



Faculty of Environmental Engineering, Geomatics and Power Engineering

Field of study: **Geodesy and Cartography**

First-cycle full-time programme.

Available from the academic year 2016/2017

I – lectures, c – classes, p – project work, lab – laboratory classes, E – examination

| <b>Semester 1</b>  |   |            |            |           |            |           |                     |
|--------------------|---|------------|------------|-----------|------------|-----------|---------------------|
| <b>Module Code</b> | <b>Module Title</b>                                       | <b>Σ</b>   | <b>I</b>   | <b>c</b>  | <b>lab</b> | <b>p</b>  | <b>ECTS credits</b> |
|                    | Mathematics 1   | 60         | 30E        | 30        | -          | -         | 6                   |
|                    | Physics 1   | 45         | 30         | 15        | -          | -         | 4                   |
|                    | Geomatics   | 60         | 30E        | 15        | -          | 15        | 6                   |
|                    | Fundamentals of Geotechnics and Geology                   | 30         | 15         | -         | 15         | -         | 2                   |
|                    | Surveying Engineering 1                                   | 45         | 30E        | 15        | -          | -         | 3                   |
|                    | Fundamentals of Earth Sciences                            | 30         | 15         | 15        | -          | -         | 2                   |
|                    | Descriptive Geometry and CAD Computer Graphics            | 45         | 15         | -         | 30         | -         | 3                   |
|                    | The Fundamentals of Computer Science                      | 30         | 15         | -         | 15         | -         | 2                   |
|                    | H-E-S module (Economics or European Civilization History) | 30         | 30         | -         | -          | -         | 2                   |
|                    | <b>Total</b>  | <b>375</b> | <b>210</b> | <b>90</b> | <b>60</b>  | <b>15</b> | <b>30</b>           |

### Semester 2

| <b>Module Code</b> | <b>Module Title</b>                           | <b>Σ</b> | <b>w</b> | <b>ć w</b> | <b>I</b> | <b>p</b> | <b>ECTS credits</b> |
|--------------------|---|----------|----------|------------|----------|----------|---------------------|
|                    | Mathematics 2                                 | 60       | 30E      | 30         | -        | -        | 5                   |
|                    | Physics 2                                     | 45       | 30E      | -          | 15       | -        | 5                   |
|                    | Surveying Computations                        | 45       | -        | -          | 45       | -        | 3                   |
|                    | Surveying 2 (including practice in the field) | 45+30    | 15E      | -          | 30+30    | -        | 5                   |
|                    | Fundamentals of Metrology                     | 30       | 15       | 15         | -        | -        | 2                   |
|                    | Measurement Techniques in Surveying           | 30       | 15       | -          | 15       | -        | 2                   |
|                    | Introduction to Environmental Engineering     | 30       | 15       | 15         | -        | -        | 2                   |
|                    | Civil Engineering                             | 45       | 30       | -          | -        | 15       | 3                   |
|                    | Foreign Language 1                            | 30       | -        | -          | 30       | -        | 2                   |



|                                     |               |            |           |               |           |           |
|-------------------------------------|---------------|------------|-----------|---------------|-----------|-----------|
| H-E-S module                        | 15            | 15         | -         | -             | -         | 1         |
| Protection of Intellectual Property | 4             | 4          | -         | -             | -         | -         |
| Principles of Standardization       | 8             | 8          | -         | -             | -         | -         |
| <b>Total</b>                        | <b>387+30</b> | <b>177</b> | <b>60</b> | <b>135+30</b> | <b>15</b> | <b>30</b> |

| <b>Elective H-E-S modules</b>                 | <b>I</b> | <b>ECTS</b> |
|---|----------|-------------|
| Ergonomics and Occupational Health and Safety | 1        | 1           |
| Protection of Intellectual Property           | 1        | 1           |
| History of Science and Engineering            | 1        | 1           |
| Fundamentals of Economics                     | 1        | 1           |
| Fundamentals of Law                           | 1        | 1           |

### Semester 3

| <b>Module Code</b> | <b>Module Title</b>  | <b>Σ</b>   | <b>I</b>   | <b>c</b>  | <b>lab</b> | <b>p</b>  | <b>ECTS credits</b> |
|--------------------|--|------------|------------|-----------|------------|-----------|---------------------|
|                    | Applied Mathematics in Geomatics                             | 30         | 15E        | 15        |            |           | 2                   |
|                    | Applied Physics in Geomatics                                 | 30         | 15         | 15        |            |           | 2                   |
|                    | Surveying 3  | 60         | 30E        |           | 30         |           | 5                   |
|                    | Principles of Adjustment Calculus and Surveying Calculations | 45         | 15E        | 30        |            |           | 5                   |
|                    | Principles of Photogrammetry                                 | 45         | 15         |           | 15         | 15        | 4                   |
|                    | Geographic Information Systems GIS                           | 30         | 15         |           | 15         |           | 3                   |
|                    | Computer Programming   | 45         | 15         |           | 30         |           | 4                   |
|                    | Types of Buildings and Engineering Structures (Overview)     | 30         | 15         | 15        |            |           | 2                   |
|                    | Terrain Transformations and Protection                       | 15         | 15         |           |            |           | 1                   |
|                    | Foreign Language 2   | 30         |            |           | 30         |           | 2                   |
|                    | PE*  | 30         |            |           | 30         |           | 1                   |
|                    | <b>Total</b>   | <b>390</b> | <b>150</b> | <b>75</b> | <b>150</b> | <b>15</b> | <b>30/31*</b>       |

\* ECTS credits for PE classes – above minimum score necessary to obtain the diploma



### Semester 4

| Module Code | Module Title   | Σ             | l          | c         | lab           | p        | ECTS credits  |
|-------------|--|---------------|------------|-----------|---------------|----------|---------------|
|             | Adjustment Calculus and Statistical Models in Geomatics/ Statistical Methods of Surveying Results Analysis*) | 60            | 30E        | 30        |               |          | 5             |
|             | Remote Sensing and Photointerpretation   | 45            | 30         |           | 15            |          | 4             |
|             | Introduction to Cadastre and Real Estate Management  | 30            | 15         | 15        |               |          | 3             |
|             | Cartography and Thematic Visualizations  | 45            | 15         |           | 30            |          | 4             |
|             | Surveying 4 (including practice in the field)  | 45+30         | 15E        |           | 30+30         |          | 5             |
|             | Transport and Water Infrastructure Constructions   | 30            | 15         | 15        |               |          | 2             |
|             | Surveying for Constructing   | 30            | 15         | 15        |               |          | 2             |
|             | Fundamentals of Law  | 30            | 30         |           |               |          | 2             |
|             | English Language 3   | 30            |            |           | 30            |          | 2             |
|             | PE*  | 30            |            |           | 30            |          | 1             |
|             | History of technology and inventions   | 15            | 15         |           |               |          | 1             |
|             | <b>Total</b>   | <b>390+30</b> | <b>180</b> | <b>75</b> | <b>135+30</b> | <b>0</b> | <b>30/31*</b> |

\* ECTS credits for PE classes – above minimum score necessary to obtain the diploma

\*) elective (one module to be chosen)

### Semester 5

| Module Code | Module Title  | Σ  | l   | c  | lab | p  | ECTS credits |
|-------------|---|----|-----|----|-----|----|--------------|
|             | Positioning and Navigation Systems  | 45 | 15E |    | 30  |    | 4            |
|             | Surveying for Constructing (2*)   | 60 | 30E |    | 30  |    | 6            |
|             | Environment Protection  | 30 | 30  |    |     |    | 2            |
|             | Photogrammetry Applications/ Terrestrial, Air and Satellite Photogrammetry *) | 60 | 30E |    | 15  | 15 | 6            |
|             | Geodesy and Geodetical Astronomy  | 45 | 30E | 15 |     |    | 4            |
|             | Surveying and Real Estate Management Law                                      | 30 | 30  |    |     |    | 2            |
|             | Spatial and Local Planning  | 30 | 30  |    |     |    | 2            |
|             | Elective Specialist Module  | 15 | 15  |    |     |    | 1            |



|  |                                     |            |            |           |            |           |           |
|--|-------------------------------------|------------|------------|-----------|------------|-----------|-----------|
|  | Protection of Intellectual Property | 15         | 15         |           |            |           | 1         |
|  | English Language 4                  | 30E        |            |           | 30         |           | 2         |
|  | <b>Total</b>                        | <b>360</b> | <b>225</b> | <b>15</b> | <b>105</b> | <b>15</b> | <b>30</b> |

\*) elective modules

| <b>Elective specialist modules in semester 5</b> |   | <b>L</b> | <b>ECTS</b> |
|--|---|----------|-------------|
|  | Construction-Site Surveys and Setting Out | 1        | 1           |
|  | Structural Mechanics                      | 1        | 1           |
|  | <i>Land Properties Cadastral Surveys</i>  | 1        | 1           |

### Semester 6

| <b>Module Code</b> | <b>Module Title</b>   | <b>Σ</b>   | <b>l</b>   | <b>c</b>  | <b>lab</b> | <b>p</b>  | <b>ECTS credits</b> |
|--------------------|---|------------|------------|-----------|------------|-----------|---------------------|
|                    | Property Management   | 60         | 30E        | 30        |            |           | 5                   |
|                    | Property Valuation and Fiscal Cadastre/ Fundamentals of Property Value Estimation*)             | 60         | 30E        |           | 15         | 15        | 5                   |
|                    | Land Information Systems  | 60         | 30         |           | 30         |           | 5                   |
|                    | Remote Sensing in Economy, Thematic Maps/ Photointerpretation of Aerial and Satellite Images *) | 60         | 30E        |           | 15         | 15        | 6                   |
|                    | Structure's Geometry Monitoring   | 30         | 15         |           | 15         |           | 3                   |
|                    | Elective Field-of-Study Module conducted in Polish  | 45         | 15         |           | 15         | 15        | 5                   |
|                    | Elective specialist module  | 15         | 15         |           |            |           | 1                   |
|                    | <b>Total</b>  | <b>330</b> | <b>165</b> | <b>30</b> | <b>90</b>  | <b>45</b> | <b>30</b>           |

\*) elective modules

| <b>Elective specialist modules in semester 6</b> |   | <b>l</b> | <b>ECTS</b> |
|--|---|----------|-------------|
|  | Principles of Mining and Tunnel Surveying   | 1        | 1           |
|  | Construction-Site and As-Built Surveys of Power Routes, Communication Lines and Media | 1        | 1           |

| <b>Elective Field-of-Study Modules conducted in Polish in semester 6</b> |                                | <b>W</b> | <b>ECTS</b> |
|--|--------------------------------|----------|-------------|
|  | Geomatics and Vocabulary       | 45       | 5           |
|  | Fundamentals of Photogrammetry | 45       | 5           |



### Semester 7

| Module Code | Module title   | $\Sigma$       | l         | c        | lab       | p         | ECTS credits |
|-------------|--|----------------|-----------|----------|-----------|-----------|--------------|
|             | Geomatics in Environmental Engineering / Surveying for Monitoring of Environment | 30             | 30        |          |           |           | 3            |
|             | Databases in Geomatics   | 45             | 15        |          | 15        | 15        | 2            |
|             | Property Sales and Management / Properties Management *)                         | 45             | 15        |          | 30        |           | 2            |
|             | Diploma Seminar  | 30             |           |          |           | 30        | 3            |
|             | Diploma Thesis   | 180            |           |          |           |           | 15           |
|             | Elective Specialist Module   | 15             | 15        |          |           |           | 1            |
|             | Internship (4 weeks)   | -              | -         | -        | -         | -         | 4            |
|             | <b>Total</b>   | <b>165+180</b> | <b>75</b> | <b>0</b> | <b>45</b> | <b>45</b> | <b>30</b>    |

\*) elective modules

| <b>Elective specialist modules in semester 7</b> |   | <b>L</b> | <b>ECTS</b> |
|--|---|----------|-------------|
|  | Displacements and Deformations of Selected Buildings and Structures – Observations and Analysis | 1        | 1           |
|  | Urban Surveying   | 1        | 1           |
|  |   |          |             |