هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

# Course Specification

| | |
|---|---|
| Course Title: | **Specimen Techniques** |
| Course Code: | **BIOL311** |
| Program: | **Biology** |
| Department: | **Biology** |
| College: | **Science** |
| Institution: | **Jazan University** |
| Version: | **4** |
| Last Revision Date: | **18 October 2020** |

# Table of Contents:

# A. General information about the course:

| Course Identification | | | | | |
|---|---|---|---|---|---|
| **1. Credit hours:** | 2 | | | | |
| **2. Course type** | | | | | |
| a. | University ☐ | College ☐ | Department☒ | Track☐ | Others☐ |
| b. | Required ☒ | Elective☐ | | | |
| **3. Level/year at which this course is offered:** 7th Level/ 3rd Year | | | | | |
| **4. Course general Description**<br>• The course on specimen techniques covers the process and methods involved in preparing samples.<br>• This course provides an overview of the techniques used to collect and prepare animal and plant specimens for laboratory experiments, as well as discussions on skills, quality assurance, and safety protocols. | | | | | |
| **5. Pre-requirements for this course (if any):** **Histology (**ZOOL 252) | | | | | |
| **6. Co- requirements for this course (if any):** | | | | | |
| **7. Course Main Objective(s)**<br>**1.** This course aims giving students the basic theoretical and practical techniques of histological samples and specimen preservation and related information.<br>**2.** Be able to identify supplies required for sample collection.<br>3. Be able to describe the pre-examination factors that affect specimen integrity.<br>4. Describe professional skills that would ensure student safety and comfort.<br>5. To study various tissue, different types of dyes, and its role in study histochemistry.<br>6. Define technical terminology related to laboratory techniques or sample collection.<br>7. Collect plant and animal specimen successfully and preserve same.<br>8. Prepare both temporary and permanent slides using histological techniques.<br>9. Be able to know the basic principles guiding the use of each instrument. | | | | | |

## 1. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1. | Traditional classroom | 33 | 100% |
| 2. | E-learning | -- | |
| 3. | Hybrid<br>• Traditional classroom<br>• E-learning | -- | |
| 4. | Distance learning | -- | |

## 2. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | Lectures | 11 |
| 2. | Laboratory/Studio | 22 |
| 3. | Field | 0 |
| 4. | Tutorial | 0 |
| 5. | Others (specify) | 0 |
| | Total | 33 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of CLOs aligned with program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 1.0 | Knowledge and understanding | | | |
| 1.1 | Define all principals, concepts, theories and aspects concerning with course. | K1-1 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 1.2 | List all characteristics, importance, features, steps of biological aspects. | K1-3 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 1.3 | Differentiate (Compare) between different mechanisms, functions, practices and aspects related to biological sciences. | K2-1 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 1.4 | Interpret by using your knowledge and understanding some of biological phenomena. | K3-2 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 2.0 | Skills | | | |
| 2.1 | Examine theoretically or practically the slides, photos, diagrams or statements of the course aspects. | S1-3 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 2.2 | Argue different biological approaches in laboratory or field or even theoretically. | S2-2 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |

| | | | | |
|---|---|---|---|---|
| 2.2 | Design a biological experiment and procedures in laboratory or in the field or even theoretically | S3-1 | Interactive lectures.<br>Classroom discussions<br>Tutorials.<br>Self-learning activities. | MCQs.<br>Short answer questions.<br>True/False.<br>Quizzes.<br>Midterm.<br>Final. |
| 3.0 | Values, autonomy, and responsibility | | | |
| 3.1 | Illustrate awareness of risk assessment and safety observation when dealing with various equipment at various fields. | V2-1 | Individual assignments.<br>Group discussion.<br>Lab-work.<br>Self-learning activities.<br>Micro-Project<br>Presentation (individual and teamwork) | Lab work assessment,<br>Short Answer Question,<br>MCQs, |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | Introduction: overview of Light and Electron Microscopy, Methods of Specimen Preparation - Plant & Animal Samples. | 1 |
| **2.** | Fixation: fixation benefits, Specifications of a good fixative, principles and methods of fixation process. Fixative types. | **2** |
| 3. | Tissue Processing (1): Washing, Dehydration, clearing (clearing agent proprieties; types of Clearing agents) | 1 |
| 4. | Tissue Processing (2): Infiltration and Embedding definition, Infiltration and Embedding agents | 2 |
| 5. | Preparation of sectioning and Microtomy: Trimming, affixation, types of sections, sectioning problems and treatment, types of microtomes and uses. | 2 |
| 6. | Staining: classification of dyes, Mordants, Methods of Staining, differentiation definition. | 2 |
| 7. | Mounting medium for microscopy: Permanent Mount, Semipermanent Mount, Slide Mounting Media | 1 |
| Total | | 11 |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Theoretical quiz | 4 | 5 |
| 2. | Mid-term exam | 6 | 10 |
| 3. | Practical quiz | 5 | 5 |
| 4. | Practical assignment | 6 | 5 |
| 5. | Final practical exam | 11 | 20 |
| 6. | Final Exam | 12 | 50 |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

# E. Learning Resources and Facilities

## 1. References and Learning Resources

| | |
|---|---|
| Essential References | • Optical laboratory preparations, by Hamed Ahmed Al Haj, 2015 (In Arabic). |
| Supportive References | • Animal specimen techniques/ Osama A. Abuzinadah, Samar O. Rabah, Mona Mahmoud and Ferial M. Stietieh. Publisher: king Saud University- Riyadh (2015)<br>• Microscopy and Techniques, by Mohamed S. Khalifa. publisher: Deanship of Library Affairs, King Saud University (In Arabic).<br>• Bancroft & Stevens, (2007). Theory & Practical of Histological Techniques. Churchill Livingston, New York. |
| Electronic Materials | https://www.labster.com/simulations<br>https://praxilabs.com/en/virtual-biology-lab |
| Other Learning Materials | PowerPoint presentations given by the instructors practical and theoretical |

## 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| facilities<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | 1 Lecture room(s) for groups of 25 students.<br>1 Laboratory for group of 15 students. |
| Technology equipment<br>(projector, smart board, software) | Internet connection, data show or smart board |
| Other equipment<br>(depending on the nature of the specialty) | Light microscopes, glassware, chemicals, consumables, dissection tools. |

# F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Peer to peer Reviewer, students | Indirect (Surveys) |
| Effectiveness of students assessment | Program quality committee, Program leader, peer reviewer | Direct (Cross Check), Indirect (Surveys) |
| Quality of learning resources | Students | Indirect (Surveys) |
| The extent to which CLOs have been achieved | Course coordinator | Excel sheet of CLOs assessment (direct), Surveys (indirect) |
| Other | | |

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data

| | |
|---|---|
| COUNCIL /COMMITTEE | BIOLOGY PROGRAM BOARD |
| REFERENCE NO. | (  ) |
| DATE | ---/---/2023 |

Course coordinator: **Dr. Mabrouk AboZaid Mabrouk**

Signature:

**Head of Department**

Name: **Dr. ABDULLAH YAHYA MASHRAQI**

Signature: