****

**Department of Field Crops**

**College of Agriculture Engineering Sciences**

**University of Salahaddin- Erbil**

**Subject: Seed Production & Technology - practice**

**Course Book: Year 4**

**Lecturer's name: Sumaya Ahmed Abdullah**

**Academic Year: 2022/2023**

**Course Book**

|  |  |  |
| --- | --- | --- |
| **1. Course name** | **Seed Technology – practice** | |
| **2. Lecturer in charge** | **Sumaya Ahmed Abdullah** | |
| **3. Department/ College** | **Field Crops/ Agriculture** | |
| **4. Contact** | **e-mail: sumaya.abdullah@su.edu.krd**  **Tel: (optional): 07504904124** | |
| **5. Time (in hours) per week** | **Practical:** | |
| **6. Office hours** |  | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | * Date of Birth**:** 1 June 1985 * Place of Birth**:** Erbil * Nationality**:** Iraqi * Marital status**:** Single * Sex**:** Female   **Education:**   * **B.Sc:** Plant Production / College of Agriculture ( 2007-2008) / University of Salahaddin / Kurdistan Region/ Iraq. * **M.Sc:** Field Crops/ Seed Technology/ College of Agriculture (2014)/ University of Salahaddin/ Kurdistan Region/ Iraq.   **Work History:**   1. College of Agriculture, Field Crops department/ University of Salahaddin /Iraq   July 2014 until date ( Assistant Lecturer)  As an assistant lecturer, I have teaching:   1. I was assisting assistant lecturer in teaching Cereal Crops for Third year student, from 2014-2015. 2. I was assisting assistant lecturer in teaching Rang Management for Fourth year student, from 2014-2015. 3. I was member in examination committee 2nd trial 2014-2015. | |
| **9. Keywords** | Seed Formation, Testing, Sampling, Density, Purity, Germination. | |
| **10. Course overview:**  1. The farmer hopes for better seed germination rates than the gardener. But the fact is that most seed plants compensate beautifully by producing seeds in great abundance to assure survival of their species despite the formidable odds. And each seed that does survive is capable of producing a plant, more seeds, and still more plant sand seeds to come.  2. Because of the fundamental importance of seeds to both agriculture and to all of society. We have taken great care to present the science and technology of seeds with The respect and feeling this study deserves. We hope that this feeling will be communicated to our readers. Furthermore we have attempted to present information in a straight-forward. easy-to- read manner that will be easily understood by students and lay persons alike.  3. Seed husbandry formed the basis for early agriculture and eventual civilization. As people learned to plant, harvest, and preserve the seeds of certain grasses for winter, they abandoned the nomadic life to build permanent settlements. All the major civilizations throughout history have been founded on the culture of cereal gains, because these staples have high food value and are easily stored. Good quality seed is essential for good crop production; cultural practices cannot compensate for poor quality seed. To guarantee quality, seed testing is necessary. | | |
| **11. Course objective:**  Quality seeds of improved varieties are the key to agricultural progress. The production potential and other desirable characteristics of seeds set the limits on production. Other inputs such as fertilizers, pesticides and herbicides and overall crop management help to realize the production potential of seeds. Seed is the important stage of a plant but biology of the seeds is usually ignored. Seed characteristics depict the sum total effect of various stresses and strains.  Seed has been an important agricultural commodity since crops were first domesticated. Part of the success of a farmer's crop depends on the quality of seed he plants. Even good management cannot produce good yields from a low-yielding. | | |
| **12. Student's obligation**  The objective is for the student to understand the seed formation, sampling, purity, testing and how can to deal with the seed. | | |
| **13. Forms of teaching**  **Teaching Methods**  1. Lecture  2. Self‐study  **Teaching Media**  1. PowerPoint presentations  2. Texts and teaching materials | | |
| **14. Assessment scheme**  We will start most class periods with a short quiz. The quizzes could cover any information presented before that date, but will usually cover information presented in the most recent lectures. The quizzes will be given during the first 5 to 7 minutes of the class period.  Exams will consist of a variety of questions, including multiple choices, true/false, matching, and reasons for, occasionally short answer.  **Note:** Number of exams and lectures for each exam did not specify. **Each student attends a report within the lecture program at the end of the lecture.**‌ | | |
| **15. Student learning outcome:**    Develop an appreciation for diversity in seed biology and be able to describe the dynamics of water in seeds from storage to germination. Examine environmental and other factors on seed quality and seedling performance. Be exposed to seed issues concerning bio fuel crops. Become acquainted with the seed industry. Be able to solve problems in the context of seeds and agriculture. | | |
| **16. Course Reading List and References‌:**   1. Agrawal, R. L. 1980. Seed technology. Oxford & IBH publishing Co., New Delhi, pp: 685 2. Baskin, C.C., and J.M. Baskin .2001. Seeds, ecology, biogeography, and evolution of dormancy and germination. Academic Press, San Diego, California. 3. ISTA, rules, International seed testing association.2013. 4. Copeland, L.O., and M.B. McDonald. 2001. Principles of Seed Science and Technology 4th ed. Kluwer Academic Publisher, MA, USA. 5. ISTA Working Sheets on Tetrazolium Testing Handbook, Volumes 1 and 2, 2003. 6. Grabe, D.F., and J.A. Peters. 1998. Lactic Acid clearing of grass seeds in tetrazolium tests. Seed Technol. 20(1): 106-108. 7. McDonald. M.B. 1985. AOSA ctlltivar purity subcommittee report. AOSA Newsletter 59: 40-57. 8. ISTA (International Seed Testing Association). 1985. International rules for seed testing. Rules and Annexes 1985. Seed Science and Technology 13: 299-513. | | |
| **17. The Topics:** | | **Lecturer's name** |
| In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture | | Lecturer's name  ex: (3 hrs) |
| **18. Practical Topics (If there is any)** | |  |
| **1st week:** Seed testing. Brief history of seed testing. International seed testing association (ISTA).  **2nd week:** Seed testing laboratory.  **3rd week:** Seed sampling.  **4th week:** Certificates. Definitions. Principles and procedures for sampling the lot. Principle and procedures for laboratory sampling. Mechanical divider method**.**  **5th week:** Seed cleaning. Seed cleaning machines and working principles.  **6th week:** Seed Moisture Test. Moisture determination methods.  **7th week:** Seeds Test Weight.  **8th week:** Physical Purity Test and Determination of Other Species  **9th week:** Definitions of the three purity test components. Definitions of pure seed of major cereal and pulse crops. Purity test procedure.  **10th week**: Phenol color reaction for varietal identification of wheat seeds.  **11th week**: Seed Germination Test. General principles.  **12th week**: Evaluation of the germination test.  **13th week**: Tetrazolium test for seed viability.  **14th week**: Blending in seed conditioning.  **15th week**: Seed Vigor: Concepts and Measurement.  **16th week**: Seed Storage. | | : (3 hrs.) |
| **19. Examinations:**  ***1. Compositional:*** In this type of exam the questions usually starts with Explain how, What are the reasons for…?, Why…?, How….?  **1- What's the objective of these tests:**  a – Seed sampling.  b – Moisture determination.  c – Weight of 1000 seeds.    **2- Differentiate between:**  **a –** The blue seed sample certificate **&**  the orange seed lot certificate  **b –** Working sample **&** primary sample  ***2.******True or false type of exams:***   1. The foundation of the international seed testing association in 1934. **No 1924** 2. The point, that seed possesses its maximum dry weight and seed quality; a stage known as physiological maturity. **Yes** 3. The seed purity is to obtain a sample of a size suitable for tests, which the same constituents in the same proportions as in the seed lot. **No Seed sampling** 4. Primary sample is a small portion taken from one location in the lot. **Yes**   ***3. Multiple choices:***   1. The first station for seed testing was established in Thrandt, in Saxony, Germany, in 2. 1859 b- 1869 c-1879 **(b)** 3. The emergence and development from the seed embryo of those essential structures is known as   a- Moisture b- Purity c- Germination **(c)** | | |
| **20. Extra notes:**  Some of the lectures will be presented in PowerPoint lecture will be provided in class. Two textbooks (optional) are recommended for the Seed technology of the course. Also, the best wishes to the development of Lab. in the department. | | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**  This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.  *(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*  ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.  هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌ | | |