss.com)  https://www.knoll.com |

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| **7- Facilities required for teaching and learning:** |
| - Data Show for presentations.  -field trips  - Chemicals and equipment.  -Microscopes. |

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| **Course coordinator:** Dr. Hany A. Abdel-Salam |  |
| **Head of the Department:** Prof. Dr. Aziza A.M. El-Shafey |  |
| **Date:** 2013 / 2014 |  |