



## Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

### القسم الخاص بالطالب Section Concerning the Student

|                                                    |                                |                                                              |
|----------------------------------------------------|--------------------------------|--------------------------------------------------------------|
| 1. Course Code:                                    | BIOLS 468                      | 1. رمز المقرر:                                               |
| 2. Course Title                                    | Animal Tissue Culture          | 2. اسم المقرر:                                               |
| 3. College:                                        | Science                        | 3. الكلية:                                                   |
| 4. Department:                                     | Biology                        | 4. القسم:                                                    |
| 5. Academic Program:                               | Bachelor of Science in Biology | 5. البرنامج الأكاديمي:                                       |
| 6. Course Credits:                                 | 2-2-3                          | 6. عدد الساعات المعتمدة:                                     |
| 7. Course NQF Level:                               | 8                              | 7. مستوى المقرر وفقاً للإطار الوطني للمؤهلات:                |
| 8. Notional Hours:                                 | 128                            | 8. عدد الساعات الافتراضية:                                   |
| 9. NQF Credits:                                    | 13                             | 9. عدد الساعات المعتمدة للمقرر وفقاً للإطار الوطني للمؤهلات: |
| 10. European Credit Transfer System (ECTS) credits | 6                              | 10. عدد الساعات للمقرر بالنظام الأوروبي                      |
| 11. Prerequisite:                                  | BIOLS 300                      | 11. المتطلب السابق للمقرر:                                   |
| 12. Lectures Timing & Location:                    |                                | 12. وقت المحاضرة ومكانها:                                    |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                             |                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------|
| 13. General Mode of Teaching and Learning                                                                                                                                                                                                                                                                                                                                                                                                         | Traditional تقليدي                                                                          | 13. النمط العام للتعليم والتعلم:     |
| 14. Course Coordinator:                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                             | 14. منسق المقرر:                     |
| 15. Course Instructor:                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                             | 15. مدرّس المقرر:                    |
| 16. Office Hours and Location:                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                             | 16. الساعات المكتبية ومكانها:        |
| 17. Instructor's Email:                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                             | 17. البريد الإلكتروني لمدرّس المقرر: |
| 18. Academic Year:                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                             | 18. السنة الأكاديمية:                |
| 19. Semester:                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                             | 19. الفصل الدراسي:                   |
| 20. Textbook(s):                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20. الكتب الدراسية للمقرر:                                                                  |                                      |
| <p>Shalini Mani, Manisha Singh, Anil Kumar. Animal Cell Culture: Principles and Practice (Techniques in Life Science and Biomedicine for the Non-Expert), Springer, 1st Edition, 2023.</p> <p>R. Ian Freshney. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications, Wiley-Blackwell, 7th edition, 2017.</p> <p>J. M. Davis. Basic Cell Culture, Practical Approach, Oxford University Press, 2nd Edition, 2005.</p> |                                                                                             |                                      |
| 21. References:                                                                                                                                                                                                                                                                                                                                                                                                                                   | 21. المراجع:                                                                                |                                      |
| Any animal tissue culture book                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                             |                                      |
| 22. Other Learning Resources Used (e.g. e-learning, field visits, periodicals, software, etc.):                                                                                                                                                                                                                                                                                                                                                   | 22. مصادر التعلم الأخرى (مثال: التعلم الإلكتروني، زيارات ميدانية، دوريات، برمجيات، إلخ....) |                                      |
| 23. Course Description (as published in the College Catalogue):                                                                                                                                                                                                                                                                                                                                                                                   | 23. توصيف المقرر (حسب ما ورد في دليل الكلية):                                               |                                      |
| Intensive lectures and laboratory works designed to provide the students with the knowledge related to the <i>in-vitro</i> techniques used for propagation and maintenance of animal cells, tissue and hybridoma cultures.                                                                                                                                                                                                                        |                                                                                             |                                      |
| 24. Course Intended Learning Outcomes (3 to 5 CILOs):                                                                                                                                                                                                                                                                                                                                                                                             | 24. مخرجات التعلم للمقرر (CILOs) (3 إلى 5 مخرجات تعليمية):                                  |                                      |
| 1. Describe Basic cell culture technique.                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                             |                                      |
| 2. Discuss the methodology of maintaining cell culture.                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                             |                                      |
| 3. Exhibit ability to culture primary cells and the preparation of cell lines.                                                                                                                                                                                                                                                                                                                                                                    |                                                                                             |                                      |
| 4. Conduct basic cell culture techniques considering cell culture conditions                                                                                                                                                                                                                                                                                                                                                                      |                                                                                             |                                      |
| 5. Apply tissue culture techniques.                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                             |                                      |

| 25. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain): |                    | 4) أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):       |                                  |
|---------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------|----------------------------------|
| Assessment<br>التقييم                                                                                         | Type<br>النوع      | Percentage<br>النسبة                                                                     | Assessment Date<br>تاريخ التقييم |
| Exam 1                                                                                                        | Individual<br>فردى | 15%                                                                                      |                                  |
| Exam 2                                                                                                        | Individual<br>فردى | 15%                                                                                      |                                  |
| Lab Exam                                                                                                      | Individual<br>فردى | 20%                                                                                      |                                  |
| Lab assignment                                                                                                | Individual<br>فردى | 5%                                                                                       |                                  |
| Oral Presentation                                                                                             | Individual<br>فردى | 5%                                                                                       |                                  |
| Final Exam                                                                                                    | Individual<br>فردى | 40%                                                                                      |                                  |
| <b>Total</b>                                                                                                  | <b>100%</b>        |                                                                                          |                                  |
| 26. Description of Topics Covered                                                                             |                    | 5) وصف الموضوعات التي ينبغي تناولها:                                                     |                                  |
| Topic Title<br>(e.g. chapter/experiment title)<br>الموضوع                                                     |                    | Description<br>التفصيل                                                                   |                                  |
| Chapter 1                                                                                                     |                    | The cell culture laboratory                                                              |                                  |
| Chapter 2                                                                                                     |                    | Sterilization                                                                            |                                  |
| Chapter 3                                                                                                     |                    | Culture media                                                                            |                                  |
| Chapter 5                                                                                                     |                    | Basic cell culture technique and the maintenance of cell lines                           |                                  |
| Chapter 6                                                                                                     |                    | Primary cell culture and the establishment of cell lines                                 |                                  |
| Chapter 8                                                                                                     |                    | Cloning                                                                                  |                                  |
|                                                                                                               |                    | Senescence, apoptosis, and necrosis                                                      |                                  |
|                                                                                                               |                    | Three-dimensional culture                                                                |                                  |
|                                                                                                               |                    | Tissue culture applications                                                              |                                  |
| Lab 1                                                                                                         |                    | The cell culture laboratory (Work area, equipment, instrumentation, and culture vessels) |                                  |
| Lab 2                                                                                                         |                    | Cell counting with a hemocytometer                                                       |                                  |

| Lab 3                      |                        |                                                                                                                           | Media preparation                                                                                   |                                                                              |
|----------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Lab 4                      |                        |                                                                                                                           | Retrieval of cells from frozen storage                                                              |                                                                              |
| Lab 5                      |                        |                                                                                                                           | Subculture of non-adherent cells                                                                    |                                                                              |
| Lab 6                      |                        |                                                                                                                           | Subculture of adherent cells<br>(Trypsinization)                                                    |                                                                              |
| Lab 7                      |                        |                                                                                                                           | Cell freezing                                                                                       |                                                                              |
| Lab 8                      |                        |                                                                                                                           | Cell cloning by limiting dilution                                                                   |                                                                              |
| Lab 9<br>Lab 10            |                        |                                                                                                                           | Isolation of cells by mechanical<br>disaggregation (preparation of feeder cells)<br>Explant culture |                                                                              |
|                            |                        |                                                                                                                           |                                                                                                     |                                                                              |
| <b>27. Weekly Schedule</b> |                        |                                                                                                                           | <b>6) الجدول الأسبوعي</b>                                                                           |                                                                              |
| <b>Week</b><br>الأسبوع     | <b>Date</b><br>التاريخ | <b>Topics Covered</b><br>الموضوعات المتناولة                                                                              | <b>CILOs</b><br>مخرجات التعلم للمقرر<br>(CILOs)                                                     | <b>Teaching/Assessment Mode and Method</b><br>منهجية ونمط<br>التدريس/التقييم |
| <b>1</b>                   |                        | Course syllabus<br>distribution and<br>course content<br>explanation<br><i>Chapter 1: The cell<br/>culture laboratory</i> | 1,2                                                                                                 | Traditional تقليدي                                                           |
| <b>2</b>                   |                        | Chapter 1<br>Lab 1                                                                                                        | 1,2                                                                                                 | Traditional تقليدي                                                           |
| <b>3</b>                   |                        | Chapter 1<br>Lab 2                                                                                                        | 1-3                                                                                                 | Traditional تقليدي                                                           |
| <b>4</b>                   |                        | Chapter 2<br>Lab 3                                                                                                        | 1-3                                                                                                 | Traditional تقليدي                                                           |
| <b>5</b>                   |                        | Chapter 2<br>Lab 4                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>6</b>                   |                        | Chapter 3<br>Lab 5                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>7</b>                   |                        | Chapter 3<br>Lab 6                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>8</b>                   |                        | Chapter 5<br>Lab 7                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>9</b>                   |                        | Chapter 5<br>Lab 8                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>10</b>                  |                        | Chapter 6<br>Lab 9                                                                                                        | 1-5                                                                                                 | Traditional تقليدي                                                           |
| <b>11</b>                  |                        | Chapter 6                                                                                                                 | 1-5                                                                                                 | Traditional تقليدي                                                           |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Lab 10                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Chapter 8                                               | 1,2,5                                                                                                                                                                                                                                                                                                                                                                                                                                                          | تقليدي Traditional |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | <i>Senescence, apoptosis and necrosis</i>               | 1,2,5                                                                                                                                                                                                                                                                                                                                                                                                                                                          | تقليدي Traditional |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | <i>Three-dimensional culture</i><br>Oral Presentation   | 1-5                                                                                                                                                                                                                                                                                                                                                                                                                                                            | تقليدي Traditional |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | <i>Tissue culture applications</i><br>Oral Presentation | 1-5                                                                                                                                                                                                                                                                                                                                                                                                                                                            | تقليدي Traditional |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
| <b>28. Academic Integrity Statement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                         | <b>7) بيان النزاهة الأكاديمية</b>                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |
| Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, <a href="#">Anti-plagiarism Policies</a> , and <a href="#">Students' Rights and Responsibilities Handbook</a> . The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations. |  |                                                         | يتعين على الطلبة الالتزام بأعلى مستويات الصدق والأمانة والأخلاق الأكاديمية في سعيهم لتحقيق أهدافهم الأكاديمية وفقاً للوائح سلوك الطلاب والنزاهة الأكاديمية، <a href="#">سياسات مكافحة الانتحال</a> ، <a href="#">ودليل حقوق الطلبة واجباتهم</a> ، المعمول بها في جامعة البحرين. يمكن لعواقب الغش والسرقة الأدبية والتعاون غير المصرح به وغيرها من أشكال عدم الأمانة الأكاديمية أن تكون خطيرة للغاية وسيتم التعامل معها وفقاً للسياسات واللوائح المذكورة آنفاً. |                    |
| <b>29. Attendance and Absence Regulations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                         | <b>8) نظام الحضور والغياب</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |
| Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33) of Regulations of <a href="#">Study and Examination at the University of Bahrain</a> .                                                                                                                                                                                                                                                     |  |                                                         | يجب على الطلبة الالتزام بالحضور المنتظم للمحاضرات الصفية والعملية، حسبما تحدده طبيعة المقرر الدراسي، ووفقاً للمادة (33) من <a href="#">نظام الدراسة والامتحانات في جامعة البحرين</a> .                                                                                                                                                                                                                                                                         |                    |