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| **STUDY PROGRAMME:** | **Professional Undergraduate Study Programme *Agriculture***  Specific field of study: Plant production | |
| **Course:** | **INDUSTRIAL CROP PRODUCTION** | |
| **Course code:** 240023  **Course status:** compulsory | **Semester:** **IV** | **ECTS credits: 6** |
| **Course holder:** | **Zvjezdana Augustinović**, Ph. D.,professor of professional studies | |
| **Course associates:** | **Martin Bužić**, M.Eng.Agr. | |
| **Modes of delivery:** | **Number of hours** | |
| **Lectures** | 45 | |
| **Excersises** | 20 | |
| **Seminars** | 10 | |
| **Practical training** | 15 | |

**Course objectives:** Enable students to independently produce industrial crops

**Course content**

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|  | **Course units** | **Modes of delivery:** | | | **Places of delivery** |
| **L** | **E** | **S** |
| 1. | Introduction to the course – course goals and objectives, course content, learning outcomes, methods of knowledge assessment, literature. | 1 |  |  | Lecture hall |
| 2. | Importance of Industrial crops. Current status of Industrial crop production in the Republic of Croatia. | 1 |  |  | Lecture hall |
| 3. | Oil crops – acreage in Croatia and worldwide, importance and uses. | 1 |  |  | Lecture hall |
| 3.1. | Sunflower: basic characteristics, importance, origin, acreage. morphological and biological features, agroecological conditions for cultivation. | 3 |  |  | Lecture hall |
| 3.1.1. | Sunflower: growth and development stages, cultivation technology (soil preparation, fertilization, hybrid selection, sowing, care measures, harvest). | 3 | 2 |  | Lecture Hall/ Practicum |
| 3.2. | Rapeseed: basic characteristics, importance, origin, acreage. morphological and biological features, agroecological conditions for cultivation. | 3 |  |  | Practicum |
| 3.2.1. | Rapeseed: growth and development stages, cultivation technology (soil preparation, fertilization, variety or hybrid selection, sowing, care measures, harvest). | 3 | 3 |  | Lecture Hall/  Practicum |
| 3.3. | Oil pumpkins: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 2 |  |  | Lecture hall |
| 3.3.1. | Oil pumpkins: growth and development stages, cultivation technology (soil preparation, fertilization, variety selection, sowing, care measures, harvest). | 1 | 2 |  | Lecture Hall/  Practicum |
| 3.4. | Poppy: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 1 |  |  | Lecture hall |
| 3.4.1. | Poppy: growth and development stages, cultivation technology (soil preparation, fertilization, variety or hybrid selection, sowing, care measures, harvest). | 1 | 1 |  | Lecture Hall/  Practicum |
| 3.5. | Sesame: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 1 |  |  | Lecture hall |
| 3.5.1 | Sesame: cultivation technology (soil preparation, fertilization, variety or hybrid selection, sowing, care measures, harvest). |  |  | 1 | Lecture hall |
| 3.6. | Castor bean: significance, key morphological and biological features, cultivation technology. | 1 |  |  | Lecture hall |
| 3.6.1 | Castor bean: cultivation technology (soil preparation, fertilization, variety or hybrid selection, sowing, care measures, harvest). |  |  | 1 | Lecture hall |
| 3.7. | Determining seed quantity for sowing, determining yield and its structure. |  | 3 |  | Lecture hall |
| 3.8. | Oil crops as raw materials for biofuel production. |  |  | 2 | Lecture hall |
| Colloquium I. | | | | | |
| 4. | Fiber Plants – acreage in Croatia and worldwide, importance, and uses. | 1 |  |  | Lecture hall |
| 4.1. | Hemp: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 2 |  |  | Lecture hall |
| 4.1.1. | Hemp: growth and development stages, cultivation technology (soil preparation, fertilization, variety selection, sowing, care measures, harvest). | 2 | 2 |  | Lecture Hall/  Practicum |
| 4.2. | Flax: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 1 |  |  | Lecture hall |
| 4.2.1. | Flax: growth and development stages, cultivation technology (soil preparation, fertilization, variety selection, sowing, care measures, harvesting/pulling). | 1 | 1 |  | Lecture Hall/  Practicum |
| 4.3. | Cotton: importance, key morphological and biological features, cultivation technology. |  |  | 1 | Lecture hall |
| Colloquium II. | | | | | |
| 5. | Plants for sugar, starch, and alcohol production – representatives, acreage, importance, and uses. | 1 |  |  | Lecture hall |
| 5.1. | Sugar beet: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 4 |  |  | Lecture hall |
| 5.1.1. | Sugar beet: growth and development stages, cultivation technology (soil preparation, fertilization, hybrid selection, sowing, care measures, harvesting/extraction). | 2 | 3 |  | Lecture hall |
| 5.2. | Chicory: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 1 |  |  | Lecture hall |
| 5.2.1. | Chicory: cultivation technology (soil preparation, fertilization, hybrid selection, sowing, care measures, harvesting/extraction). |  |  | 2 | Lecture hall |
| 5.3. | Potato: basic characteristics, importance, origin, acreage. Morphological and biological features, agroecological conditions for cultivation. | 2 |  |  | Lecture hall |
| 5.3.1. | Potato: growth and development stages, cultivation technology (soil preparation, fertilization, hybrid selection, sowing, care measures, harvesting/extraction). Selection of the most suitable variety for industrial processing. | 1 | 2 |  | Lecture Hall/  Practicum |
| 5.4. | Plants for sugar, starch, and alcohol production as raw materials for biofuel production. |  |  | 2 | Lecture hall |
| 6. | Other industrial crops – representatives, acreage, importance, and uses. | 1 |  |  | Lecture hall |
| 6.1. | Tobacco: significance, key morphological and biological features, cultivation technology. | 1 |  |  | Lecture hall |
| 6.1.1. | Tobacco: growth and development stages, cultivation technology (soil preparation, seedling production, fertilization, field planting, care measures, harvesting). | 2 | 1 |  | Lecture Hall/  Practicum |
| 6.2. | Hops: importance, key morphological and biological characteristics, cultivation technology. Possibilities of cultivation in Croatia. | 1 |  |  | Lecture hall |
| 6.2.1. | Hops: Cultivation technology (soil management, fertilization, planting of orchards, duration of orchards, care measures, harvesting). |  |  | 1 | Lecture hall |
| **IN TOTAL** | | **45** | **20** | **10** |  |
| Colloquium III. | | | | | |
| **Practical training** | | **15** | | |  |
| Field Teaching: Visit to agricultural farms involved in the cultivation of industrial crops. | | 5 | | | Outside the University of Applied Sciences |
| Organize the production of a specific industrial crop, participate in the production process from sowing to harvesting, and monitor the impact of different production methods or varieties on yield. | | 8 | | | Course/  experimental areas of the University of Applied Sciences |
| Presentation of the Integrated Project Assignment (IPA): The task is based on linking and applying knowledge from the courses Marketing, Vegetable Cultivation, and Industrial Crop Cultivation. Students present their observations during the research and draw conclusions. | | 2 | | | Lecture hall |

**L=Lectures, E=Excersises, S=Seminars, PT=Practical training**

**Learning outcomes (LO)**

LO 1. Present the main morphological and biological characteristics of industrial crops

LO 2. Recognize the phases of growth and development of industrial crops

LO 3. Assess the agronomic properties of individual varieties and hybrids of industrial crops and recommend those that are suitable for specific agro-ecological conditions

LO 4. Propose appropriate agro-technical measures in the cultivation of industrial crops

LO 5. Calculate basic parameters (amount of fertilizer, seeds, etc.) for the production of industrial crops

LO 6. Propose cultivation technology for industrial crops in case of their cultivation as raw materials for biofuel production

Course holder:

Zvjezdana Augustinović, Ph.D., professor of professional studies

Križevci, July 2024