



Module name: Volunteered Geographic Information

Academic year: 2019/2020 Code: ZSDA-3-0085-s ECTS credits: 2

Faculty of: Szkoła Doktorska AGH

Field of study: Szkoła Doktorska AGH Specialty: —

Study level: Third-cycle studies Form and type of study: Full-time studies

Lecture language: English Profile of education: Academic (A) Semester: 0

Course homepage: —

Responsible teacher: dr hab. inż, prof. AGH Cichociński Piotr (piotr.cichocinski@agh.edu.pl)

Module summary

Student gets to know principles of creation and use of VGI, IT tools used to build Web Mapping sites and licenses on which free software and open data, especially spatial, are made available. Retrieves data from OpenStreetMap and assesses their quality. Formulate and solve spatial tasks using specialized analysis methods and retrieved data. Adds data to OSM according to community-defined tagging standards. Makes web maps using free software and open specifications.

Description of learning outcomes for module

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Connections with FLO	Method of learning outcomes verification (form of completion)
Social competence: is able to			
M_K001	ensure adequate crowdsourced data quality	SDA3A_K01	Report, Oral answer, Execution of exercises, Activity during classes
M_K002	popularize the use and creation of VGI	SDA3A_K03, SDA3A_K02	Report, Oral answer, Execution of exercises, Activity during classes
Skills: he can			
M_U001	formulate and solve spatial tasks using specialized analysis tools and VGI	SDA3A_U07, SDA3A_U06, SDA3A_U01	Report, Oral answer, Test, Execution of exercises, Activity during classes
M_U002	create, modify, update and use VGI, as well as evaluate its quality	SDA3A_U07, SDA3A_U06, SDA3A_U01, SDA3A_U03	Report, Oral answer, Test, Execution of exercises, Activity during classes

M_U003	make web maps using free software and open specifications	SDA3A_U02, SDA3A_U01, SDA3A_U03	Report, Oral answer, Execution of exercises, Activity during classes
Knowledge: he knows and understands			
M_W001	principles of creation and use of VGI	SDA3A_W07, SDA3A_W05, SDA3A_W04, SDA3A_W06, SDA3A_W01	Report, Oral answer, Execution of exercises, Test, Activity during classes
M_W002	IT tools used to build Web Mapping sites	SDA3A_W07, SDA3A_W04	Report, Oral answer, Test, Execution of exercises, Activity during classes
M_W003	licenses on which free software and open data, especially spatial, are made available	SDA3A_W07, SDA3A_W05, SDA3A_W04, SDA3A_W06	Report, Oral answer, Test, Execution of exercises, Activity during classes

Number of hours for each form of classes

Suma	Form of classes										
	Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Fieldwork classes	Workshops	Prace kontrolne i przejściowe	Lektorat
30	8	0	0	22	0	0	0	0	0	0	0

FLO matrix in relation to forms of classes

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Form of classes										
		Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Fieldwork classes	Workshops	Prace kontrolne i przejściowe	Lektorat
Social competence: is able to												
M_K001	ensure adequate crowdsourced data quality	-	-	-	+	-	-	-	-	-	-	-
M_K002	popularize the use and creation of VGI	-	-	-	+	-	-	-	-	-	-	-
Skills: he can												
M_U001	formulate and solve spatial tasks using specialized analysis tools and VGI	-	-	-	+	-	-	-	-	-	-	-
M_U002	create, modify, update and use VGI, as well as evaluate its quality	-	-	-	+	-	-	-	-	-	-	-
M_U003	make web maps using free software and open specifications	-	-	-	+	-	-	-	-	-	-	-

Knowledge: he knows and understands												
M_W001	principles of creation and use of VGI	+	-	-	+	-	-	-	-	-	-	-
M_W002	IT tools used to build Web Mapping sites	+	-	-	+	-	-	-	-	-	-	-
M_W003	licenses on which free software and open data, especially spatial, are made available	+	-	-	+	-	-	-	-	-	-	-

Student workload (ECTS credits balance)

Student activity form	Student workload
Udział w zajęciach dydaktycznych/praktyka	30 h
Preparation for classes	6 h
przygotowanie projektu, prezentacji, pracy pisemnej, sprawozdania	6 h
Realization of independently performed tasks	6 h
Contact hours	2 h
Summary student workload	50 h
Module ECTS credits	2 ECTS

Additional information

Module content

Lectures

- Volunteered geographic information (VGI): definition, characteristics, demand (open data) and possibilities of creation (Web 2.0), benefits and weaknesses, examples.
- OpenStreetMap (OSM): database structure, data sources, selected software for editing OSM database, OSM quality evaluation, application areas.
- VGI quality: criteria and methodologies.
- Integration, analysis, and applications of VGI: VGI in spatial planning, VGI and crowdsourcing in environmental monitoring (crisis response), VGI in mobility.
- Crowdsourced geographic information use in government and spatial data infrastructures (SDI).
- Web mapping: sharing VGI on the Internet using free software and open specifications.

Project classes

- Retrieving data from OSM. OSM data quality evaluation. Examples of OSM data applications.
- Applications of other crowdsourced data sets: geocoding (OpenAddresses), ...
- Adding data to OpenStreetMap in a known place according to community-defined tagging standards.
- Making web maps with free software and open standards.

Teaching methods and techniques:

Lectures: The content presented at the lecture is communicated in the form of a multimedia presentation in combination with a classic blackboard lecture enriched with demonstrations related to the presented topics.

Project classes: Students prepare the project on their own, without much intervention of the teacher. This is to develop a sense of responsibility for teamwork and responsibility for decisions made.

Warunki i sposób zaliczenia poszczególnych form zajęć, w tym zasady zaliczeń poprawkowych, a także warunki dopuszczenia do egzaminu:

1. Active participation and positive results of current checking whether the assumed learning outcomes have been achieved by the student are the basis for passing the course.
2. Participation in classes is obligatory. A maximum of two unexcused absences per semester is allowed. A justification for absence may be health reasons (confirmed by medical exemption) or other important reasons recognized by the person conducting the exercise. The student is obliged to justify absence at the first class after the cause of absence has ceased. Exceeding the threshold of 20% of unexcused absences results in the lack of the possibility to pass the course.
3. In exceptional cases, a student who has exceeded the above-mentioned limits for important random reasons or because of a documented long-term illness may obtain the teacher's consent to pass the course.
4. The program of the course includes 5-6 exercises (or 2-3 projects) and 1-2 tests every semester. All topics / projects and tests must be passed.
5. The ongoing control of learning outcomes is based on: checking exercises / projects systematically submitted by students (on a computer screen or in the form of a write-up), verifying the knowledge of issues covered by a given exercises (a student may be asked to explain / present how to implement the task), conducting practical test at the computer and written tests of theoretical knowledge.
6. Student can become acquainted with detailed results of the evaluation of written work (exercises, projects, tests) only in person at the teacher.
7. The student should keep files created as a result of the implementation of exercises / projects until passing the course.
8. Detected lack of independence of the student's work or use of unauthorized materials results in failing grade (2.0) in the nearest term of passing. In addition, detected cases of plagiarism will be reported to the dean's authorities.
9. The possibility of using auxiliary materials is determined by the teacher for each test. During tests it is forbidden to use devices that allow the registration, storage and playback of texts or images, in particular mobile phones.
10. An unexcused absence from the test results in obtaining "nb".
11. The student is obliged to correct the test, from which she obtained a failing grade (2.0). It is not possible to correct positively passed test.
12. Passing the course is made on the basis of control of learning outcomes during the semester and should be made no later than on the last day of the semester in which the classes are conducted (Deadline 1). The grade is a weighted average of the grades from tests (weight 0.6) and grades for completed exercises / projects (weight 0.4). Failure to pass the course within the prescribed period results in obtaining the failing grade (2.0). Two additional deadlines are set: Deadline 2 - until the end of the basic session, Deadline 3 - until the end of the re-sit session.

Zasady udziału w poszczególnych zajęciach, ze wskazaniem, czy obecność studenta na zajęciach jest obowiązkowa:

Lectures:

- Attendance is mandatory: No
- Participation rules in classes: Students participate in classes learning new content according to the syllabus of the course. Students should ask questions and clarify doubts on an ongoing basis. Audiovisual registration of a lecture requires the consent of the lecturer.

Project classes:

- Attendance is mandatory: Yes
- Participation rules in classes: Students carry out practical work in order to acquire the competences assumed by the syllabus. The way the project is carried out and the final result are evaluated.

Method of calculating the final grade

FG = P

where:

P - grade from project classes (arithmetic mean of all deadlines; if the grade of at least one deadline is positive, then $P \geq 3.0$)

Sposób i tryb wyrównywania zaległości powstałych wskutek nieobecności studenta na zajęciach:

Compensation of backlogs resulting from the student's absence from the classes consists in participation in classes with another group (as far as free computers are available) or through the individual implementation of the tasks to be performed on these classes.

Prerequisites and additional requirements

Basic knowledge of geographic information systems (GIS). Basic knowledge of English.

Recommended literature and teaching resources

1. Capineri, C, Haklay, M, Huang, H, Antoniou, V, Kettunen, J, Ostermann, F and Purves, R. (eds.) European Handbook of Crowdsourced Geographic Information. London: Ubiquity Press 2016.
2. Haklay, M., Antoniou, V., Basiouka, S., Soden, R., and Mooney, P., Crowdsourced geographic information use in government, Report to GFDRR (World Bank). London 2014.
3. Kubik T. GIS : rozwiązania sieciowe. Wydawnictwo Naukowe PWN, Warszawa 2009.
4. Open Geospatial Consortium (OGC) specifications: CSW,WMS, WFS, WFS-T, WCS, WPS. <http://www.opengeospatial.org/standards>

Scientific publications of module course instructors related to the topic of the module

1. Cichociński P.: Przegląd darmowego oprogramowania do udostępniania danych przestrzennych w Internecie (Review of free software for spatial data sharing on the Internet). XXVIII Ogólnopolska Konferencja Kartograficzna „Mapa w systemach komputerowych”. Szczecin, 25-27 października 2001 r.
2. Cichociński P.: Metadane i jakość danych w systemach informacji geograficznej (Metadata and data quality in geographic information systems). III Krajowa Konferencja Naukowa „Technologie Przetwarzania Danych”. Materiały konferencyjne. Poznań, 21-23 czerwca 2010 r. WNT, Warszawa 2010.
3. Bielecka E., Cichociński P., Iwaniak A., Krawczyk A., Pachół P.: Przegląd polskich geoportali na podstawie konkursu „The SDI Best Practice Award 2009” (A review of polish geoportals on the basis of „The SDI Best Practice Award 2009” competition). Roczniki Geomatyki 2010, tom VIII, zeszyt 6, s. 19-27. Warszawa 2010.
4. Cichociński P.: Ocena przydatności OpenStreetMap jako źródła danych dla analiz sieciowych (Assessment of OpenStreetMap suitability as a data source for network analysis). Roczniki Geomatyki 2012, tom X, zeszyt 7, s. 15-24. Warszawa 2012.
5. Cichociński P.: Propozycja geoportalu dla przestrzenno-czasowych danych statystycznych (A proposal of a geo-portal for spatio-temporal statistical data). Roczniki Geomatyki 2013, Tom XI, Zeszyt 1(58), s. 35-44. Warszawa 2013.

Additional information

1. Information, announcements, results of tests, as well as auxiliary materials for classes are posted on the course website placed on the University e-Learning Platform (<https://upel.agh.edu.pl/wggiis>). The password for access to the course is provided by the lecturer at the first class. Publication of information on this site is considered to be made available to students.
2. Individual consultations, held on dates announced at the beginning of each semester are supplementary to all forms of classes.
3. Classes are held at the Computer Laboratory of the Department of Mining Surveying and Environmental Engineering. The student is required to know and comply with the rules and regulations in force on the website <http://pk.geod.agh.edu.pl>.