

Digital Agriculture Studie's Council
Faculty of Agrobiotechnical Sciences Osijek
Faculty of Electrical Engineering, Computing and
of Information Technologies Osijek

Course syllabuses Graduate Study Programme in English Digital Agriculture

Osijek, 2022

Graduate Study Programme in English
Digital Agriculture

Academic year 2022/2023

Course syllabuses

1st year

| | |
|--|----------------------|
| Graduate university study Digital Agriculture | 1 st year |
|--|----------------------|

| Winter semester (semester 1) | | Classes and class types | | | | ECTS credits |
|------------------------------|--|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-01 | Introduction to digital agriculture | 30 | - | 10 | 40 | 3 |
| ICT-02 | Basic biostatistics | 35 | 15 | 10 | 60 | 5 |
| ICT-03 | Databases | 30 | 15 | 15 | 60 | 5 |
| ICT-04 | Agroecology in sustainable agriculture | 25 | 25 | - | 50 | 4 |
| ICT-05 | Programming basics | 30 | 30 | - | 60 | 5 |
| ICT-06 | Agricultural engineering | 20 | 15 | 15 | 50 | 4 |
| ICT-07 | Agrotechnics and sustainable crop production systems | 30 | 15 | 5 | 50 | 4 |
| | Total | | | | | 30 |

| Summer semester (semester 2) | | Classes and class types | | | | ECTS credits |
|------------------------------|--|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-08 | Bioeconomy and rural development | 40 | - | 10 | 50 | 4 |
| ICT-09 | Networks and networking | 30 | 30 | - | 60 | 5 |
| ICT-10 | Geoinformation technologies in agriculture | 20 | 15 | 15 | 50 | 4 |
| ICT-11 | Precision agriculture | 20 | 15 | 15 | 50 | 4 |
| ICT-12 | Remote sensing and data analysis | 30 | 15 | 15 | 60 | 5 |
| ICT-13 | Horticultural production systems | 30 | 15 | 5 | 50 | 4 |
| ICT-14 | Principles of animal breeding and feeding | 40 | 10 | - | 50 | 4 |
| | Total | | | | | 30 |

| | |
|------------------------------|-------------------------|
| Winter semester (semester 1) | Classes and class types |
|------------------------------|-------------------------|

| ICT-01 | Introduction to digital agriculture | | | | |
|--------------|--------------------------------------|-----------|---|-----------|-----------|
| Coordinator: | | L | P | S | Total |
| | Zdenko Lončarić, PhD, full professor | 25 | | 10 | |
| | Robert T. Burns, PhD, full professor | 5 | | | |
| Total | | 30 | | 10 | 40 |

| ICT-02 | Basic biostatistics | | | | |
|--------------|--|-----------|-----------|-----------|-----------|
| Coordinator: | | L | AP | S | Total |
| | Andrijana Rebekić, PhD, associate professor | 18 | 8 | 5 | |
| | Kristina Gvozdanović, PhD, assistant professor | 17 | 7 | 5 | |
| Total | | 35 | 15 | 10 | 60 |

| ICT-03 | Databases | | | | |
|--------------|---|-----------|-----------|-----------|-----------|
| Coordinator: | | L | AP | S | Total |
| | Ivica Lukić, PhD, associate professor | 30 | | | |
| | Zdravko Krpić, PhD, assistant professor | | 15 | 15 | |
| Total | | 30 | 15 | 15 | 60 |

| ICT-04 | Agroecology in sustainable agriculture | | | | | |
|--------------|--|-----------|-----------|----|---|-----------|
| Coordinator: | | L | LP | TP | S | Total |
| | Vladimir Ivezić, PhD, associate professor | 5 | | | | |
| | Fernando Henrique da Silva Reboredo, PhD, full professor | 10 | 5 | | | |
| | Vladimir Zebec, PhD, assistant professor | 5 | | 10 | | |
| | Jurica Jović, PhD, assistant professor | 5 | 10 | | | |
| Total | | 25 | 25 | | | 50 |

| ICT-05 | Programming basics | | | | |
|--------------|---|-----------|-----------|---|-----------|
| Coordinator: | | L | AP | S | Total |
| | Alfonzo Baumgartner, PhD, associate professor | 15 | 15 | | |
| | Goran Martinović, PhD, full professor | 15 | 15 | | |
| Total | | 30 | 30 | | 60 |

| ICT-06 | Agricultural engineering | | | | |
|--------------|--|-----------|-----------|-----------|-----------|
| Coordinator: | | L | AP | S | Total |
| | Domagoj Zimmer, PhD, assistant professor | 20 | | | |
| | Anamarija Banaj, PhD | | 8 | 7 | |
| | Željko Barač, PhD, assistant professor | | 7 | 8 | |
| Total | | 20 | 15 | 15 | 50 |

| ICT-07 | Agrotechnics and sustainable crop production systems | | | | | |
|--------------|--|-----------|-----------|----|----------|-----------|
| Coordinator: | | L | AP | TP | S | Total |
| | Danijel Jug, PhD, full professor | 25 | | | 5 | |
| | Bojan Stipešević, PhD, full professor | 5 | 10 | 5 | | |
| Total | | 30 | 15 | | 5 | 50 |

| ICT-08 | Bioeconomy and rural development | | | | |
|--------------|---|----|---|----|-------|
| Coordinator: | Ružica Lončarić, PhD, full professor | L | P | S | Total |
| | Ružica Lončarić, PhD, full professor | 20 | | | |
| | Jadranka Deže, PhD, full professor | 10 | | | |
| | Tihana Sudarić, PhD, full professor | 10 | | 10 | |
| Total | | 40 | | 10 | 50 |

| ICT-09 | Networks and networking | | | | |
|--------------|--|----|----|---|-------|
| Coordinator: | Krešimir Grgić, PhD, associate professor | L | AP | S | Total |
| | Krešimir Grgić, PhD, associate professor | 30 | 30 | | |
| Total | | 30 | 30 | | 60 |

| ICT-10 | Geoinformation technologies in agriculture | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | Mladen Jurišić, PhD, full professor | L | AP | S | Total |
| | Mladen Jurišić, PhD, full professor | 20 | | | |
| | Dorijan Radočaj, M. Sc. | | 15 | 15 | |
| Total | | 20 | 15 | 15 | 50 |

| ICT-11 | Precision agriculture | | | | |
|--------------|--|----|----|----|-------|
| Coordinator: | Ivan Plaščak, PhD, associate professor | L | TP | S | Total |
| | Ivan Plaščak, PhD, associate professor | 20 | | | |
| | Domagoj Zimmer, PhD, assistant professor | | | 15 | |
| | Željko Barač, PhD, assistant professor | | 15 | | |
| Total | | 20 | 15 | 15 | 50 |

| ICT-12 | Remote sensing and data analysis | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | Josip Job, PhD, associate professor | L | LP | S | Total |
| | Josip Job, PhD, associate professor | 15 | 15 | | |
| | Časlav Livada, PhD, associate professor | 15 | | 15 | |
| Total | | 30 | 15 | 15 | 60 |

| ICT-13 | Horticultural production systems | | | | |
|--------------|---|----|----|---|-------|
| Coordinator: | Tomislav Vinković, PhD, associate professor | L | AP | S | Total |
| | Tomislav Vinković, PhD, associate professor | 30 | | | |
| | Monika Tkalec Kojić, PhD | | 10 | | |
| | Boris Ravnjak, M. Sc. | | 5 | 5 | |
| Total | | 30 | 15 | 5 | 50 |

| ICT-14 | Principles of animal breeding and feeding | | | | |
|--------------|--|----|----|---|-------|
| Coordinator: | Vesna Gantner, PhD, full professor | L | AP | S | Total |
| | Vesna Gantner, PhD, full professor | 30 | | | |
| | Zvonimir Steine, PhD, full professor | 10 | | | |
| | Mirna Gavran, M. Sc. | | 10 | | |
| Total | | 40 | 10 | | 50 |

Graduate Study Programme in English
Digital Agriculture
Plant production major

Academic year 2022/2023

Course syllabuses

2nd year

Compulsory courses

| | |
|---|----------------------|
| Graduate university study Digital Agriculture, Plant production major | 2 nd year |
|---|----------------------|

| Winter semester (semester 3) | | Classes and class types | | | | ECTS credits |
|------------------------------|--|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-15 | Application of models in irrigation management | 15 | - | 25 | 40 | 3 |
| ICT-16 | Fertilisation in sustainable agriculture | 30 | 10 | 10 | 50 | 4 |
| ICT-17 | Models in plant protection | 30 | 10 | - | 40 | 3 |
| ICT-18 | Greenhouse production technology | 20 | 20 | 10 | 50 | 4 |
| ICT-19 | Application of unmanned aerial vehicles in agriculture | 15 | 10 | 25 | 50 | 4 |
| ICT-20 | Practicum I | - | 70 | 5 | 75 | 3 |
| | Total obligatory courses | | | | | 21 |
| | Elective courses | | | | | 9 |
| | Total | | | | | 30 |

| Summer semester (semester 4) | | Classes and class types | | | | ECTS credits |
|------------------------------|---------------------------------|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-21 | Contemporary pomotechnology | 30 | - | 20 | 50 | 4 |
| ICT-22 | Contemporary viticulture | 20 | 20 | 10 | 50 | 4 |
| ICT-23 | Big data in agriculture | 20 | 20 | - | 40 | 3 |
| ICT-24 | Practicum 2 | - | 70 | 5 | 75 | 3 |
| ICT-25 | Graduate thesis | | | | | 6 |
| | Total obligatory courses | | | | | 20 |
| | Elective courses | | | | | 10 |
| | Total | | | | | 30 |

| ICT-15 | Application of Models in Irrigation Management | | | | |
|--------------|---|----|---|----|-------|
| Coordinator: | | L | P | S | Total |
| | Monika Marković, PhD, associate professor | 8 | | 12 | |
| | David Kranjac, PhD, assistant professor | 7 | | 13 | |
| Total | | 15 | - | 25 | 40 |

| ICT-16 | Fertilization in sustainable agriculture | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | | L | AP | S | Total |
| | Zdenko Lončarić, PhD, full professor | 30 | 10 | 10 | |
| Total | | 30 | 10 | 10 | 50 |

| ICT-17 | Models in plant protection | | | | |
|--------------|------------------------------------|----|----|---|-------|
| Coordinator: | | L | AP | S | Total |
| | Vlatka Rozman, PhD, full professor | 15 | | | |
| | Marija Ravlić, assistant professor | 15 | 10 | | |
| Total | | 30 | 10 | - | 40 |

| ICT-18 | Greenhouse production technology | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | | L | AP | S | Total |
| | Tomislav Vinković, PhD, associate professor | 10 | | | |
| | Monika Tkalec Kojić, PhD | 10 | 10 | 5 | |
| | Boris Ravnjak, M. Sc. | | 10 | 5 | |
| Total | | 20 | 20 | 10 | 50 |

| ICT-19 | Application of unmanned aerial vehicles in agriculture | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | | L | AP | S | Total |
| | Ivan Plaščak, PhD, associate professor | 15 | | | |
| | Dorijan Radočaj, PhD. | | 10 | 25 | |
| Total | | 15 | 10 | 25 | 50 |

| ICT-20 | Practicum I | | | | |
|--------------|---|---|----|---|-------|
| Coordinator: | | L | TP | S | Total |
| | Ružica Lončarić, Miroslav Lisjak, Ivan Plaščak, Mislav Đidara, Marija Ravlić, Tomislav Vinković | | | | |
| | Ružica Lončarić, PhD, full professor Miroslav Lisjak, PhD, associate professor Ivan Plaščak, PhD, associate professor Mislav Đidara, PhD, associate professor Marija Ravlić, PhD assistant professor Tomislav Vinković, PhD, associate professor | | 70 | 5 | |
| Total | | - | 70 | 5 | 75 |

| ICT-21 | Contemporary Pomotechnology | | | | |
|--------------|--|-----------|----------|-----------|-----------|
| Coordinator: | Aleksandar Stanisavljević | L | P | S | Total |
| | Aleksandar Stanisavljević, PhD, full professor | 30 | | | |
| | Dejan Bošnjak, M.Sc. | | | 20 | |
| Total | | 30 | - | 20 | 50 |

| ICT-22 | Contemporary viticulture | | | | |
|--------------|---|-----------|-----------|-----------|-----------|
| Coordinator: | Mato Drenjančević, PhD, associate professor | L | TP | S | Total |
| | Mato Drenjančević, PhD, associate professor | 20 | 10 | 10 | |
| | Toni Kujundžić, PhD | | 10 | | |
| Total | | 20 | 20 | 10 | 50 |

| ICT-23 | Big data in agriculture | | | | |
|--------------|--|-----------|-----------|----------|-----------|
| Coordinator: | Andrijana Rebekić, PhD, associate professor | L | AP | S | Total |
| | Andrijana Rebekić, PhD, associate professor | 10 | 10 | | |
| | Kristina Gvozdanović, PhD, assistant professor | 10 | 10 | | |
| Total | | 20 | 20 | - | 40 |

| ICT-24 | Practicum II | | | | |
|--------------|---|----------|-----------|----------|-----------|
| Coordinator: | Tihana Sudarić, Zdenko Lončarić, Ivan Plaščak, Mislav Đidara, Anita Liška, Tomislav Vinković | L | TP | S | Total |
| | Tihana Sudarić, PhD, full professor Zdenko Lončarić, PhD, full professor Ivan Plaščak, PhD, associate professor Mislav Đidara, PhD, associate professor Anita Liška, PhD, full professor Tomislav Vinković, PhD, associate professor | | 70 | 5 | |
| Total | | 0 | 70 | 5 | 75 |

Graduate Study Programme in English
Digital Agriculture
Animal production major

Academic year 2022/2023

Course syllabuses

2nd year

Compulsory courses

| | |
|--|----------------------|
| Graduate university study Digital Agriculture, Animal Production major | 2 nd year |
|--|----------------------|

| Winter semester (semester 3) | | Classes and class types | | | | ECTS credits |
|------------------------------|--|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-26 | Animal nutrition and physiology | 35 | 10 | 5 | 50 | 4 |
| ICT-27 | Ruminant breeding technologies | 25 | 5 | 10 | 40 | 3 |
| ICT-28 | Sensors in the process of monitoring and control of livestock production | 20 | 20 | 10 | 50 | 4 |
| ICT-29 | Technology of swine and poultry production | 30 | - | 10 | 40 | 3 |
| ICT-20 | Practicum I | - | 70 | 5 | 75 | 3 |
| | Total obligatory courses | | | | | 17 |
| | Elective courses | | | | | 13 |
| | Total | | | | | 30 |

| Summer semester (semester 4) | | Classes and class types | | | | ECTS credits |
|------------------------------|--|-------------------------|----------|---------|-------|--------------|
| Code | Course | Lecture | Practice | Seminar | Total | |
| ICT-30 | Precision livestock farming applications in animal health monitoring | 20 | 5 | 5 | | 3 |
| ICT-31 | Quality and safety of animal products | 30 | 10 | 10 | | 4 |
| ICT-23 | Big data in agriculture | 20 | 20 | - | 40 | 3 |
| ICT-24 | Practicum 2 | - | 70 | 5 | | 3 |
| ICT-25 | Graduate thesis | | | | | 6 |
| | Total obligatory courses | | | | | 19 |
| | Elective courses | | | | | 11 |
| | Total | | | | | 30 |

| ICT-26 | Animal Nutrition and Physiology | | | | |
|--------------|---|-----------|-----------|----------|-----------|
| Coordinator: | Zvonimir Steiner, PhD, full professor | L | AP | S | Total |
| | Zvonimir Steiner, PhD, full professor | 20 | | | |
| | Mislav Đidara, PhD, associate professor | 15 | | | |
| | Mario Ronta, PhD, assistant professor | | 10 | 5 | |
| Total | | 35 | 10 | 5 | 50 |

| ICT-27 | Ruminant breeding technologies | | | | |
|--------------|---|-----------|----------|-----------|-----------|
| Coordinator: | Josip Novoselec, PhD, associate professor | L | AP | S | Total |
| | Josip Novoselec, PhD, associate professor | 10 | | 5 | |
| | Tina Bobić, PhD, associate professor | 10 | 2 | 5 | |
| | Željka Klir, PhD, assistant professor | 5 | 3 | | |
| Total | | 25 | 5 | 10 | 40 |

| ICT-28 | Sensors in the process of monitoring and control of livestock production | | | | | |
|--------------|---|-----------|-----------|-----------|-----------|-----------|
| Coordinator: | Davor Kralik, PhD, full professor | L | AP | TP | S | Total |
| | Davor Kralik, PhD, full professor | 20 | 10 | 10 | 10 | |
| Total | | 20 | 10 | 10 | 10 | 50 |

| ICT-29 | Technology of swine and poultry production | | | | |
|--------------|---|-----------|----------|-----------|-----------|
| Coordinator: | Vladimir Margeta, PhD, associate professor | L | P | S | Total |
| | Vladimir Margeta, PhD, associate professor | 20 | | | |
| | Kristina Gvozdanić, PhD, assistant professor | 10 | | 10 | |
| Total | | 30 | - | 10 | 40 |

| ICT-30 | Precision livestock farming applications in animal health monitoring | | | | |
|--------------|---|-----------|----------|----------|-----------|
| Coordinator: | Mislav Đidara, PhD, associate professor | L | TP | S | Total |
| | Mislav Đidara, PhD, associate professor | 15 | 5 | 5 | |
| | Marta Alexy, PhD, senior lecturer | 5 | | | |
| Total | | 20 | 5 | 5 | 30 |

| ICT-31 | Quality and safety of animal products | | | | | |
|--------------|---|-----------|----------|----------|-----------|-----------|
| Coordinator: | Goran Kušec, PhD, full professor | L | LP | TP | S | Total |
| | Goran Kušec, PhD, full professor | 10 | | | 5 | |
| | Ivona Djurkin Kušec, PhD, associate professor | 10 | 5 | | 3 | |
| | Kristina Gvozdanić, PhD, assistant professor | 5 | | 5 | 2 | |
| | Marta Alexy, PhD, senior lecturer | 5 | | | | |
| Total | | 30 | 5 | 5 | 10 | 50 |

Graduate Study Programme in English
Digital Agriculture
Plant production major
&
Animal production major

Academic year 2022/2023

Course syllabuses

2nd year

Elective courses

List of elective courses of Block 1 Bioeconomy

| <i>Code</i> | <i>Semes ter</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|----------------------|---|----------------|-----------------|----------------|--------------|-------------------------|
| ICT-E-32 | 3 | Agroeconomic models in sector modelling | 20 | - | 10 | 30 | 3 |
| ICT-E-33 | 3 | Decision support systems and E-marketing | 20 | 10 | 10 | 40 | 4 |
| ICT-E-34 | 3 | Digitalization in agritourism | 20 | - | 10 | 30 | 3 |
| ICT-E-35 | 4 | ICT and society | 20 | - | 10 | 30 | 3 |
| ICT-E-36 | 4 | Innovative agromanagement | 20 | - | 10 | 30 | 3 |
| ICT-E-37 | 4 | English language in digital agriculture | 20 | 10 | - | 30 | 3 |
| ICT-E-38 | 4 | Project management in digital agriculture | 10 | 15 | 15 | 40 | 3 |
| | | Total | | | | | 22 |

List of elective courses of Block 2 Crop Production

| <i>Code</i> | <i>Seme ster</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|----------------------|--|----------------|-----------------|----------------|--------------|-------------------------|
| ICT-E-39 | 3 | Information technology and plant breeding | 25 | 15 | - | 40 | 3 |
| ICT-E-40 | 3 | Ecological modelling | 15 | 15 | 10 | 40 | 3 |
| ICT-E-41 | 3 | Nanotechnology for sustainable agriculture | 30 | 10 | 10 | 50 | 4 |
| ICT-E-42 | 4 | Industrial plants production | 20 | 20 | 10 | 50 | 4 |
| ICT-E-43 | 4 | Cereals and forages production | 25 | 20 | 5 | 50 | 4 |
| ICT-E-44 | 4 | Organic plant production | 25 | 10 | 5 | 40 | 3 |
| | | Total | | | | | 21 |

List of elective courses of Block 3 Agricultural Engineering

| <i>Code</i> | <i>Seme ster</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|----------------------|--|----------------|-----------------|----------------|--------------|-------------------------|
| ICT-E-45 | 3 | Remote sensing in agriculture | 15 | 10 | 25 | 50 | 4 |
| ICT-E-46 | 3 | GNSS and sensors in agriculture | 15 | 10 | 25 | 50 | 4 |
| ICT-E-47 | 4 | Inventarisation and thematic maps of natural resources | 15 | 10 | 25 | 50 | 4 |
| | | Total | | | | | 12 |

List of elective courses of Block 4 Computer Science

| <i>Code</i> | <i>Semester</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|-----------------|--------------------------------|----------------|-----------------|----------------|--------------|---------------------|
| ICT-E-48 | 3 | Algorithms and data structures | 30 | 20 | - | 50 | 4 |
| ICT-E-49 | 3 | Web development | 20 | 30 | - | 50 | 4 |
| ICT-E-50 | 3 | R for data analysis | 20 | 15 | 5 | 40 | 3 |
| ICT-E-51 | 4 | Modelling | 20 | 20 | 10 | 40 | 4 |
| ICT-E-52 | 4 | Object-oriented programming | 20 | 20 | 10 | 50 | 4 |
| | | Total | | | | | 19 |

List of elective courses of Block 5 Plant Protection

| <i>Code</i> | <i>Semester</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|-----------------|--|----------------|-----------------|----------------|--------------|---------------------|
| ICT-E-53 | 3 | Digitalization in stored product protection | 15 | - | 15 | 30 | 2 |
| ICT-E-54 | 3 | Nematodes in sustainable agriculture | 25 | 15 | 0 | 40 | 3 |
| ICT-E-55 | 3 | Ecology of plant pathogens and prognostic models | 10 | - | 20 | 30 | 2 |
| ICT-E-56 | 4 | Insect phenology modelling | 25 | - | 15 | 40 | 3 |
| ICT-E-57 | 4 | Modelling weed control | 20 | 10 | 10 | 40 | 3 |
| | | Total | | | | | 13 |

List of elective courses of Block 6 Animal Production

| <i>Code</i> | <i>Semester</i> | <i>Course</i> | <i>Lecture</i> | <i>Practice</i> | <i>Seminar</i> | <i>Total</i> | <i>ECTS credits</i> |
|-------------|-----------------|---|----------------|-----------------|----------------|--------------|---------------------|
| ICT-E-58 | 3 | Innovative technologies in beekeeping | 10 | 10 | - | 20 | 2 |
| ICT-E-59 | 3 | Digital technologies in breeding of herbivore animals | 30 | 10 | - | 40 | 3 |
| ICT-E-60 | 4 | Digital technology in omnivore breeding | 30 | 10 | - | 40 | 3 |
| | | Total | | | | | 8 |

List of elective courses of Block 1 Bioeconomy

| ICT-E-32 | Agroeconomic models in sector modelling | | | | |
|--------------|--|----|---|----|-------|
| Coordinator: | David Kranjac, PhD, assistant professor | L | P | S | Total |
| | David Kranjac, PhD, assistant professor | 20 | | 10 | |
| Total | | 20 | - | 10 | 30 |

| ICT-E-33 | Decision support systems and e-marketing | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | Ružica Lončarić, PhD, full professor | L | AP | S | Total |
| | Ljubica Ranogajec, PhD, full professor | 5 | 10 | | |
| | Ružica Lončarić, PhD, full professor | 15 | | 10 | |
| Total | | 20 | 10 | 10 | 40 |

| ICT-E-34 | Digitalization in agritourism | | | | |
|--------------|--|----|---|----|-------|
| Coordinator: | Tihana Sudarić, PhD, full professor | L | P | S | Total |
| | Tihana Sudarić, PhD, full professor | 10 | | 10 | |
| | Jelena Kristić, PhD, assistant professor | 10 | | | |
| Total | | 20 | - | 10 | 30 |

| ICT-E-35 | ICT and society | | | | |
|--------------|--|----|---|----|-------|
| Coordinator: | Snježana Tolić, PhD, associate professor | L | P | S | Total |
| | Snježana Tolić, PhD, associate professor | 20 | | 5 | |
| | Olgica Klepač, PhD | | | 5 | |
| Total | | 20 | - | 10 | 30 |

| ICT-E-36 | Innovative agromanagement | | | | |
|--------------|--|----|---|----|-------|
| Coordinator: | Jadranka Deže, PhD, full professor | L | P | S | Total |
| | Jadranka Deže, PhD, full professor | 10 | | 5 | |
| | Jelena Kristić, PhD, assistant professor | 10 | | 5 | |
| Total | | 20 | - | 10 | 30 |

| ICT-E-37 | English language in digital agriculture | | | | |
|--------------|--|----|----|---|-------|
| Coordinator: | Tihomir Živić, PhD, associate professor | L | AP | S | Total |
| | Tihomir Živić, PhD, associate professor | 20 | 10 | | |
| Total | | 20 | 10 | - | 30 |

| ICT-E-38 | Project management in digital agriculture | | | | |
|--------------|--|----|----|----|-------|
| Coordinator: | Snježana Tolić, PhD, associate professor | L | AP | S | Total |
| | Snježana Tolić, PhD, associate professor | 10 | 5 | 10 | |
| | Olgica Klepač, PhD | | 10 | 5 | |
| Total | | 10 | 15 | 15 | 40 |

List of elective courses of Block 2 Crop Production

| ICT-E-39 | Information technology and plant breeding | | | | |
|--------------|--|----|----|---|-------|
| Coordinator: | | L | LP | S | Total |
| | Sonja Petrović, PhD, associate professor | 10 | 15 | | |
| | Sonja Vila, PhD, full professor | 15 | | | |
| Total | | 25 | 15 | - | 40 |

| ICT-E-40 | Ecological modelling | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | | L | AP | S | Total |
| | Vladimir Ivezić, PhD, associate professor | 5 | 10 | 10 | |
| | Zdenko Lončarić, PhD, full professor | 5 | | | |
| | Miroslav Lisjak, PhD, associate professor | 5 | 5 | | |
| Total | | 15 | 15 | 10 | 40 |

| ICT-E-42 | Industrial plants production | | | | | |
|--------------|---------------------------------------|----|----|----|----|-------|
| Coordinator: | | L | AP | TP | S | Total |
| | Ivana Varga, PhD, assistant professor | 20 | 10 | 10 | 10 | |
| Total | | 20 | 10 | 10 | 10 | 50 |

| ICT-E-43 | Cereals and forages production | | | | | |
|--------------|---|----|----|----|---|-------|
| Coordinator: | | L | AP | TP | S | Total |
| | Dario Iljkić, PhD, assistant professor | 15 | 5 | 5 | | |
| | Ranko Gantner, PhD, associate professor | 10 | 5 | 5 | | |
| | Goran Herman, M. Sc. | | | | 5 | |
| Total | | 25 | 10 | 10 | 5 | 50 |

| ICT-E-44 | Organic plant production | | | | |
|--------------|---------------------------------------|----|----|---|-------|
| Coordinator: | | L | TP | S | Total |
| | Bojan Stipešević, PhD, full professor | 15 | 5 | 5 | |
| | Danijel Jug, PhD, full professor | 10 | 5 | | |
| Total | | 25 | 10 | 5 | 40 |

List of elective courses of Block 3 Agricultural Engineering

| ICT-E-45 | Remote sensing in agriculture | | | | |
|--------------|--------------------------------------|----|----|----|-------|
| Coordinator: | Mladen Jurišić, full professor | L | AP | S | Total |
| | Mladen Jurišić, PhD, full professor | 15 | | | |
| | Dorijan Radočaj, PhD. | | 10 | 25 | |
| Total | | 15 | 10 | 25 | 50 |

| ICT-E-46 | GNSS and sensors in agriculture | | | | |
|--------------|--|----|----|----|-------|
| Coordinator: | Ivan Plaščak PhD, associate professor | L | AP | S | Total |
| | Ivan Plaščak, PhD, associate professor | 15 | | | |
| | Dorijan Radočaj, PhD. | | 10 | 25 | |
| Total | | 15 | 10 | 25 | 50 |

| ICT-E-47 | Inventarisation and thematic maps of natural resources | | | | |
|--------------|---|----|----|----|-------|
| Coordinator: | Mladen Jurišić, PhD, full professor | L | AP | S | Total |
| | Mladen Jurišić, PhD, full professor | 15 | | | |
| | Dorijan Radočaj, PhD. | | 10 | 25 | |
| Total | | 15 | 10 | 25 | 50 |

List of elective courses of Block 4 Computer Science

| ICT-E-48 | Algorithms and data structures | | | | |
|--------------|---|----|----|---|-------|
| Coordinator: | Alfonzo Baumgartner, PhD, associate professor | L | AP | S | Total |
| | Alfonzo Baumgartner, PhD, associate professor | 30 | 20 | | |
| Total | | 30 | 20 | - | 50 |

| ICT-E-49 | Web development | | | | |
|--------------|--|----|----|---|-------|
| Coordinator: | Krešimir Nenadić, PhD, associate professor | L | AP | S | Total |
| | Krešimir Nenadić, PhD, associate professor | 20 | 30 | | |
| Total | | 20 | 30 | - | 50 |

| ICT-E-50 | R for data analysis | | | | |
|--------------|---|----|----|---|-------|
| Coordinator: | Andrijana Rebekić, PhD, associate professor | L | AP | S | Total |
| | Andrijana Rebekić, PhD, associate professor | 20 | | | |
| | Vlatko Galić, PhD | | 15 | 5 | |
| Total | | 20 | 15 | 5 | 40 |

| ICT-E-51 | Modelling | | | | |
|--------------|--|----|----|----|-------|
| Coordinator: | Mirko Köhler, PhD, associate professor | L | AP | S | Total |
| | Mirko Köhler, PhD, associate professor | 20 | 20 | 10 | |
| Total | | 20 | 20 | 10 | 50 |

| ICT-E-52 | Object-oriented programming | | | | |
|--------------|--|----|----|----|-------|
| Coordinator: | Damir Blažević, PhD, associate professor | L | AP | S | Total |
| | Damir Blažević, PhD, associate professor | 20 | 20 | 10 | |
| Total | | 20 | 20 | 10 | 50 |

List of elective courses of Block 5 Plant Protection

| ICT-E-53 | Digitalization in stored product protection | | | | |
|--------------|--|----|---|----|-------|
| Coordinator: | | L | P | S | Total |
| | Anita Liška, PhD full professor | 15 | | | |
| | Pavo Lucić, PhD assistant professor | | | 15 | |
| Total | | 15 | - | 15 | 30 |

| ICT-E-54 | Nematodes in sustainable agriculture | | | | |
|--------------|---|----|----|---|-------|
| Coordinator: | | L | LP | S | Total |
| | Mirjana Brmež, PhD full professor | 25 | | | |
| | Josipa Puškarić, PhD | | 15 | | |
| Total | | 25 | 15 | - | 40 |

| ICT-E-55 | Ecology of plant pathogens and prognostic models | | | | |
|--------------|---|----|---|----|-------|
| Coordinator: | | L | P | S | Total |
| | Karolina Vrandečić, PhD full professor | 5 | | 20 | |
| | Jasenka Ćosić, PhD full professor | 5 | | | |
| Total | | 10 | - | 20 | 30 |

| ICT-E-56 | Insect phenology modelling | | | | |
|--------------|-----------------------------------|----|---|----|-------|
| Coordinator: | | L | P | S | Total |
| | Ivana Majić, PhD full professor | 20 | | 15 | |
| | Vesna Rastija, PhD full professor | 5 | | | |
| Total | | 25 | - | 15 | 40 |

| ICT-E-57 | Modelling weed control | | | | | |
|--------------|------------------------------------|----|----|----|----|-------|
| Coordinator: | | L | AP | LP | S | Total |
| | Edita Štefanić, PhD full professor | 20 | 5 | 5 | 10 | |
| Total | | 20 | 5 | 5 | 10 | 40 |

List of elective courses of Block 6 Animal Production

| ICT-E-58 | Innovative technologies in beekeeping | | | | | |
|--------------|--|-----------|----------|----------|----------|-----------|
| Coordinator: | Marin Kovačić, PhD, assistant professor | L | TP | LP | S | Total |
| | Marin Kovačić, PhD, assistant professor | | | 5 | | |
| | Zlatko Puškadija, PhD, full professor | 10 | 5 | | | |
| Total | | 10 | 5 | 5 | - | 20 |

| ICT-E-59 | Digital technologies in breeding of herbivore animals | | | | |
|--------------|--|-----------|-----------|----------|-----------|
| Coordinator: | Nikola Raguž, PhD, associate professor | L | AP | S | Total |
| | Nikola Raguž, PhD, associate professor | 15 | 5 | | |
| | Željka Klir, PhD, asistant professor | 15 | 5 | | |
| Total | | 30 | 10 | - | 40 |

| ICT-E-60 | Digital technology in omnivore breeding | | | | | | |
|--------------|--|-----------|----------|----------|----------|----------|-----------|
| Coordinator: | Marcela Šperanda, PhD, full professor | L | AP | LP | TP | S | Total |
| | Marcela Šperanda, PhD, full professor | 10 | 2 | | | | |
| | Boris Lukić, PhD, asistant professor | 10 | | | 4 | | |
| | Dinko Jelkić, PhD, asistant professor | 10 | | 4 | | | |
| Total | | 30 | 2 | 4 | 4 | - | 40 |