**2nd degree Study Postgraduate Study Programme Leading to Magister (Masters)**

**Energy Technology**

**Course specifications**

**Legend:**

L – lectures

S – seminar/project

AE – auditorial exercises

LE – laboratory exercises

CE – computer exercises

**1st Year**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Lecturer** | **L** | **S** | **A.E.** | **L.E.** | **C.E.** | **Cont. hours** | **Ind. work** | **ECTS** |
| **WINTER** **SEMESTER** | 1 | **OPERATIONS RESEARCH** | USENIK | 27 | - | 10 | - | 20 | 57 | 93 | **5** |
| 2 | **OPTIMIZATION OF ENERGETIC SYSTEMS** | PREDIN | 27 | - | 30 | - | - | 57 | 63 | **4** |
| 3 | **MAINTENANCE OF SYSTEMS I** | AVSEC | 27 | - | 30 | - | - | 57 | 63 | **4** |
| 4 | **SUPPLY OF INDUSTRIAL BUILDINGS** | ŽAGAR I. | 27 | - | 30 | - | - | 57 | 93 | **5** |
| 5 | **SENSOR SYSTEMS** | HADŽISELIMOVIČ | 30 | 12 | - | 15 | - | 57 | 63 | **4** |
| 6 | **HIGH VOLTAGE AND LARGE CURRENT TECHNIQUE** | HADŽISELIMOVIČ | 27 | - | 5 | 25 | - | 57 | 63 | **4** |
| 7 | **NUCLEAR INSTALLATION AND IRRADIATION FACILITIES** | CVIKL | 27 | 10 | 20 | - | - | 57 | 63 | **4** |
|  | **Total**  |  | **192** | **22** | **125** | **40** | **20** | **399** | **501** | **30** |
|  |
| **SUMMER SEMESTER** | 8 | **Course 1\*\* – Modul A\*** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| 9 | **Course 2\*\* – Modul A** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| 10 | **Course 3\*\* – Modul A** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| 11 | **Course 4\*\* – Modul B\*** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| 12 | **Course 5\*\* – Modul B** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| 13 | **Course 6\*\* – Modul B** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
|  | **Total**  | **168** | **18** | **126** | **12** | **18** | **342** | **558** | **30** |
| \* student pick two of the selective modul\*\* the structure of the course (number of hours) varies from the course to course, the table represents the average of the courses(more details are presented in one ot the following list) |

**2nd year**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **L\*** | **S\*** | **A.E.\*** | **L.E.\*** | **C.E.\*** | **Cont. Hours\*** | **Ind. Work\*** | **ECTS** |
| **WINTER SEMESTER** | **1** | **Selective Course 1\*\*\*** | 27 | 1 | 12 | 1 | 1 | 42 | 48 | **3** |
| **2** | **Selective Course 2\*\*\*** | 27 | 1 | 12 | 1 | 1 | 42 | 48 | **3** |
| **3** | **Course 1 – Modul X\*\*\*** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| **4** | **Course 2 – Modul X** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| **5** | **Course 3 – Modul X** | 28 | 3 | 21 | 2 | 3 | 57 | 93 | **5** |
| **6** | **METHODS OF RESEARCH AND DEVELOPMENT** | 30 | 10 | - | - | 45 | 85 | 185 | **9** |
|  | **Total** | **168** | **21** | **87** | **8** | **56** | **340** | **560** | **30** |
|  |
| **SUMMER**  | **1** | **INDIVIDUAL RESEARCH WORK** | - | 5\*\* | **-** | **-** | **-** | 5 | 295 | 10 |
| **2** | **MA THESIS** |  | 10\*\* | **-** | **-** | **-** | 10 | 590 | **20** |
|  | **Total** |  | **15\*\*** | **-** | **-** | **-** | **15** | **885** | **30** |
| \* the structure of the course (number of hours) varies from the course to course, the table represents the average of the courses (more details are presented in one ot the following list)\*\*contact hours with menthor (lecturer)\*\*\* student pick one more of the selective modul/two more selective course |

**List of modules:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module** | **Course** | **Lecturer** | **L** | **S** | **A.E.** | **L.E.** | **C.E.** | **Cont. Hours** | **Ind. work** | **ECTS** |
| **GENERAL MODUL 1** | **Electric power system optimization** | VIRTIČ | 27 | - | - | - | 30 | 57 | 93 | **5** |
| **Alternative energetic systems**  | PREDIN | 27 | - | 30 | - | - | 57 | 93 | **5** |
| **Power system control** | ŠTUMBERGER B. | 30 | - | - | - | 25 | 55 | 95 | **5** |
| **GENERAL MODUL 2** | **Technological modelling of power processes** | HADŽISELIMOVIĆ | 30 | 7 | 20 | - | - | 57 | 93 | **5** |
| **Optimisation of cooling systems** | MARČIČ | 30 | 7 | 20 | - |  - | 57 | 93 | **5** |
| **Introduction to fusion energy** | ČERČEK | 27 | - | 30 | - | - | 57 | 93 | **5** |
| **GENERAL MODUL 3** | **Control of air-conditioning systems** | AVSEC | 30 | - | 27 | - | - | 57 | 93 | **5** |
| **Maintenance of systems II** | AVSEC | 27 | - | 20 | 10 | - | 57 | 93 | **5** |
| **Engineering in energetics**  | PRAUNSEIS | 27 | - | 30 | - | - | 57 | 93 | **5** |
| **HYDRO****ENERGETIC****MODUL** | **Optimization of hydroenergetic systems** | PREDIN | 27 | - | 30 | - | - | 57 | 93 | **5** |
| **Technology and optimal operation of pumped storage hydro power plants**  | PREDIN | 27 | - | 20 | 10 | - | 57 | 93 | **5** |
| **EU energy market** | KROPE | 27 | 10 | 20 | - | - | 57 | 93 | **5** |
| **THERMO****ENERGETIC****MODUL** | **Optimisation of power plant** | MARČIČ | 30 | 7 | 20 | - | - | 57 | 93 | **5** |
| **Supply systems optimization** | POTRČ | 27 | - | 20 | 10 | - | 57 | 93 | **5** |
| **EU energy market** | KROPE | 27 | 10 | 20 | - | - | 57 | 93 | **5** |
| **NUCLEAR****MODUL** | **Nuclear reactor analysis and design** | TRKOV | 27 | - | 30 | - | - | 57 | 93 | **5** |
| **Nuclear fuel cycle technology** | ŽAGAR T. | 27 | 10 | 20 | - | - | 57 | 93 | **5** |
| **Safety assessment** | CVIKL | 27 | - | 30 | - | - | 57 | 93 | **5** |
|  | **Total** |  | **501** | **51** | **387** | **30** | **55** | **1024** | **1676** | **90** |

Specific modul will be performed, if it'selected by at least 10 students.

If specific modul is selected by 4-9 students, the module (corses) will be performed in the form of individual consultations.

If specific modul is selected by less then 3 students, the module (corses) will not be performed.

**List of Selective courses:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Lecturer** | **L** | **S** | **A.E.** | **L.E.** | **C.E.** | **Cont. Hours** | **Ind. work** | **ECTS** |
| 1 | **Technics And Devices In Power Production** | POTRČ  | 27 | - | 10 | 5 | - | 42 | 48 | **3** |
| 2 | **Technology Of Energy Process** | POTRČ  | 27 | - | 10 | 5 | - | 42 | 48 | **3** |
| 3 | **Marketing And Market Research** | VODOPIVEC  | 27 | 5 | 10 | - | - | 42 | 48 | **3** |
| 4 | **Process And Fire Safety** | PRAUNSEIS  | 37 | - | - | 5 | - | 42 | 48 | **3** |
| 5 | **Energy And Environment** | ŽAGAR I. | 27 | 5 | 10 | - | - | 42 | 48 | **3** |
| 6 | **Power System Economics** | HADŽISELIMOVIĆ  | 27 | - | 15 | - | - | 42 | 48 | **3** |
| 7 | **Project Management** | KRIŽANIČ  | 27 | - | 15 | - | - | 42 | 48 | **3** |
| 8 | **Engineering In Energetics** | PRAUNSEIS  | 27 | - | 15 | - | - | 42 | 48 | **3** |
| 9 | **Energy Supply Of The Buildings** | KROPE,GORIČANEC  | 27 | - | 15 | - | - | 42 | 48 | **3** |
| 10 | **Signal Processing In Energy Systems** | VIRTIČ  | 27 | - | 5 | - | 10 | 42 | 48 | **3** |
| 11 | **Electrical Motor Drives**  | ŠTUMBERGER B. | 27 | 5 | - | 10 | - | 42 | 48 | **3** |
| 12 | **Nuclear Nondestructive Testing Methods** | ŽAGAR T. | 27 | - | 15 | - | - | 42 | 48 | **3** |
| 13 | **The application of calorimetry and advanced termomechanics in energy technology** | AVSEC | 25 | - | 7 | 10 | - | 42 | 48 | **3** |
| 14 | **Diferential equations and simulink** | FERČEC | 22 | - | 5 | - | 15 | 42 | 48 | **3** |
| 15 | **Virtual prototyping** | HREN | 20 | 7 | - | - | 15 | 42 | 48 | **3** |
| 16 | **Pressure vessels in energetics** | PRAUNSEIS | 32 | 5 | - | 5 | - | 42 | 48 | **3** |
|  | **TOTAL** |  | **433** | **27** | **132** | **40** | **40** | **672** | **768** | **48** |

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If specific course is selected by less then 3 students, the courses will not be performed.