

COURSE DESCRIPTION (Group C)

| Course code | Course group | Volume in ECTS credits | Course valid from | Course valid to | Reg. No. |
|-------------|--------------|------------------------|-------------------|-----------------|----------|
| APL 4004 | C | 6 | 2013.06.10 | 2016.06.10 | |

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|--------------------------------------|--------------|
| Course type (compulsory or optional) | Compulsory |
| Course level (study cycle) | I |
| Semester the course is delivered | Autumn |
| Study form (face-to-face or distant) | Face-to-face |

Course title in Lithuanian

GEOGRAFINIŲ INFORMACINIŲ SISTEMŲ PAGRINDAI

Course title in English

BASICS OF GEOGRAPHICAL INFORMATION SYSTEMS

Short course annotation in Lithuanian (up to 500 characters)

Kursas skirtas įgyti pagrindinių žinių apie geografinių informacinių sistemų (GIS) sampratą, geografinės informacijos surinkimą, skaitmenizavimą, duomenų bazių sukūrimą, pateikimo metodus bei GIS pritaikymą epidemiologijoje ir aplinkotyroje

Short course annotation in English (up to 500 characters)

The aim of this course is to obtain knowledge and practical skills in Geographical Information System (GIS), data collection, digitalization, development of GIS and GIS applications in environmental sciences and environmental monitoring

Prerequisites for entering the course

Calculus, Statistical methods in environmental sciences and biology

Course aim

The course is aimed to present theoretical and practical background of GIS and their application in environmental sciences.

Links between study programme outcomes, course outcomes and criteria of learning achievement evaluation

| Study programme outcomes | Course outcomes | Criteria of learning achievement evaluation |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. Apply quantitative and qualitative methods for environmental monitoring and assessment of the state of the environment and its anthropogenic changes. | 1. Explain the basic concepts and principles of a geographical information systems | Explained the basic concepts and principles of a geographical information systems |
| | 2. Use geographical information systems in a specific application context | Used geographical information systems for environmental monitoring |
| 2. Summarise the key environmental problems, factors determining them and potential threats to the natural environment and human health. | 3. Explain functions, structure and formats of geographic information systems | Explained functions, structure and formats of geographic information systems |
| | 4. Evaluate different geographical information systems data collection approaches and data sources | Evaluated different geographical information systems data collection approaches and data sources |
| | 5. Apply basic cartographic principles, visual variables, and maps summarising the key environmental problems | Applied basic cartographic principles, for mapping and explaining of key environmental problems |

Link between course outcomes and content

| Course outcomes | Content (topics) |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Explain the basic concepts and principles of a geographical information systems | 1. Geographic information systems: concepts and theory 2. History of GIS 3. Components of GIS |
| 2. Use geographical information systems in a specific application context | 4. GIS application capabilities |
| 3. Explain functions, structure and formats of geographic information systems | 5. GIS data models 6. Raster data model 7. Vector data model 8. GIS data collection 9. Development of GIS databases 10. Database management system |
| 4. Evaluate different geographical information systems data collection approaches and data sources | 11. GIS applications in environmental sciences |
| 5. Apply basic cartographic principles, visual variables, and maps summarising the key environmental problems | 12. GIS and cartographic |

Study (teaching and learning) methods

Teaching methods: disquisition, consulting, discussion, case analysis, example provision.
Learning methods: discussion, case study, presentation preparation and presentation, information search and analysis.

Methods of learning achievement assessment

Open questions test, evaluation of laboratory work, presentation and assignment assessment.

Distribution of workload for students (contact and independent work hours)

| | |
|--------------------------|------------|
| Lectures | 30 hours |
| Seminars | |
| Group work | |
| Laboratory work | 45 hours |
| Practical work | |
| Individual students work | 85 hours |
| Total: | 160 |

Structure of cumulative score and value of its constituent parts

Presentations – 10%, Mid – term exam – 15%, laboratory work – 25%, Exam – 50%

Recommended reference materials

| No. | Publication year | Authors of publication and title | Publishing house | Number of copies in | | |
|-----------------|------------------|-----------------------------------------------------------------|------------------------|---------------------|------------------|-----------------|
| | | | | University library | Self-study rooms | Other libraries |
| Basic materials | | | | | | |
| 1. | 2013 | Gadal S., Dèdelè A., Basics of Geographical Information Systems | VDU | Intranetas | | |
| 2. | 2006 | Tumas R. Aplinkos geoinformacijos | Vilnius: Enciklopedija | | 1 | |

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|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--|---|--|
| | | sistemos: vadovėlis aukštųjų mokyklų studentams | | | | |
| 3. | 2005 | Longley P. A., Goodchild M. F., Maguire D. J., Rhind D. W., Geographic Information Systems and Science, 2nd Edition | Wiley | | 1 | |
| 4. | 2005 | Longley P. A., Goodchild M. F., Maguire D. J., Rhind D. W., Geographical Information Systems: Principles, Techniques, Management, and Applications, Second Edition, Abridged | Wiley | | 1 | |

Course programme designed by

Dr. Audrius Dėdelė