# DISCIPLINE DESCRIPTION

**1. Information on the study programme**

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| 1.1 Academic institution | **UNIVERSITY OF ORADEA** |
| 1.2 Faculty | **FACULTY OF ENVIRONMENTAL PROTECTION** |
| 1.3 Department | **AGRICULTURE, HORTICULTURE** |
| 1.4 Field of study | **AGRONOMY** |
| 1.5 Cycle of study | **LICENSE** |
| 1.6 Study programme/Qualification | **AGRICULTURE / ENGINEER** |

**2. Information on the discipline**

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|---|---|---|---|---|---|---|---|
| 2.1 Name of discipline | | | | **PLANT IMPROVEMENT II** | | | |
| 2.2 Course holder | | | | **Assoc. Prof. PhD LAZAR ANDRA NICOLETA** | | | |
| 2.3 Seminar/Laboratory/Project holder | | | | **Assoc. Prof. PhD LAZAR ANDRA NICOLETA** | | | |
| 2.4 Year of study | IV | 2.5 Semester | 8 | 2.6 Type of evaluation | Ex | 2.7 Regime of discipline | C |

(C) Compulsory; (O) Optional; (E) Elective

**3. Total estimate time** (hours per semester of didactic activities)

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|---|---|---|---|---|---|
| 3.1 Number of hours per week out of which: | 4 | 3.2. course | 2 | 3.3. laboraty/project | 2 |
| 3.4 Total hours in the curriculum out of which: | 56 | 3.5. course | 28 | 3.6. laboratory/project | 28 |
| **Time allotment** | | | | | **hours** |
| Study assisted by manual, course support, bibliography and notes | | | | | 5 |
| Additional documentation in the library/ on specialised electronic platforms and in the field | | | | | 5 |
| Preparation of seminars/laboratories/ topics/reports, portfolios and essays | | | | | 5 |
| Tutorship | | | | | 2 |
| Examinations | | | | | 2 |
| Other activities..... | | | | | - |
| **3.7 Total hours of individual study** | **19** | | | | |
| **3.9 Total hours per semester** | **56** | | | | |
| **3.10 Number of credits** | **3** | | | | |

**4. Prerequisites** (where appropriate)

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| 4.1 curriculum | Genetics, Botany, Plant Physiology |
| 4.2 competences | Graduates will have the necessary knowledge to carry out improvement activities, especially the application of selection, to the main agricultural species. |

**5. Conditions** (where appropriate)

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| 5.1. related to course | Video projector, computer |
| 5.2. related to seminar | Precision balances, germinators, ovens, seed counting plates, electronic humid-meter |

| **6. Specific competences acquired** | |
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| Professional competences | C4. Production of quality biological material for propagating crop plants<br>C4.1 Description of technologies for the production of biological material for the reproduction of crop plants<br>C4.2 Explanation of the specific conditions for the production of biological material corresponding to different species and biological links<br>C4.3 Identification of risks in the production of biological material, development of improvement plans and their application<br>C4.4 Realization of the fields of production of the biological material of reproduction corresponding to the biological category and application of the technology of the specific culture |

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|---|---|
| Transversal competences | CT1. Elaboration and observance of a work program and accomplishment of one's own attributions with professionalism and rigor<br>CT2 Application of efficient communication techniques in specific activities of teamwork; assuming a role within the team and respecting the principles of the division of labor<br>CT3. Objective self-assessment of the need for continuous vocational training in order to constantly adapt and respond to the demands of economic development; the use of information and communication techniques and, at least, a language of international circulation. |

**7. Objectives of discipline** (coming from the specific competences acquired)

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| **7.1 General objective** | The improvement of agricultural plants provides students with the theoretical and practical knowledge necessary for the efficient development of the breeding activity with the ultimate goal of obtaining new varieties and hybrids, high productivity, quality, resistant to diseases and pests, to maximize existing agro-ecosystems.<br>The aim is to establish major objectives such as: productivity, quality, ripening period, winter hardiness, diseases and pests, drought, as well as special objectives characteristic of each group of plants. |
| **7.2 Specific objectives** | Knowledge of the methods of selection and challenge of variability applied in the improvement of agricultural species.<br>Carrying out the various tests that are applied in the improvement process and learning some working techniques in the improvement field<br>Graduates will have the necessary knowledge to carry out improvement activities, especially the application of selection, to the main agricultural species. |

**8. Content*/**

| **8.1 Course** | **Methods of teaching** | **No. of hours/ Remarks** |
|---|---|---|
| 1. Breeding and seed production in crops. General principles on seed production. | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 2. Certification of seed lots. Improvement and production of wheat, rye, barley, oats) Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 3. Breeding and production of seed for rye, barley, oats. Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 4. Breeding and seed production in maize cultivation Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 5. Improvement and production of seeds in peas, beans, soybeans) Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 26. Breeding and seed production in beans, soybeans) Importance; Systematics and biology of flowering; | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |

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|---|---|---|
| Genetics; Improvement objectives; Methods of improvement | | |
| 7. Soybean seed breeding and production Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 8. Improvement and production of potato seed. Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement. Breeding and production of sugar beet seed. Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 9. Breeding and seed production in sunflower Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement. Breeding and seed production in textile plants (linen, hemp, cotton) Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 10. Breeding and seed production in fodder plants (clover, guide) Importance; Systematics and biology of flowering; Genetics; Improvement objectives; Methods of improvement. Breeding and seed production in medicinal plants. Methods of improvement. | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |

**Bibliography:**


1. T. Crăciun, T. Mureşan, 1996, *Metode de ameliorare şi producere a seminţelor,* EDP Bucureşti
2. M. Savatti, L. Muntean jr., 2002, *Caiet de lucrări practice la ameliorarea plantelor şi producerea de sămânţă.* Ed. AcademicPres Cluj-Napoca.
3. M. Savatti, M. M. Savatti jr., L. Muntean jr., 2003, *Ameliorarea plantelor – teorie şi practică*, Ed. AcademicPres, Cluj-Napoca.
4. Savatti M., Nedelea G., Ardelean M., 2004, *Tratat de ameliorarea plantelor*, Ed. Marineasa, Timişoara;
5. Scheau Viorel, 2007, *Ameliorarea plantelor horticole*, Ed. Universităţii din Oradea


| **8.3. Laboratory** | **Methods of teaching** | **No. of hours/ Remarks** |
|---|---|---|
| 1. Observations and notations in the improvement field. Methods of improvement | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 2. Methods for examining plant resistance to diseases and pests. Extraction and analysis of elite plants in different species of agricultural plants | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 3. Production of seed and planting material; | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 4. Certification of seed crops. | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 5. Technical improvement works for cereals (extraction and analysis of elite plants) | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |
| 6. Technical improvement works for legumes (extraction and analysis of elite plants) | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 2 |

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| 7. Technical improvement works for tuberculiferous and root plants (extraction and analysis of elite plants) | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 4 |
| 8. Technical improvement works for oleaginous plants (extraction and analysis of elite plants) | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 4 |
| 9. Seed breeding and production technology (seed breeding and production schemes). Hybridization batch technology | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 4 |
| 10. Verification of the knowledge acquired during the laboratory hours | Presentation of theoretical aspects related to the topic, lecture, interactive discussions with students | 4 |

**Bibliography:**


1. T. Crăciun, T. Mureşan, 1996, *Metode de ameliorare şi producere a seminţelor* EDP Bucureşti
2. M. Savatti, L. Muntean jr., 2002, *Caiet de lucrări practice la ameliorarea plantelor şi producerea de sămânţă.* Ed. AcademicPres Cluj-Napoca.
3. M. Savatti, M. M. Savatti jr., L. Muntean jr., 2003, *Ameliorarea plantelor – teorie şi practică*, Ed. academicPres, Cluj-Napoca.
4. Savatti M., Nedelea G., Ardelean M., 2004, *Tratat de ameliorarea plantelor*, Ed.Marineasa, Timişoara;
5. Scheau Viorel, 2007, *Ameliorarea plantelor horticole*, Ed. Universității din Oradea


* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

**9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme**

The content of the discipline is adapted and satisfies the requirements imposed by the labor market, being agreed by the social partners, professional associations and employers in the field related to the bachelor program.
The content of the discipline is found in the curricula of the study programs of Agriculture and other university centers in Romania that have accredited these specializations, so the knowledge of the basic notions is a stringent requirement of employers in the agricultural field.

**10. Evaluation**

| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Share in the final grade |
|---|---|---|---|
| **10.4 Course** | Exam scheduled in the exam session | Written exam | 70% |
| **10.6. Laboratory** | The evaluation in the laboratory works is a continuous evaluation. | Oral talk | 30% |
| **10.8 Minimum standard of performance** | | | |
| Knowledge and appropriate use of specific notions about the organization and technique of the breeding process, the general principles of seed production and propagation in autogamous plants and allogamous plants. | | | |

Date of completion — Signature of course holder — Signature of seminar holder

17.09.2020 — Conf. univ. dr. biol. **Lazăr Andra Nicoleta** — Conf. univ. dr. biol. **Lazăr Andra Nicoleta**

Date of approval in the department — Signature of the Head of Department

..... — Prof. univ. dr. ing. Bandici Gheorghe-Emil

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Dean signature
Prof. dr. ing. Chereji Ioan

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** - Name, first name, academic degree and contact details (e-mail, web page, etc.) will be specified.
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