Introducing of New Content to Geodesy Courses at the Faculty of Civil Engineering in Sarajevo

SDI Days 2018 and 14th International Conference on Geoinformation and Cartography

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Bologna Declaration

• Bologna Declaration objectives:
  • to establish the European Higher Education Area (EHEA),
  • remove obstacles and enable student mobility across Europe,
  • to strengthen the global attractiveness of European higher education and
  • to establish a common structure of higher education in Europe.

• The first generation of geodesy students at the Department of Geodesy - Faculty of Civil Engineering - University of Sarajevo ("Bologna") was enrolled in academic 2006/07 years.
Implementation objectives of the Bologna Declaration

• the establishment of a system of easily recognizable and comparable academic degrees and diplomas, the introduction of a diploma supplement,

• Higher education is based on three education cycles (undergraduate, graduate and doctoral studies),

• the introduction of a point system such as ECTS, a suitable means of improving student exchange,

• improving the mobility of teachers and students and overcoming obstacles to free movement,
Implementation objectives of the Bologna Declaration

• improvement of European cooperation and quality assurance in order to develop comparable criteria and methodology,
• improving the European dimension in higher education,
• emphasizing the role of a student in developing and managing higher education,
• promoting the attractiveness of the European Higher Education Area,
• lifelong learning
International mobility from the University of Sarajevo beyond the borders of Bosnia and Herzegovina in 2016

- The Erasmus+, Erasmus Mundus, Tempus and CEEPUS programs have greatly contributed to the internationalization of the university and the implementation of reforms in accordance with the Bologna principles.
ERASMUS + projects on the FCE UNSA

• GEOWEB – Modernising geodesy education in Western Balkan with focus on competences and learning outcomes.
  • Partner from University of Sarajevo: Faculty of Civil Engineering (Department of Geodesy and Geoinformatics);

• BESTSDI – Western Balkan Academic Education Evolution and Professional's Sustainable training for Spatial Data Infrastructures.
  • Partner from University of Sarajevo: Faculty of Civil Engineering (Department of Geodesy and Geoinformatics) / Faculty of Agriculture
Faculty of Civil Engineering: New curriculum adopted for 2018/2019

• Undergraduate study:
  • All obligatory items
  • I year:
    • 2 new courses (GIS I, Legislation and Economics),
    • 2 courses - modified curriculum (Field measurements I and II)
  • II year:
    • 6 courses - modified curriculum (Field Measurements III and IV, Theory of adjustment, Theory of Errors, Introduction to Photogrammetry, Programming)
  • III year:
    • 2 new courses (Digital Terrain Modeling, Cartography and Map Projections)
    • 4 courses - modified curriculum (GNSS Positioning, Geodetic Reference Systems, State Survey, Survey Project)
Faculty of Civil Engineering: New curriculum adopted for 2018/2019

• Graduate study:
  • Mandatory (14) and optional (8) courses
  • I year:
    • 7 new courses
      • Web GIS, Geovisization, Precise positioning and navigation - Mandatory,
      • GIS in Spatial Planning, Engineering Geodesy in Mining, Spatial Database and IPP, Spatial Analysis, Reference Systems in Space and Time - Optional
    • 4 courses - modified curriculum
      • Physical Geodesy, Land consolidation, Geodynamic and Deformational Analysis, Precise Industrial Measurements
Faculty of Civil Engineering: New curriculum adopted for 2018/2019

- II year:
  - 4 new courses
    - Methods of technical communication and research - Mandatory,
    - Geostatistics, Geodetic Space Technologies, Geodetic Measurement Systems - Optional
  - 0 modified items
- Master (Graduate) thesis
Changes in the existing curriculum of the Faculty of Civil Engineering - Department of Transport

• Graduate Study

• Course: Planning of Transport and Road Infrastructure supplied with content:
  
• Spatial Data Infrastructure - Concept and Fundamentals
• Spatial Data Interoperability
• Data exchange
• INSPIRE directive and Implementation Rules
Erasmus + project on the UNSA - CIS

- NatRisk-WeB – Development of master curricula for natural disasters risk management in Western Balkans Countries.
  - Partner from University of Sarajevo: Faculty of Civil Engineering

- The new graduate degree program - "Protection of natural disasters" started for the school year 2018/2019 at the UNSA - Center for Interdisciplinary Studies (CIS).
New module: **Protection of natural disasters**

- One year study
- 3 mandatory courses and
- 11 optional courses, of which 3 courses in the field of Geodesy and Geoinformatics
  - Cartography
  - Topographic / cartographic models
  - Spatial Databases and SDI
- Research and Writing of Master Thesis
Subject Course of Space Database and SDI

• Content:
  • Database models and data modeling,
  • Basics of Relational, Object Oriented, Relational, Object Oriented Extensions and XML Models and Databases,
  • Spatial Data Models and Spatial Databases,
  • Spatial language queries, spatial storage and indexing, query processing and optimization, spatial networks,
  • Project management and spatial database implementation,
  • Spatial Data Distribution and Decision Support Systems,
• Trends in spatial database systems,
• Sources of spatial data (public, open access, commercial),
• Spatial Data Infrastructure (SDI) - Basics, Components, SDI Background,
• Standards in geomatics and SDI development,
• Spatial Data Infrastructure and Policy Development in Europe,
• INSPIRE data specifications,
• National Spatial Data Infrastructure.
Conclusion

• Changes go hard
• The emphasis is on the modification of existing curricula
• Elective courses at the Faculty of Civil Engineering are being introduced for the first time - Geodesy and Geoinformatics Department
• New courses require an additional engagement of professors and assistants employed at the faculty
• New courses require the engagement of professors from other faculties and universities
• Made a step forward
Thank you for attention!