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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 |  |