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| | **INSTITUT TEKNOLOGI SEPULUH NOPEMBER**<br>**FACULTY OF CIVIL, PLANNING AND GEO ENGINEERING**<br>**DEPARTMENT OF GEOMATICS ENGINEERING**<br>**UNDERGRADUATE PROGRAM** | **Document Code** |

## SEMESTER LEARNING PLAN (SLP)

| **COURSE NAME** | **CODE** | **COURSE GROUP** | **CREDITS (SKS)** | | **SEMESTER** | **Date of Preparation** |
|---|---|---|---|---|---|---|
| Geospatial Information Infrastructure | CM234971 | Geospatial | **T=1** | **P=1** | Elective Course | - |

| **AUTHORIZATION** | **SLP Developer** | **Course Group Coordinator** | **Head of Study Program** |
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| | Prof. Dr. Ir. Bangun Muljo Sukojo, DEA. DESS | Prof. Lalu Muhamad Jaelani, S.T., M.Sc., Ph.D. | Putra Maulida, S.T., M.T., Ph.D. |

| **Learning Outcomes (LO)** | | |
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| | **Expected Learning Outcomes (ELO) that Imposed in the Course** | |
| | ELO-2 | Able to study and utilize science and technology in order to apply it to the areas of expertise in Geodesy and Surveying, Hydrography, Photogrammetry, and Remote Sensing, as well as Geospatial and Land Information, and able to make appropriate decisions from the results of their own work or group work in the form of a final project report or other forms of learning activities whose outcomes are equivalent to the final project through logical, critical, systematic and innovative thinking. |
| | ELO-7 | Able to perform spatial data acquisition using modern measurement methods, geospatial data processing, using industry standard software, and making standard designs and analyses in the fields of Geodesy and Surveying, Hydrography, Photogrammetry and Remote Sensing, as well as Geospatial and Land Information. |
| | ELO-8 | Able to compile scientific reports and provide solutions based on leadership, creativity and communication skills as well as being responsible for the work done. |
| | ELO-10 | Able to work in inter-disciplinary and inter-cultural teams so they can compete at national and international levels. |
| | **Course Learning Outcomes (CLO)** | |
| | CLO-1 | Able to explain the concept of SDI and the components that create SDI |
| | CLO-2 | Able to explain the need for geospatial data and information in SDI |
| | CLO-3 | Able to explain the concepts of metadata, interoperability and feature catalogue |
| | CLO-4 | Able to create geoportal designs |
| | CLO-5 | Able to explain the concepts and methods to evaluate SDI and geoportal |

**Matrix ELO – CLO**

| CPMK | ELO-2 | ELO-7 | ELO-8 | ELO-10 |
|---|---|---|---|---|
| CLO-1 | V | | | V |
| CLO-2 | | V | | |
| CLO-3 | | | V | V |
| CLO-4 | V | | | |
| CLO-5 | | V | V | V |

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| **Course Description** | This course contains material about the basic concepts of Geospatial Information Infrastructure (IIG). The role of geomatics engineering is in designing, building, managing and developing IIG. In IIG's role in Indonesia, related to the sharing and exchanging of geospatial data and information in order to respond to problems and issues related to IIG. |
| **Course Materials** | 1. The IIG concept and its IIG building components.<br>2. The concept of making IIG design and its development process<br>3. Management and development of IIG to support various spatial-based development activities<br>4. IIG and geoportal evaluation models<br>5. Simple geoportal design using commercial and open source software. |
| **References** | **Main:** |
| | 1. Crompvoets, J., Rajabifard, A., et al., 2008. A Multi-view Framework to Assess Spatial Data Infrastructures, Space for Geo-Information (RGI), Wageningen University and Centre for SDIs and Land Administration, Department of Geomatics, The University of Melbourne.<br>2. Darmawan, M., dkk., 2013, Panduan Umum Pembangunan Simpul Jaringan, Badan lnformasi Geospasial.<br>3. GSDl, 2009, SDl Cookbook, Global Spatial Data lnfrastructure (GSDl) lnc.<br>4. Rusmanto, A., dkk., 2014, Petunjuk Teknis Pembangunan Simpul Jaringan, Badan lnformasi Geospasial<br>5. Williamson, l., et al, 2003. Developing Spatial Data lnfrastructures from Concept to Reality, CRC Press. |
| | **Additional :** |
| | 1. Pemerintah Republik Indonesia, 2018, Keputusan Presiden Republik Indonesia Nomor 20 Tahun 2018<br>2. Kresse W., and Danko, D. (2012). Springer Handbook of Geographic Information. Berlin Heidelberg, SpringerVerlag<br>3. Open Geospatial Consortium, OGC Reference Model (ORM), http://www.opengeospatial.org/standards/orm |
| **Lecturer** | Prof. Dr. Ir. Bangun Muljo Sukojo, DEA. DESS |
| **Prerequisite** | Geografic Information System |

| Class/ Week | Lesson Learning Outcome (Sub-CLO) | Evaluation | Forms of Learning, Learning methods,Student Assignments/Task, [ Estimated Time ] | Learning Materials [ References ] | Weight (%) |
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| | | Indicators | Criteria and Form | Offline | Online | | |
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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **1** | Able to explain the definition the overall understanding of geospatial information infrastructure | Accuracy in explaining the definition the overall understanding of geospatial information infrastructure | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | Terms and definitions also an example of Geospatial Information Infrastructure (IIG). | 5 |
| **2** | Able to explain the development of IIG at international and national levels | Accuracy in explaining the development of IIG at international and national levels | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | IIG Developments in the International and Indonesia | 10 |
| **3** | Able to explain the technological components, standards and data in IIG | Accuracy in explaining the technological components, standards and data in IIG | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | • Ecological concept<br>• Ecosystem concept<br>• Carrying capacity of the environment | 5 |
| **4** | Able to explain the components of regulations, policies and institutions and the importance of these components in IIG development | Accuracy in explaining the components of regulations, policies and institutions and the importance of these components in | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [2 x 45']<br>2. Discussion, Task [1 x 45'] | | • Act 4 2011<br>• Perpres 27/2014<br>• Network Node Node of the National Geospatial Information Network (JIGN) | 5 |

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| | | IIG development | | | | | |
| **5** | Able to explain the concept of interoperability and the steps to make it happen | Accuracy in explaining the concept of interoperability and the steps to make it happen | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [2 x 45']<br>2. Discussion [1 x 45'] | | • Data heterogeneity<br>• Harmonization<br>• Interoperability | 5 |
| **6** | Able to explain the concept of metadata | Accuracy in explaining the concept of metadata | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [2 x 45']<br>2. Quiz [1 x 45'] | | • Definition of metadata<br>• ISO 19115<br>• Indonesian national metadata | 10 |
| **7** | Able to explain the concept of a feature catalog | Accuracy in explaining the concept of a feature catalog | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [2 x 45']<br>2. Practice [1 x 45'] | | • Definition of feature catalog<br>• Example feature catalog<br>• Compilation of feature catalogs | 5 |
| **8** | **Midterm Evaluation / Midterm Exam** | | | | | | **45** |
| **9** | Able to explain the concept of OGC in llG. | Accuracy in to explaining the concept of OGC in llG. | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | OpenGlS concept, specificatuons implementations | 5 |
| **10** | Able to explain the concept of web service | Accuracy in explaining the concept of web service | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Practice, Task [1 x 45']] | | • Web map service<br>• Web feature service<br>• Web coverage service<br>• Web processing service | 10 |

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| **11** | Able to explain the understanding of geoportal | Accuracy in explaining the understanding of geoportal | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | Geoportal understanding, function, and the differences between webGIS | 5 |
| **12** | Able to explain the different forms of geoportal and philosophy of development | Accuracy in explaining the different forms of geoportal and philosophy of development | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Practice [1 x 45'] | | Geoportal in Indonesia other countires, local goverment and in ministries/institutions | 10 |
| **13** | Able to explain the procedures and processes of geoportal designing | Accuracy in explaining the procedures and processes of geoportal designing | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Task [1 x 45'] | | Geoportal component and design | 10 |
| **14** | Able to explain the users and their interactions in geoportal | Accuracy in explaining the users and their interactions in geoportal | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Discussion [1 x 45'] | | Business process and users, Use cas IIG for commercial and non-commercial stops | 5 |
| **15** | Able to explain the concepts, Methods and lIG evaluation procedures | Accuracy in explaining the concepts, Methods and lIG evaluation procedures | 1. Completeness of the material<br>2. Depth of explanation and effectiveness of communication | 1. Lecture [1 x 45']<br>2. Task [1 x 45'] | | • Concept of evaluation<br>• Evaluation of readiness<br>• Performance evaluation<br>• SDI readiness index | 10 |
| **16** | **Final Semester Evaluation / Final Semester Examination** | | | | | | **100** |