MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Title** | Genetics | | | | **Module Delivery** | | |
| **Module Type** | Core | | | | * **☒ Theory**   **☐ Lecture**   * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | BID313 | | | |
| **ECTS Credits** | 5.00 | | | |
| **SWL (hr/sem)** | 125 | | | |
| **Module Level** | | 3 | **Semester of Delivery** | | | | 5 |
| **Administering Department** | | BID | **College** | BMIC | | | |
| **Module Leader** | Shaimaa Khalid Moufak | | **e-mail** | [Shaimaa.khalid-bic@uoitc.edu.iq](mailto:Shaimaa.khalid-bic@uoitc.edu.iq) | | | |
| **Module Leader’s Acad. Title** | | Assistant Lecturer | **Module Leader’s Qualification** | | | | MSc |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | Omar A.M | **e-mail** | omara.m@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 Objectives**  **أهداف المادة الدراسية** | 1. Explain Mendel’s Principles of Segregation and Independent Assortment. 2. Describe the chromosomal basis of inheritance. 3. Explain linkage, recombination, and the mapping of genes on chromosomes 4. Describe non-Mendelian inheritance. 5. To learn and apply concepts of modern transmission. 6. To identify and describe the process and purposes of the cell cycle, meiosis, and mitosis, as well as predict the outcomes of these processes. 7. To solve transmission genetics problems, make accurate predictions about inheritance of genetic traits, and map the locations of genes. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Explain how information is stored and expressed in cells. 2. Summaries the molecular basis of variation and mutation, of inheritance of genes and characteristics, of genetic recombination, and the tools of genetic analysis. 3. Describe the behavior of genes in populations and how this contributes to adaptation in an evolutionary context. 4. Solve genetic problems. 5. Explain how information is stored and expressed in cells. 6. Summaries the molecular basis of variation and mutation, of inheritance of genes and characteristics, of genetic recombination, and the tools of genetic analysis. 7. Describe the behavior of genes in populations and how this contributes to adaptation in an evolutionary context. |
| **Indicative Contents**  **المحتويات الإرشادية** | The module includes four main requirements that the student must complete in order to successfully pass the course.  1. Readings: Students must weekly read each lecture before presenting it in the classroom in order to be able to interact and discuss. The content of the course includes four main parts, and each part includes topics that are illustrated in weekly syllabus, which includes:  Part 1 – Cell division  Part 2 – Meiosis  Part 3 – The chromosomes history – structure karyotyping  Part 4 – The chromosomal abnormalities  Part 5 – Genetics disease due chromosomal abnormalities  Part 6 - Pattern of inheritance Mendel's laws  2. Discussion: We will use discussion as the main form of interaction in the class. Students’ responses to the weekly readings  3. Quiz: every lecture we will do a simple quiz (oral or writing) to enhance the students for more reading and follow up them.  4. Oral Presentations: this is very important to allow the students to learn how to do the slide and how to discuss many topics (theoretical or practical). |

| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| --- | --- |
| **Strategies** | * CLASSES * Discussion * Brainstorming * Practical presentations * (Lab works) Practical |

| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا** | | | |
| --- | --- | --- | --- |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 64 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 4 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 61 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 4 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **125** | | |

| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 7 | LO #1, #2 and #7 |
| **Assignments** | 2 | 10% (10) | 2 and 7 | LO #3, #4 and #6, #7 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO #5, #6 and #7 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Cell division |
| **Week 2** | Meiosis |
| **Week 3** | The chromosomes history – structure karyotyping |
| **Week 4** | The chromosomal abnormalities |
| **Week 5** | Genetics disease due chromosomal abnormalities |
| **Week 6** | Patter of inheritance Mendel's laws |
| **Week 7** | Mid-term Exam |
| **Week 8** | Types of inheritances |
| **Week 9** | The genetic basis of sex X-linked inheritance – Y linked inheritance |
| **Week 10** | Sex influenced traits, sex limited genes |
| **Week 11** | Mutations |
| **Week 12** | Mutagens carcinogenic in the environment |
| **Week 13** | Cancer and genetics |
| **Week 14** | Chromosome and cancer |
| **Week 15** | Oncogenes |

| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Instruments and materials used in medical genetic field |
| **Week 2** | Instruments and materials used in medical genetic field (quiz and discussion) |
| **Week 3** | Laboratory safety |
| **Week 4** | Practical of Laboratory safety |
| **Week 5** | Cell division |
| **Week 6** | Cell division (quiz and discussion) |
| **Week 7** | Mid exam |
| **Week 8** | Cytogenetic sampling |
| **Week 9** | Cytogenetic sampling (practical) |
| **Week 10** | Pedigree |
| **Week 11** | Pedigree (quiz and discussion) |
| **Week 12** | Explain of DNA analysis |
| **Week 13** | DNA analysis (practical) |
| **Week 14** | Explain of DNA fingerprinting |
| **Week 15** | DNA fingerprinting (practical) |

| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
| --- | --- | --- |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | HUMAN GENETICS, **THE BASICS**, Second Edition  Ricki Lewis , 2017 | No |
| **Required Texts** | GENETICS ANALYSIS & PRINCIPLES, Robert J. Brooker, Sixth Edition, 2018 |  |
| **Recommended Texts** | CONCEPT OF GENETICS, Twelfth Edition, William S. Klug , 2018 | No |
| **Websites** | [Introduction to Genetics | Basic Biology](https://basicbiology.net/biology-101/introduction-to-genetics)  [Best Genetics Courses & Certifications [2023] | Coursera](https://www.coursera.org/courses?query=genetics) | |

| **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. | | | | |