**The University of Jordan**

**Faculty: Agriculture Department: Hort. & Crop Sc.**

**Program: PH.D Academic year: \_\_\_\_\_\_\_\_\_\_\_**

**Course: Plant Biochemistry 601944**

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| --- | --- | --- | --- | --- | --- |
| **Credit hours** | 3 | **Level** | PH.D | **Pre-requisite** | **-** |
| **Coordinator/ Lecturer** | Prof. M. Qrunfleh  Prof. J. Ayad | **Office number** | 217 | **Office phone** | 22339 |
| **Course website** |  | **E-mail** |  | **Place** |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Office hours** | | | | | |
| **Day/Time** | **Sunday** | **Monday** | **Tuesday** | **Wednesday** | **Thursday** |
|  |  |  |  |  |  |

**Course Description**

Advanced discussion to recent topics related to plant biochemistry including carbohydrates, lipids, nitrogen fixation, purines, pyramidines, nucleic acids, terpenes, terpenoids, chlorophyll and heme, alkaloids, plant phenolics, phytohormones and related compounds, photosynthesis and respirators.

**Learning Objectives**

Enabling participated students of understanding internal processes in the plant for building materials needed for plant growth and development. Pathways involved, enzymes, genetic factors that control biosynthesis and metabolism of substances and their role. Economic importance of built materials for man kind.

**Intended Learning Outcomes (ILOs):**

Successful completion of the course should lead to the following outcomes:

**A. Knowledge and Understanding:** Student is expected to

**A1-** Know the way materials are build inside plant.

**A2-** Name materials manufactured.

**A3**- Know the plant ability in Nitrogen fixation.

**A4**- Know the biochemical processes that take place.

**A5**- Know metabolism of materials needed for plant growth and development.

**B. Intellectual Analytical and Cognitive Skills:** Student is expected to

**B1**- Extract materials, purify them, identify and quantify them.

**B2**- Follow the pathway of injected substances.

**C. Subject- Specific Skills:** Students is expected to

**C1**- Use specific instruments for identification and purification of extracts

**D. Transferable Key Skills:** Students is expected to

**D1**- Introducing various precursors of materials into the plant.

**D2**- Following materials pathways.

# ILOs: Learning and Evaluation Methods

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| --- | --- | --- |
| **ILO/s** | **Learning Methods** | **Evaluation Methods** |
|  | Lectures and discussions, Homework and Assignments, Projects, Presentation, … | Exam- Quiz 40%  Presentation-project 20%  Assignments, .. 40% |

**Course Contents**

|  |  |  |  |
| --- | --- | --- | --- |
| **Content** | **Reference** | **Week** | **ILO/s** |
| ***Homework:- Assign your team and project,***  ***-Write proposal about your project.*** |  | ***Due date: 5th week*** |  |
| Carbohydrate | (1) | 1st - 3rd |  |
| Nitrogen fixation | (4) | 4th - 6th |  |
| Proteins | (1) | 7th – 8th |  |
| Purenes, Pyrimidins | (1) | 9th – 10th |  |
| Nucleic acid | (4) |  |  |
| Lipids | (1) | 11th – 12th |  |
| Plant phenols | (1) | 13th |  |
| Alkaloids | (1) | 14th |  |
| Terpens, Terpenoids | (1) | 15th |  |

**Learning Methodology**

Lectures.

**Projects and Assignments**

Presentations using data show

# Evaluation

|  |  |  |
| --- | --- | --- |
| **Evaluation** | **Point %** | **Date** |
| **2 Midterm Exams** | 40 | 6th and 11th week |
| * **Review paper and class participation** * **Project** | 20 | 8th week |
| **Final Exam** | 40 | 15th week |

**Main Reference/s:**

1. Goodwin and Mercer. 1983. Introduction to plant Biochemistry. 2nd Ed., Pergamon, Oxford.
2. Most recent articles in scientific journals.

# References:

1. Bonner and Varner. 1976. Plant Biochemistry. 3rd Ed., Academic Press.
2. Dieter Hess. 1975. Plant physiology; molecular, biochemical, and physiological fundamentals of metabolism and development. Springer-Verlag, Berlin. Heidelberg. New York**.**

**Intended Grading Scale (Optional)**

0-39 **F**

40-49 **D**-

50-54 **D**

55-59 **D+**

60-64 **C**-

65-69 **C**

70-73 **C+**

74-76 **B**-

77-80 **B**

81-84 **B+**

85-89 **A**-

90-100 **A**

**Notes:**

* Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming, then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter, problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For final complaints, there will be a committee to review grading the final exam.
* For more details on University regulations please visit:

<http://www.ju.edu.jo/rules/index.htm>