**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.  |

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| Baghdad University / Al Khwarizmi College of engineering | 1. Teaching Institution |
| Biochemical Engineering Department | 2. University Department/Centre |
| Environmental pollution and biochemical treatment/ 503BCEPT | 3. Course title/code |
| University Requirement | 4. Program to which it contributes |
| Full time | 5. Modes of Attendance offered |
| Semester system | 6. Semester/Year |
| 3 hours (3 theoretical) | 7. Number of hours tuition (total) |
| 2023-9-23 | 8. Date of production/revision of this specification |
| 9. Aims of the Course |
| To enable the students to learn the basic principles of Environmental pollution and biochemical treatment  |
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| 10· Learning Outcomes, Teaching , Learning and Assessment Methods |
| A. Knowledge and UnderstandingA1. Knowledge and grasp the basic concepts and principles of environmental pollution of water , soil and airA2. Treatment of sewage that are related to biochemical engineeringA3. Understand the chemicals standard that allowed for industrial wastewater discharges to water bodies to ensure the safety and health of humans and the surrounding environment.A4. Rivers and Streams: most effective way to protect water quality of Rivers and Streams, we need for both government and industry involvement in promoting cleaner production. |
|  B . Subject-specific skills1. Awareness of the need to preserve the environment
2. Find solutions for Industrial wastewater discharge
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| Teaching and Learning Methods |
| Theoretical literatures, problem’s sheets and tutorials. |
| Assessment methods  |
| Quizzes, homework, and Terminal Exams |
| C. Thinking Skills C1. Interpretation: Having the ability to understand the information you are being presented with and being able to communicate the meaning of that information to others. C2. Analysis: Having the ability to connect pieces of information together in order to determine what the intended meaning of the information was meant to represent.C3. Inference: Having the ability to understand and recognize what elements you will need in order to determine an accurate conclusion or hypothesis from the information you have at your disposalC4. Evaluation: Being able to evaluate the credibility of statements or descriptions of a person’s experience, judgment or opinion in order to measure the validity of the information being presented.. |
| Teaching and Learning Methods  |
| Theoretical literatures, problem’s sheets and tutorials. |
| Assessment methods |
| Quizzes, Homework, and Terminal Exams. |

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| D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Work in groups in laboratories and in final year design project in order to meet shared objectives.D2. Prepare and present arguments and illustrative materials in a variety of formats.D3. Demonstrate literacy and information sourcing and retrieval skills.D4. Use problem solving strategies to develop innovative solutions. |

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| 11. Course Structure |
| Assessment Method | TeachingMethod | Unit/Module or TopicTitle | ILOs | Hours | Week |
| Quizzes, Homework, & Terminal Exam | Lecture & Tutorial | Introduction to Ecology &River pollution |  | 3 | 1 |
| Lecture & Tutorial | Introduction of wastewater  |  | 3 | 2 |
| Lecture & Tutorial | wastewater regulations |  | 3 | 3 |
| Lecture & Tutorial | Waste Management & Minimization |  | 3 | 4 |
| Lecture & Tutorial | Wastewater Treatment Processes & |  | 6 | 5-6 |
| Lecture & Tutorial | Physical-chemical & Biological Treatment |  | 3 | 7-8 |
| Lecture & Tutorial | Slugde Management |  | 3 | 9 |
| Lecture & Tutorial | Gaseous Pollutants |  | 6 | 10-13 |
| Lecture & Tutorial | Solid waste |  | 3 | 14 |
| Lecture & Tutorial | Soil pollution |  | 3 | 15 |

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| 12. Infrastructure |
|  | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
|  | Special requirements (include for example workshops, periodicals, IT software, websites) |
|  | Community-based facilities(include for example, guestLectures , internship,field studies) |

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| 13. Admissions |
|  | Pre-requisites |
| 15 | Minimum number of students |
| 30 | Maximum number of students |