

**AGH**AGH UNIVERSITY OF SCIENCE
AND TECHNOLOGY

Module name: Geoinformation and sustainable development

Academic year: 2019/2020 Code: ZSDA-3-0184-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 Bydłoz Jarosław (bydlosz@agh.edu.pl)

Module summary

The purpose of the course is to acknowledge students with geoinformation issues in the context of sustainable development. During the course students learn about land registries, cadastre, land administration, infrastructure of spatial information in Europe, and standardization.

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	popularize modern science and technology achievements.	SDA3A_K01, SDA3A_K03, SDA3A_K02	Involvement in teamwork, Participation in a discussion, Activity during classes
Skills: he can			
M_U001	read literature and prepare a presentation in the English language on subjects concerning geoinformation aspects; analyze and compare methods, systems, and procedures.	SDA3A_U05, SDA3A_U01	Presentation
M_U002	apply communication and information technology in researches.	SDA3A_U06, SDA3A_U02, SDA3A_U04	Participation in a discussion, Presentation
Knowledge: he knows and understands			
M_W001	extensive knowledge of world trends in geoinformation.	SDA3A_W02, SDA3A_W05, SDA3A_W01	Participation in a discussion, Presentation, Activity during classes

M_W002	knowledge concerning sustainable development aspects in land administration	SDA3A_W02, SDA3A_W05, SDA3A_W01	Participation in a discussion, Presentation, Activity during classes
M_W003	European and international standards and legal regulations concerning land administration and environmental issues.	SDA3A_W02, SDA3A_W01	Participation in a discussion, Presentation, 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
20	5	0	0	0	0	15	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	popularize modern science and technology achievements.	-	-	-	-	-	+	-	-	-	-	-
Skills: he can												
M_U001	read literature and prepare a presentation in the English language on subjects concerning geoinformation aspects; analyze and compare methods, systems, and procedures.	-	-	-	-	-	+	-	-	-	-	-
M_U002	apply communication and information technology in researches.	-	-	-	-	-	+	-	-	-	-	-
Knowledge: he knows and understands												
M_W001	extensive knowledge of world trends in geoinformation.	+	-	-	-	-	-	-	-	-	-	-
M_W002	knowledge concerning sustainable development aspects in land administration	+	-	-	-	-	-	-	-	-	-	-

M_W003	European and international standards and legal regulations concerning land administration and environmental issues.	+	-	-	-	-	-	-	-	-	-	-
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Student workload (ECTS credits balance)

Student activity form	Student workload
Udział w zajęciach dydaktycznych/praktyka	20 h
Preparation for classes	10 h
przygotowanie projektu, prezentacji, pracy pisemnej, sprawozdania	10 h
Realization of independently performed tasks	5 h
Contact hours	5 h
Summary student workload	50 h
Module ECTS credits	2 ECTS

Additional information

Module content

Lectures

Land registries and cadastres.

Traditional land registration systems and cadastres.

Land administration and sustainable development.

The Land Administration Paradigm. The Butterfly Diagram. Land Administration for Sustainable Development.

Infrastructure for spatial information in Europe.

Establishing infrastructure for spatial information in Europe. INSPIRE directive.

Seminar classes

2030 agenda for sustainable development.

Characterization of sustainable development goals.

Present and future views on cadastral systems in the context of sustainable development.

Multipurpose cadastre. Fit for purpose cadastre. 3D cadastre. 4D cadastre.

Tools to define spatial information infrastructure -Unified Modelling Language.

CASE tools. UML – diagrams, relationships.

Spatial information exchange - XML and GML.

Extensible Markup Language – an overview. Geography Markup Language (GML) as the XML grammar for expressing geographical features.

Standardisation in geographic information.

Standardization rules. ISO 19100 series.

INSPIRE directive as an example of EU environmental policy.

Scope themes, annexes, data specifications and implementation.

[ISO 19152 - Land Administration Domain Model.](#)

Standardization in Land Administration. Parties. Ownership rights. Spatial units. Spatial sources and spatial representation.

Teaching methods and techniques:

Lectures: Nie określono

Seminar classes: Presentations and discussion

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

Every student prepares (and gives) presentation concerning the professional subject. Every presentation is evaluated. It is possible to get some extra marks for activity in the discussion during the course.

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

Lectures:

- Attendance is mandatory: No
- Participation rules in classes: Nie określono

Seminar classes:

- Attendance is mandatory: Yes
- Participation rules in classes: Nie określono

Method of calculating the final grade

Students write a short test. Seminar mark is a result of marks for test, presentation, and activity during the course.

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

If a student fails the test, he/she is obliged to take it again. Student can be given the additional topic for elaboration and reporting.

Prerequisites and additional requirements

None.

Recommended literature and teaching resources

Spatially Enabled Society. Joint publication of FIG-Task Force on Spatially Enabled Society in cooperation with GSDI Association and with the support of Working Group 3 of the PCGIAP. FIG Report 2012. ISBN 978-87-90907-97-6. Available also at <http://www.fig.net/pub/figpub/index.htm>

Williamson I., Enemark S., Wallace J., Rajabifard A.: Land Administration for Sustainable Development. ESRI Press Academic. Redlands. California. 2010.

<http://www.eurocadastre.org/>

<http://www.fig.net/>

<http://www.geospatialworldforum.org/2012/modeling.htm>

<http://www.gdmc.nl/3DCadastres/>

<http://inspire.jrc.ec.europa.eu/>

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

Bydłosz J., Parzych P., Dąbrowski J.: The possibilities of real estates market development in Poland in

connection with INSPIRE directive. *Geomatics and Environmental Engineering*. 2011 vol. 5 no. 1, pp. 15-23.

Bydłoz J.: Preliminary works on leading Polish cadastral model into conformance with LADM. *GIS for geoscientists: scientific monograph*. Editors: Davorin Kereković, Ryszard Żróbek. Published by University of Silesia and Hrvatski Informatički Zbor - GIS Forum. 2012. pp. 86-92.

Bieda A., Bydłoz J., Parzych P.: Actualization of data concerning surface flowing waters, based on INSPIRE directive requirements. *Geomatics and Environmental Engineering*. 2013 vol. 7 no. 1, pp. 25-36.

Bydłoz J., Hanus P.: The impact of landslide areas on municipal spatial. *Real Estate Management and Valuation*. ISSN 2300-5289. 2013 vol. 21 no. 4, pp. 5-10.

Bydłoz, J.: The application of the Land Administration Domain Model in building a country profile for the Polish cadastre, *Land Use Policy* 49 (2015), Elsevier, pp. 598-605,

Bydłoz, J.: Developing the Polish cadastral model towards a 3D cadastre. 5th international workshop on 3D cadastres : 18-20 October 2016, Athens, Greece : proceedings. International Federation of Surveyors (FIG), cop. 2016. — ISBN: 978-87-92853-47-9 ; e-ISBN: 978-87-92853-49-3. — pp. 505-518.

Bydłoz, J., Bieda A., Parzych P.: The implementation of spatial planning objects in a 3D cadastral model. *ISPRS International Journal of Geo-Information*, 2018 vol. 7 iss. 4 art. no. 153, pp. 1-14. *Valuation*. ISSN 2300-5289. 2013 vol. 21 no. 4, pp. 5-10.

Additional information

None.