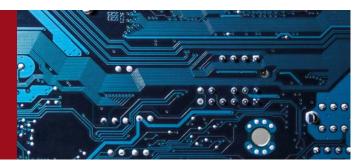


### **GENERAL INTRO**

This course will give students multidisciplinary knowledge of electronics and computer engineering. It will enable them to obtain theoretical and practical knowledge in designing applied electronic systems based on analogue and digital techniques as well as gaining expertise in microprocessors, programmable logic applications and signal processing. Graduate students will be able continue second level study in the fields of Electrical Engineering, Computer Science, Automation and Robotics or Telecommunication, or other related fields.



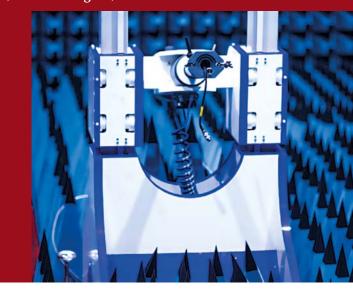


## **JOB PROSPECTS**

The graduate will acquire the experience necessary for a professional career in broadly covered industrial automation, and will be prepared for 2nd level studies (master level).

| 1st YEAR, SEMESTER 1 |                             |      |  |  |
|----------------------|-----------------------------|------|--|--|
|                      | Subject/Module              | ECTS |  |  |
| 1                    | Metrology                   | 4    |  |  |
| 2                    | Mathematic – Analysis       | 8    |  |  |
| 3                    | Mathematic – Algebra        | 8    |  |  |
| 4                    | Introduction to Programing  | 8    |  |  |
| 5                    | Philosophy, Ethics          | 2    |  |  |
|                      | TOTAL                       | 30   |  |  |
|                      | 1st YEAR, SEMESTER 2        |      |  |  |
|                      | Subject/Module              | ECTS |  |  |
| 1                    | Mathematic – Analysis 2     | 5    |  |  |
| 2                    | Mathematic for Electronics  | 4    |  |  |
| 3                    | Physics                     | 6    |  |  |
| 4                    | Object Oriented Programming | 5    |  |  |
| 5                    | Electronics                 | 8    |  |  |
| 6                    | Foreign Language            | 2    |  |  |
|                      |                             |      |  |  |

|                                 | 2nd YEAR, SEMESTER 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
|                                 | Subject/Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ECTS                           |
| 1                               | Physics for Electronics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 6                              |
| 2                               | Scientific & Engineering Programming                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5                              |
| 3                               | Electronic Components and Sensors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8                              |
| 4                               | Electronic Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5                              |
| 5                               | System Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3                              |
| 6                               | Foreign Languages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3                              |
|                                 | TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30                             |
|                                 | 2nd YEAR, SEMESTER 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |
|                                 | Subject/Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ECTS                           |
| 1                               | Programming Systems & Environments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4                              |
| 2                               | Introduction to Microcontrollers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8                              |
| 3                               | Electronic Circuits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7                              |
| 4                               | Introduction to Automation & Robotics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 7                              |
| 5                               | Fundamentals of Telecommunication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4                              |
|                                 | TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30                             |
|                                 | 3rd YEAR, SEMESTER 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |
|                                 | Subject/Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ECTS                           |
| 1                               | Computer Networks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4                              |
| 2                               | Microcontrollers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5                              |
| 3                               | Optional Courses (3 out of 5: Advanced Topics in Robot-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 21                             |
|                                 | ics; Digital signal Processing; Artificial Intelligence and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                |
|                                 | Computer Vision; Optoelectronics; Wireless systems)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                |
|                                 | TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30                             |
|                                 | TOTAL  3rd YEAR, SEMESTER 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |
|                                 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ECTS                           |
| 1                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ECTS<br>5                      |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>ECTS</b> 5 4                |
|                                 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineer-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ECTS<br>5                      |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems;                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>ECTS</b> 5 4                |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineer-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>ECTS</b> 5 4                |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Sys-                                                                                                                                                                                                                                                                                                                                                                                                       | <b>ECTS</b> 5 4                |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL                                                                                                                                                                                                                                                                                                                                                                                 | 5<br>4<br>21                   |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)                                                                                                                                                                                                                                                                                                                                                                                        | 5<br>4<br>21                   |
| 2                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7                                                                                                                                                                                                                                                                                                                                                           | 5<br>4<br>21                   |
| 3                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module                                                                                                                                                                                                                                                                                                                                           | ECTS 5 4 21 30 ECTS            |
| 3                               | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar                                                                                                                                                                                                                                                                                                                          | 5 4 21 30 ECTS 3               |
| 2<br>3<br>1<br>2                | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project                                                                                                                                                                                                                                                                                                           | 5 4 21 30 ECTS 3 12            |
| 2<br>3<br>1<br>2<br>3<br>4      | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law                                                                                                                                                                                                                                                                                   | ECTS 5 4 21 30 ECTS 3 12 6     |
| 2<br>3<br>1<br>2<br>3           | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotech-                                                                                                                                                                                                              | ECTS 5 4 21 30 ECTS 3 12 6 2   |
| 2<br>3<br>1<br>2<br>3<br>4<br>5 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotechnics; Medical Electronics; Fibre-Optics Technology;                                                                                                                                                            | ECTS 5 4 21 30 ECTS 3 12 6 2 1 |
| 2<br>3<br>1<br>2<br>3<br>4<br>5 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotechnics; Medical Electronics; Fibre-Optics Technology; Electronics For Renewable Energy Sources; Satellite                                                                                                        | ECTS 5 4 21 30 ECTS 3 12 6 2 1 |
| 2<br>3<br>1<br>2<br>3<br>4<br>5 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotechnics; Medical Electronics; Fibre-Optics Technology; Electronics For Renewable Energy Sources; Satellite Communication Networks; Virtualization and Cloud                                                       | ECTS 5 4 21 30 ECTS 3 12 6 2 1 |
| 2<br>3<br>1<br>2<br>3<br>4<br>5 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotechnics; Medical Electronics; Fibre-Optics Technology; Electronics For Renewable Energy Sources; Satellite                                                                                                        | ECTS 5 4 21 30 ECTS 3 12 6 2 1 |
| 2<br>3<br>1<br>2<br>3<br>4<br>5 | TOTAL  3rd YEAR, SEMESTER 6  Subject/Module  Team Project  Electroacoustic  Optional Courses (3 out of 5: Control Systems Engineering; Embedded Systems; Real Time Operating Systems; Lasers, Fibres and Applications; Telecommunication Systems & networks)  TOTAL  4th YEAR, SEMESTER 7  Subject/Module  Diploma Seminar  Final Project  Internship  Author Law  Business  Optional Courses (2 of the listed: Practical Electrotechnics; Medical Electronics; Fibre-Optics Technology; Electronics For Renewable Energy Sources; Satellite Communication Networks; Virtualization and Cloud Computing; Machine Learning; Selected Topics In Arti- | ECTS 5 4 21 30 ECTS 3 12 6 2 1 |





# **ENTRY INFORMATION**

#### Required

Secondary school certificate, received after the completion of a recognized secondary school (total 12 years of education), being the equivalent of Polish Matriculation certificate. Each application is assessed individually on its merits. If in doubt, please contact the Admission Officer.

#### Other information

Polish students – check on www.rekrutacja.pwr.edu.pl International students – check on admission.pwr.edu.pl







"Electronic and Computer Engineering (EAC) – a new field of study at Wroclaw University of Technology where the theoretical background and practical knowledge from the current study programs of Electronics, Computer Science and Automation & Robotics is combined. Such a combination of disciplines reflects modern trends in electronics where analogue meets digital and hardware meets software. This new practical field of study is recomended among others for those electronic enthusiasts who want to know «how it works»".

> Professor Krzysztof Tchoń, program coordinator and lecturer





FIELD OF STUDY

**ELECTRONIC AND COMPUTER ENGINEERING** STUDIES IN ENGLISH





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PROFESSOR KRZYSZTOF ABRAMSKI

DR GRZEGORZ BUDZYN





