



### MODULE SPECIFICATION

|                                       |   |
|---------------------------------------|---|
| Module code                           |   |
| Module title in Polish                | <b>Podstawy budownictwa komunikacyjnego i wodnego</b>   |
| Module title in English               | <b>Transport and Water Infrastructure Constructions</b> |
| Module running from the academic year | <b>2016/2017</b>  |

### A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

|   |   |
|---|---|
| Field of study                                      | <b>Surveying and Cartography</b>                  |
| Level of qualification                              | <b>first cycle</b><br>(first cycle, second cycle) |
| Programme type                                      | <b>academic</b><br>(academic/practical)           |
| Mode of study                                       | <b>full-time</b><br>(full-time/part-time)         |
| Specialism  | <b>all</b>  |
| Organisational unit responsible for module delivery | <b>The Department of Transport Engineering</b>    |
| Module co-ordinator                                 | <b>Anna Chomicz – Kowalska. PhD, Eng.</b>         |
| Approved by:  | <b>Marek Iwański, PhD hab., Eng.</b>              |

### B. MODULE OVERVIEW

|  |   |
|--|---|
| Module type  | <b>core module</b><br>(core/programme-specific/elective HES*) |
| Module status  | <b>compulsory module</b><br>(compulsory/optional)             |
| Language of module delivery                                      | <b>English</b>  |
| Semester in the programme of study in which the module is taught | <b>semester 4</b>   |
| Semester in the academic year in which the module is taught      | <b>summer semester</b><br>(winter semester/summer semester)   |
| Pre-requisites   | <b>None</b><br>(module code/module title, where appropriate)  |
| Examination required   | <b>No</b><br>(Yes/No)   |
| ECTS credits   | <b>2</b>  |

\* elective HES – elective modules in the Humanities and Economic and Social Sciences

| Mode of instruction | lectures  | classes   | laboratories | project | others |
|---------------------|-----------|-----------|--------------|---------|--------|
| Total hours per     | <b>15</b> | <b>15</b> |              |         |        |



# Politechnika Świętokrzyska

## WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

|          |  |  |  |  |  |
|----------|--|--|--|--|--|
| semester |  |  |  |  |  |
|----------|--|--|--|--|--|



### C. LEARNING OUTCOMES AND ASSESSMENT METHODS

|                    |   |
|--------------------|---|
| <b>Module aims</b> | The aim of the module is to familiarise students with basic elements of transport infrastructure and hydraulic engineering (drawing particular attention to the issues concerning road construction). |
|--------------------|---|

| Module outcome code | Module learning outcomes  | Mode of instruction<br>(l/c/lab/p/<br>others) | Corresponding programme outcome code | Corresponding discipline-specific outcome code      |
|---------------------|---|---|--------------------------------------|---|
| W_01                | A student has basic knowledge as regards the localisation, classification, and the type of engineering structures which serve the purpose of transport. | l/p   | GiK_W01<br>GiK_W12                   | T1A_W01<br>T1A_W03                                  |
| U_01                | A student can design the course of the road on a plan, a cross-section, and longitudinal section.   | l/p   | GiK_U01<br>GiK_U14<br>GiK_U26        | T1A_U01<br>T1A_U08<br>T1A_U16                       |
| K_01                | A student can work individually and in a team.  | p   | GiK_K07<br>GiK_K06                   | T1A_K03   |
| K_02                | A student is responsible for the reliability of the obtained results.   | p   | GiK_K08<br>GiK_K02                   | T1A_K04<br>T1A_K01<br>T1A_K02<br>T1A_K05<br>T1A_K07 |

#### Module content:

##### 1. Topics to be covered in the lectures

| No.   | Topics  | Module outcome code |
|-------|---|---------------------|
| 1     | Communication and transport in national economy.  | W_01                |
| 2-3   | Hydraulic engineering. The elements of water transport (the characteristics of main European waterways, equipment elements).  | W_01                |
| 4-7   | Road transport. Road transport infrastructure. Roads: their construction, geometrical shaping, the arrangement of a road on a plan. Roadway structures and dimensioning. Technical parameters of motorways. Expressways. Road junctions. Streets (their classification and crossroads). Municipal transport. The possibilities as regards the realisations of road and street drainage. | W_01                |
| 8-10  | Rail transport. Rail transport infrastructure. Railways, route types, controlling transport and communication, contact lines, and rolling stock. Rail stations and railway junctions, the elements of railway station systems. High Speed Railways. The principles of modern railways.  | W_01                |
| 11-13 | Airports. The principles of locating airports. The classification of airports according to ICAO. Geometric shaping of the manoeuvre area components. The structures of airfield surfaces. Technical diagnostics and assessing surface technical condition.  | W_01                |
| 14-15 | Combined and unconventional transport. Obtaining a credit.  | W_01                |

##### 2. Topics to be covered in the classes

| No. | Topics | Module outcome code |
|-----|--------|---------------------|
|     |        |                     |



|       |  |                                      |
|-------|--|--------------------------------------|
| 1-2   | A topographic plan, routing the course of road axis.   | W_01<br>U_01<br>K_01                 |
| 3-4   | Road, street, and road-street cross-sections. Construction details. Construction layers of road surface. Calculating height difference of elements concerning a road-street section.                             | W_01<br>U_01<br>K_01                 |
| 5-6   | Determining main points as well as characteristics of the designed road. Hectometers.  | W_01<br>U_01<br>K_01                 |
| 7-8   | A longitudinal terrain profile. The principle of projecting terrain on a perpendicular plane to a road axis. Calculating terrain offsets in point determined with hectometers.                                   | W_01<br>U_01<br>K_01                 |
| 9-10  | Designing a longitudinal profile of a road axis (formation lines). Calculating longitudinal sections with a uniform gradient. Calculating formation line offsets in characteristic points.                       | W_01<br>U_01<br>K_01<br>K_02<br>K_03 |
| 11-12 | The characteristics of drainage ditches and the principles of designing them. Determining the course of elevation development of the elements concerning linear road drainage (the bottom of trapezium ditches). | W_01<br>U_01<br>K_01<br>K_02         |
| 13-14 | Completing cross-sections of the designed roads. Applying the edges of the designed elements of a road cross-section on a drawing of the site plan.  | W_01<br>U_01<br>K_01<br>K_02         |
| 15    | Oral defence of the projects.  | W_01<br>U_01<br>K_01<br>K_02         |

### Assessment methods

| Module outcome code | Assessment methods<br><i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i> |
|---------------------|--|
| W_01                | A test, assessing a student's project, and an oral defence   |
| U_01                | Assessing a project and an oral defence  |
| K_01                | Project assessment, an oral defence, and a discussion with students  |
| K_02                | Project assessment, an oral defence, and a discussion with students  |



### D. STUDENT LEARNING ACTIVITIES

| ECTS summary |  |                           |
|--------------|--|---------------------------|
|              | Type of learning activity  | Study time/<br>credits    |
| 1            | Contact hours: participation in lectures   | 15                        |
| 2            | Contact hours: participation in classes  | 15                        |
| 3            | Contact hours: participation in laboratories   |                           |
| 4            | Contact hours: attendance at office hours (2-3 appointments per semester)                                    |                           |
| 5            | Contact hours: participation in project-based classes  |                           |
| 6            | Contact hours: meetings with a project module leader   | 1                         |
| 7            | Contact hours: attendance at an examination  | 1                         |
| 8            |  |                           |
| 9            | <b>Number of contact hours</b>   | <b>32</b><br><i>(sum)</i> |
| 10           | <b>Number of ECTS credits for contact hours</b><br><i>(1 ECTS credit = 25-30 hours of study time)</i>        | <b>1.28</b>               |
| 11           | Private study hours: background reading for lectures   | 4                         |
| 12           | Private study hours: preparation for classes   | 4                         |
| 13           | Private study hours: preparation for tests   | 5                         |
| 14           | Private study hours: preparation for laboratories  |                           |
| 15           | Private study hours: writing reports   | 5                         |
| 16           | Private study hours: preparation for a final test in laboratories  |                           |
| 17           | Private study hours: preparation of a project/a design specification   |                           |
| 18           | Private study hours: preparation for an examination  |                           |
| 19           |  |                           |
| 20           | <b>Number of private study hours</b>   | <b>18</b><br><i>(sum)</i> |
| 21           | <b>Number of ECTS credits for private study hours</b><br><i>(1 ECTS credit = 25-30 hours of study time)</i>  | <b>0.72</b>               |
| 22           | <b>Total study time</b>  | <b>50</b>                 |
| 23           | <b>Total ECTS credits for the module</b><br><i>(1 ECTS credit = 25-30 hours of study time)</i>               | <b>2</b>                  |
| 24           | <b>Number of practice-based hours</b><br><i>Total practice-based hours</i>                                   | <b>0</b>                  |
| 25           | <b>Number of ECTS credits for practice-based hours</b><br><i>(1 ECTS credit = 25-30 hours of study time)</i> | <b>0</b>                  |

### E. READING LIST

|                |  |
|----------------|--|
| References     |  |
| Module website |  |