**بسم الله الرحمن الرحيم**

**University:** Diyala

**College:** Agriculture

**Department:** Science Field Crops

**Stage: Fourth**

**Lecturer name:** Husham Abdulwahab Abdulkarem

**Academic Status:** Lecturer

**Qualification:ph.D**

**Place of work:** College Agriculture**/** University of Diyala

**Republic of Iraq**

**The Ministry Of Higher Education**

**& Scientific Research**

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**Flow up of implementation celli pass play**

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| **Course Instructor** | ***Husham Abdulwahab Abdulkarem***  ***Gufran Ali Hussien*** | | | | |
| **E\_mail** | ***hushamabdulkareem* @uodiyala.edu.iq**  ***ghuffranali@uodiyala.edu.iq*** | | | | |
| **Title** | ***Ecology Stress*** | | | | |
| **Course Coordinator** | **Spring Course, autumn course** | | | | |
| **Course Objective** | ***Study The effect of Abiotic Stress factors on plant*** | | | | |
| **Course Description** | ***The effect of Abiotic Stress factors on plant germination, growth, development, and yield*** | | | | |
| **Textbook** | ***Lectures*** | | | | |
| **References** | **1- weed science.**  **2- Websites, Articles, FAO reports .** | | | | |
| **Course Assessment** | **final** | **report** | **coz** | **Lab** |  |
| **%60** | **%5** | **5%** | **10%** | **20%** |
| **General Notes** | **Monthly tests** | | | | |

**Course weekly Outline**

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| **week** | **Date** | **Topics Covered** | **Lab. Experiment Assignments** | **Notes** |
|  |  | **Theoretical** | **Lab.** |  |
| **1** |  | **Biotic and abiotic stresses** | **Ecology stress and their risk on the plants experiment** |  |
| **2** |  | **Heat stress** | **Heat stress and their risk on the plant experiment** |  |
| **3** |  | **Water stress part1** | **Water stress and calculate the average of seed germination in different water stress treatments** |  |
| **4** |  | **Water stress part2** | **Water stress and calculate the effect of water stress on seedlings experiment** |  |
| **5** |  | **Salination** | **Salts stress and their effect on the development plants experiment** |  |
| **6** |  | **Risks of high salination** | **Evaluation of salination stress on seed germination experiment** | **Exam** |
| **7** |  | **Measurements of salination resistance** | **Light stress and their effect on plants experiment** |  |
| **8** |  | **Light stress** | **Differences between high and low light stresses experiment** |  |
| **9** |  | **Low light stress** | **Effect of light stress on seedlings experiment** |  |
| **10** |  | **High light stress** | **Effect of So2 contamination on plant experiment** |  |
| **11** |  | **Soil pH** | **Effect of soil pH on plant experiment** |  |
| **12** |  | **Ecology Contamination** | **Effect of ecology contamination on plant experiment** |  |
| **13** |  | **Free radicals and role of antioxidants** | **Effect of free radicals on plant experiment** | **Exam** |
| **14** |  |  |  |  |
| **15** |  |  |  |  |

**توقيع الاستاذ: توقيع العميد:**