جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

# MODULE DESCRIPTION FORM
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **cytogenetics and human genetic diseases** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ☒ **Theory**<br>☒ **Lecture**<br>☒ **Lab**<br>☐ **Tutorial**<br>☐ **Practical**<br>☐ **Seminar** | |
| **Module Code** | **UOMU0307061** | | | | |
| **ECTS Credits** | **5** | | | | |
| **SWL (hr/sem)** | **125** | | | | |
| **Module Level** | **3** | | **Semester of Delivery** | **2** | |
| **Administering Department** | Biotechnology Medical | | **College** | Sciences of college | |
| **Module Leader** | **Mohammed Zuhair Naji** | | **e-mail** | Mohammed.zuhair.naji@uomus.edu.iq | |
| **Module Leader's Acad. Title** | | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | |
| **Peer Reviewer Name** | Name | | **e-mail** | E-mail | |
| **Scientific Committee Approval Date** | | | **Version Number** | 1.0 | |

| Relation with other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | MBT-2309 | **Semester** | 1 |

| | | | |
|---|---|---|---|
| **Co-requisites module** | | **Semester** | |

| **Module Aims, Learning Outcomes and Indicative Contents**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | 1- This module is a major (Mandatory) Departmental course for the Third Year and taught by Technology-based labs. This module deals mainly with human Chromosomal analysis Karyotyping. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | After successful completion of the course, the student will be able to: See what Human chromosomes look like under the light microscope -Distinguish chromosomes on the basis of reproducible banding patterns that are accentuated with the use of various staining protocols using a mild trypsin treatment followed by staining with the dye Giemsa and other techniques that allow for increased resolution of chromosome banding patterns. - permitting differentiation of a greater number of Chromosomal abnormalities - Chromosome nomenclature |
| **Indicative Contents**<br>المحتويات الإرشادية | Student responsibilities:<br>1. Study of course materials as specified by the instructor<br>2. Timely submission of given class assignment |

| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | 1. Classroom lectures and discussions.<br>2. Case studies and examples from original research articles. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | **64** | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | **5** |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | **61** | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | **1** |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **125** | | |

| **Module Evaluation**<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative** | **Quizzes** | **3** | **10** | **4, 6, 10** | **#1 and#2, #3-#5, #9** |

| | | | | | |
|---|---|---|---|---|---|
| **assessment** | **Assignments** | **2** | **10** | **13 and 14** | **#1 and #12** |
| | **Projects / Lab.** | **1** | **10** | **continuous** | **all** |
| | **Report** | **1** | **10** | **15** | **#14** |
| **Summative assessment** | **Midterm Exam** | **2h** | **10** | **7** | **#1-#6, #8-#14** |
| | **Final Exam** | **3h** | **50** | **16** | **all** |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | **Overview of Genetics** |
| **Week 2** | **Cells and Differentiation Meiosis and Development** |
| **Week 3** | **Pedigree Analysis Family Genome Analysis** |
| **Week 4** | **Mendelian Genetics Sex Chromosomes and Sex-Linkage** |
| **Week 5** | **Multifactorial Traits Behavioral Genetics (midterm)** |
| **Week 6** | **DNA Structure Gene Expressions and Mutations** |
| **Week 7** | **Med Exam.** |
| **Week 8** | **Cancer genetic** |
| **Week 9** | **Genetic diseases** : **Down syndrome (Trisomy 21) and Fragile X syndrome.** |
| **Week 10** | **Genetic diseases** : **Trisomy 18, Trisomy 13, and Klinefelter syndrome**. |
| **Week 11** | **Genetic diseases : Thalassemia, Sickle cell anemia. Hemochromatosis , Achondroplasia** |
| **Week 12** | **Genetic diseases** : **X- linked genetic : Hemophilia B, Fetal hemoglobin quantitative trait locus 3.** |
| **Week 13** | **Genetic Autoimmune diseases : Myasthenia gravis, Rheumatoid arthritis** |
| **Week 14** | **Genetic Autoimmune diseases : Celiac disease - sprue (gluten-sensitive enteropathy)** |
| **Week 15** | **Preparatory week before final exam.** |
| **Week 16** | **Final Exam.** |

## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| | Material Covered |
|---|---|
| **Week 1** | **General Lab Rules for Cytogenetics** |
| **Week 2** | **Device, Equipment, and tools of Cytogenetic Lab** |
| **Week 3** | **Mitosis of Vicia faba** |
| **Week 4** | **Karyotype of Hordeum vulgare (2n=14)** |
| **Week 5** | **Mitotic Aberrations** |
| **Week 6** | **Meiosis of Normal Diploids** |
| **Week 7** | **Med Exam.** |
| **Week 8** | **Cytogenetic Analysis of Peripheral Blood G-Banding (Using trypsin)** |
| **Week 9** | **The standard karyotype Chromosome number and banding patterns Idiograms** |
| **Week 10** | **Cytogenetic Analysis of Peripheral Blood C-Banding constitutive Heterochromatin banding** |
| **Week 11** | **Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test ) -1** |
| **Week 12** | **Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test) -2** |
| **Week 13** | **Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test) -3** |
| **Week 14** | **Final exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Books Title: Cell Biology-A laboratory Handbook,2006. Author(s)/Editor(s):Celis,Julio E. (ed.) Publisher: Amsterdam: Elsevier Academic Press ISBN: 0-12-164731-5 0-12-164732-3 0-12-164733-1 0-12-164734-X | |
| **Recommended Texts** | Title: Analyzing Chromosomes(basics from background to bench),2018 Author(s)/Editor(s):B. Czepulkowski Publisher: Springer | |
| **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.