MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Title** | Microbiology | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **☒ Theory** * **☐ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | ITC320110 | | | |
| **ECTS Credits** | 4.00 | | | |
| **SWL (hr/sem)** | 100 | | | |
| **Module Level** | | 2 | **Semester of Delivery** | | | | 3 |
| **Administering Department** | | **BID** | **College** | BMIC | | | |
| **Module Leader** | **Zainab salim jaafar** | | **e-mail** | **Zainab.al-kadimy@uoitc.edu.iq** | | | |
| **Module Leader’s Acad. Title** | | **Assistant Professor** | **Module Leader’s Qualification** | | | | **MSc**. |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | | jwan k alwan | **e-mail** | jwanism@uoitc.edu.iq | | | |
| **Scientific Committee Approval Date** | | **18/06/2023** | **Version Number** | | | **1.0** | |

| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| --- | --- | --- | --- |
| **Prerequisite module** | Biology and Cell Biology / BMI111 | **Semester** | 1 |
| **Co-requisites module** |  | **Semester** |  |

| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| --- | --- |
| **Module Aims**  **أهداف المادة الدراسية** | 1. To highlight the roles and characteristics of microorganisms  2. To study in detail the growth of microorganisms and impact of environment on their growth  3. To evaluate explicitly, the metabolic pathways, role of microbes in public health; insight into the physical and chemical control of microorganisms |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. - Helping the student to become familiar with the existing scientific facts, whether in the human body or in the universe surrounding us, and to know the scientific assumptions and theories of scientists and specialists. 2. - Enable students to gain knowledge and understanding of how to maintain and restore microbiology systems. 3. - Introduce students to laboratory work and apply theoretical information and link it to the reality of laboratory work. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  **I – INTRODUCTION TO MICROBIOLOGY** Basic of microbial existence: History of Microbiology, classification, and nomenclature of microorganisms. Microscopy: Light and Electron microscopy. Microscopic examination of microorganisms. morphology and fine structure of bacteria.  **II - MICROBIAL NUTRITION, GROWTH AND METABOLISM**  Nutritional requirements of bacteria: Growth curve and Different methods to quantitative bacterial growth. Aerobic and anaerobic bioenergetics- utilization of energy. Biosynthesis of important molecules.  **III- MICROBIAL PHYSIOLOGY AND GENETICS** Fungi-Importance, characteristics, morphology, reproduction, physiology cultivation, and Classification of fungi. Molds and repair association with other organisms. Bacteriophages.  **IV - General characteristics**, Morphology and structure. Classification and Nomenclature-Bacteriophages of E.coli. Replication Viruses of plants, animals, Structure, and Replication.  **APPLIED MICROBIOLOGY Microbial metabolites:** Microbial applications in agricultural, biotechnological, pharmaceutical, and environmental applications. Physical, chemical, and biological control of microorganisms. Host-microbe interactions such as asphalt microbe interaction & animal-microbe interaction.  **Microbiology of human diseases Bacteria** |

| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| --- | --- |
| **Strategies** | 1- Learning by Experimentation  2- Cooperative Learning  3- Brainstorming  4- Self-Learning  5- Individual Skills Assessment  6- Achievement Tests  7- Standard Tests |

| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| --- | --- | --- | --- |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 63 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 4 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 37 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 2 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 100 | | |

| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 1 | 10% (10) | 6 | LO #1 and 2 |
| **Assignments** | 1 | 10% (10) | 11 | LO # 1 and 2 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous |  |
| **Report** | 1 | 10% (10) | 12 | LO # 1, 2 and 3 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 13 | LO # 1, 2 and 3 |
| **Final Exam** | 3hr | 50% (50) |  | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Introduction of Microbiology |
| **Week 2** | Microbial Nutrition and Growth |
| **Week 3** | Bacterial Morphology |
| **Week 4** | Bacterial cell structures and functions |
| **Week 5** | ANTIMICROBIAL DRUGS |
| **Week 6** | Bacteriophage |
| **Week 7** | First test |
| **Week 8** | Chemical coordination and regulation |
| **Week 9** | INFECTION AND INFECTIOUS PROCESS |
| **Week 10** | The nerve system |
| **Week 11** | Types of infectious diseases |
| **Week 12** | Application of microbiology |
| **Week 13** | Microbial Metabolism |
| **Week 14** | BACTERIAL FOOD POISONING |
| **Week 15** | Reveiw |

| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Introduction to bacteriology |
| **Week 2** | Lab 2: Biosafety |
| **Week 3** | Lab 3: Media preparation |
| **Week 4** | Lab 4: Microbiological methods |
| **Week 5** | Lab 5: Pure culture isolation techniques |
| **Week 6** | Lab 6: Pure cultivation |
| **Week 7** | Lab 7: Serial dilution of Environmental Samples |
| **Week 8** | Lab 8: Types of culture media |
| **Week 9** | Lab9: Antibiotics |
| **Week 10** | Lab 10 : Antibiotics sensitivity test |
| **Week11** | Lab 11 : Biochemical tests |
| **Week 12** | Lab 12: Pathogenic bacteria |
| **Week 13** | Lab 13: Pathogenic bacteria II |
| **Week 14** | Lab 14 : Blood groups |
| **Week 15** | Lab 15 : IMVIC test |

| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
| --- | --- | --- |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | 1. Michael J. Pelczar, S. Chan, and Noel R. Krieg “Microbiology”, McGraw Hill, 7thEdition, 2011.  2. Michael T. Madigan, John M. Martinko, Paul V. Dunlap, and David P. Clark “Brock Biology of microorganisms”, Prentice Hall, 12thEdition, 2008.  3. Davis D. Bernard, Dulbecco Renato, Ginsberg S. Harold,and Eisen N. Herman “Microbiology”,Lippincott Williams,4thEdition, 1990.  4. Joklik et al, “Zinsser microbiology”- Appleton & Lange, 20th edition, 1997.  5. Stanier Y. Roger,Adelberg A. Edward,and Ingraham John “General Microbiology”,Prentice Hall,5thEdition, 1986. | NO |
| **Recommended Texts** | 1. Geo Brooks, Karen C. Carroll, Janet Butel, and Stephen Morse“Medical Microbiology”, McGraw-Hill Medical, 26thEdition, 2012.  2. Lansing M. Prescott,Donald A. Klein, and John P.Harley,“Microbiology”,McGraw | No |
| **Websites** |  | |

| **Grading Scheme**  **مخطط الدرجات** | | | | |
| --- | --- | --- | --- | --- |
| **Group** | **Grade** | التقدير | **Marks (%)** | **Definition** |
| **Success Group**  **(50 - 100)** | **A -** Excellent | **امتياز** | 90 - 100 | Outstanding Performance |
| **B -** Very Good | **جيد جدا** | 80 - 89 | Above average with some errors |
| **C -** Good | **جيد** | 70 - 79 | Sound work with notable errors |
| **D -** Satisfactory | **متوسط** | 60 - 69 | Fair but with major shortcomings |
| **E -** Sufficient | **مقبول** | 50 - 59 | Work meets minimum criteria |
| **Fail Group**  **(0 – 49)** | **FX –** Fail | **راسب (قيد المعالجة)** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
|  |  |  |  |  |
| **Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. | | | | |