**1. Course title:** SPATIAL INFORMATION SYSTEMS

**2. Course code:** SI-GG/40

**3. Validity of the course description:** 2016/2017

**4. Level of studies:** BA, BSc programme / 1st cycle / 2nd cycle of higher education

**5. Mode of studies:** intramural studies

**6. Field of study:** stationary

**7. Profile of studies:** MINING AND GEOLOGY

**8. Programme:** MINE SURVEYING

**9. Semester:** VI

**10. Faculty teaching the course:** DEPARTMENT OF MINING

**11. Course instructor:** dr hab. inż. Violetta Sokoła-Szewiola, prof. nzw. w Pol. Śl.

**12. Course classification:** Programme course

**13. Course status:** compulsory

**14. Language of instruction:** English

**15. Pre-requisite qualifications:** CAD Systems in Geodesy, Cartography, Geodesy. The student has the basic skill of elaborating of geodetic documents using IT tools. The student has the knowledge in the scope of elaborating and updating of a basic map and mining maps, reading these maps and other geodetic drafts. The student has the knowledge of the subject of the reference and coordinate systems used in geodesy. The student has the basic knowledge and competence in the scope of the basic geodetic situational and altitudinal measurements.

**16. Course objectives:** The purpose of education is to acquire the skills of elaborating and completion a database of Spatial Information System, particularly in the scope of contents of Land Information System and cognition of requirements concerning this type of database elaboration, particularly database created in the scope of IIP, as the elements creating the state of cartographic and geodetic sources. The possession of knowledge of spatial data at the European and global level, including IIP geoportals.

**17. Description of learning outcomes:**

<table>
<thead>
<tr>
<th>No</th>
<th>Learning outcomes description</th>
<th>Method of assessment</th>
<th>Teaching methods</th>
<th>Learning outcomes reference code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The student has the basic knowledge in the scope of skills of the creation, obtaining and updating of data of Spatial Information Systems, using of data in the scope of spatial information in mining, geodesy and cartography. The student has the basic knowledge in the scope of obtaining of data stored in the centers of geodetic documentations. He knows the legal acts-the directive Inspire laws and regulations nominating the system of information about the area. The student has the knowledge of functional models, the principles of designing, creating and updating, exchanges, integration and harmonization of official spatial reference databases, including metadata and principles of creating and functioning geoportals as part of IIP.</td>
<td>Written test in the lecture, practical test in the project, elaboration of tasks of the projects.</td>
<td>Lecture, project.</td>
<td>K_W19+++</td>
</tr>
<tr>
<td>2.</td>
<td>The student is able to work individually and collectively using computers. He has the skill of self-education, among others for the purpose of increasing of professional competencies. He is able to introduce date into SIS system</td>
<td>Individual performance of the project tasks.</td>
<td>Project.</td>
<td>K_U02+  K_U05+</td>
</tr>
</tbody>
</table>
### 3. The student has the skill of using data stored in the centers of geodetic and cartographic documentations. He has the skill of using Spatial Information System (SIS) for the need of the implementation of the decision. He has the skill to acquire and update the SIS data, including database creating in the frame of IIP, in particular from geportals of spatial information in geodesy and cartography. He is able to use in practically basic tools advanced software SIP, in particular the tools of creating the map image, selection tools, caching, applications and statistics. He is able to edit the contents of database.

<table>
<thead>
<tr>
<th>Individual performance of the project tasks.</th>
<th>Project.</th>
<th>K_U19++</th>
</tr>
</thead>
</table>

### 4. The student is able to determine the priorities used for the realization of a task determined by himself and others. He is aware of possibilities of usage of spatial possibilities in the process of decision implementation of legal and administrative character.

<table>
<thead>
<tr>
<th>Assessment of the tests. Elaboration of the projects.</th>
<th>Lecture, project.</th>
<th>K_K04+</th>
</tr>
</thead>
</table>

### 18. Teaching modes and hours

**Lecture / BA / MA Seminar / Class / Project / Laboratory**

**30 h L, 30 Proj.**

### 19. Syllabus description:

**Lecture:**
- Basic definitions. Spatial Information System (SIS). Geographic Information System (GIS). Land Information System (LIS). A history of spatial information systems. Elements of SIS. Data – spatial and descriptive attributes. Software, computers equipment, people. Functions and tasks of systems. Legal status of SIS in Poland. Basic legal documents and instructions regulated principles of elaboration and carrying out SIS (LIS). Inspire Directive. Law on IIP: the rules of creating and using spatial information infrastructure; administrative bodies competent in cases of IIP. The characteristics of spatial data and metadata - creating, updating and sharing files, interoperability of spatial data sets and services, spatial data services: searching, browsing, downloading, transforming enabling the launch of spatial data services, cooperation and coordination in the field of spatial information infrastructure: creation, maintenance and development of IIP, spatial data issues. Technical basis of INSPIRE collections. The principles of creating and functioning of created geportals in the frame of IIP. The generalization of the topographic objects database for the purpose of creating standard cartographic elaboration and thematic elaboration.


**Project:**
- The elaboration of the computers database in the scope of the selected contents of SIS. The input of the spatial data using the method of the raster vectorization. The input of the spatial data obtaining in the results of direct measurements.(the keyboard metod, batch method). Browsing and editing data. The elaboration of fragments of national SIT as elements forming the state geodetic and cartographic resource, including EGiB and GESUT databases, topographic objects, geodetic control networks. The preparation of the selected part of the geodetic and cartographic documentations. The completion of the elaborated database by descriptive data including the selected scopes of SIS spatial information, including cadaster contents and also survey-geological documentation and by data obtained from spatial information geportals, using metadata. Spatial analyses in SIS, to support decision: buffer, SQL queries, operators and spatial functions, thematic maps.

### 20. Examination:

No
21. Primary sources:

4. Dyrektwa INSPIRE.
14. Ustawa „Prawo geodezyjne i kartograficzne” oraz akty wykonawcze do Ustawy.
15. Ustawa o Infrastrukturze Informacji Przestrzennej.

22. Secondary sources:


23. Total workload required to achieve learning outcomes – Sem. IV

<table>
<thead>
<tr>
<th>Lp.</th>
<th>Teaching mode</th>
<th>Contact hours / Student workload hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>30/15 – in this: acquainting with the recommended sources (literature) (8), preparing for test (5), test (2).</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>/</td>
</tr>
<tr>
<td>4</td>
<td>Project</td>
<td>30/15 – in this: preparation of materials for project (7), preparing for test (6) , test (2).</td>
</tr>
<tr>
<td>5</td>
<td>BA/ MA Seminar</td>
<td>/</td>
</tr>
<tr>
<td>6</td>
<td>Other</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Total number of hours</td>
<td>60/30</td>
</tr>
</tbody>
</table>

24. Total hours: 90

25. Number of ECTS credits: 3

26. Number of ECTS credits allocated for contact hours: 2

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 1

26. Comments:

Approved:
(date, Instructor's signature)  

(date, the Director of the Faculty Unit signature)