**COURSE LESSON PLAN**

**Study Program: Geography**

**Subject Title: Applied Remote Sensing**

**Subject Code:** GEOG6080

**Semester: 6**

**Course Credit / Course Hours: 3/3**

**Lecturer: …………………………………………………**

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| **Subject Purposes**  | Students are able to apply spatial technology knowledge in the context of developing or implementing science and technology that examines and applies humanities values related to the area of expertise |
| **Learning Outcomes (LO)** | COGNITIVE1. Students are able to analyze spatial data for regional planning and development by integrating geographic information systems and remote sensing

ATTITUDE1. Students demonstrate a responsibility attitude for work independently in their area of expertise
2. Students demonstrate an interest and curiosity for geosphere phenomena

BASIC SKILLS1. Students are able to apply logical, critical, systematic, and innovative thinking in the context of developing and implementing science and technology that is responsive and consistent with humanities values in their area of expertise
2. Students are able to demonstrate independent, quality, and measurable performance
3. Students are able to make appropriate decisions in solving problems in the field of expertise based on the results of information and data analysis

SPECIFIC SKILLS1. Students are able to extract and process geosphere data and information sourced from remote sensing technology
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| **Sub Learning Outcomes (LO)** | 1. Students are able to understand remote sensing concepts for various applications: urban, water, vegetation, land, air and geology/geomorphology
2. Students are able to understand the types of satellite imagery for thematic applications
3. Students are able to understand remote sensing analysis techniques to extract geosphere phenomena
4. Students are able to design and apply remote sensing analysis methods for selected thematic applications
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| **Subject Topics** | This topic discusses a wide range of advanced remote sensing techniques for various applications including:* Remote sensing for forest management
* Remote sensing for geomorphological surveys / land management
* Remote sensing for urban / residential areas
* Remote sensing for water source
* Remote sensing for weather/climate
* Independent customized project
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**COUSE LESSON PLAN: APPLIED REMOTE SENSING**

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| **Meeting Number** | **LO Code** | **Sub LO Code** | **Topics** | **Learning Methods** | **Learning Materials and References** | **Assessment Method** |
| **Offline** | **Online Learning** |
| **Synchronous** | **Asynchronous** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| 1 | 1.7 | 1.1, 1.2 | Remote sensing for vegetation and land use | * Lectures and discussions
* Reading references
* Discussion
 |  | <https://academic.oup.com/jpe/article/1/1/9/1132900> | * Jones, H.G. and Vaughan, R.A., 2010. *Remote sensing of vegetation: principles, techniques, and applications*. Oxford university press.
* Thenkabail, P.S. ed., 2015. *Land resources monitoring, modeling, and mapping with remote sensing*. CRC Press
* Thenkabail, P., Lyon, J.G., Turral, H. and Biradar, C., 2009. *Remote sensing of global croplands for food security*. CRC Press.
 |  |
| 2 | 1.7 | 1.1, 1.2 | Remote sensing for geomorphology, climate and health area | * Lectures and discussions
* Reading references
* Discussion
 |  | <http://journals.sagepub.com.ezproxy.library.uq.edu.au/doi/pdf/10.1177/0309133309346648>  | * Prost, G.L., 2013. *Remote sensing for geoscientists: image analysis and integration*. CRC Press.
* Smith, M.J. and Pain, C.F., 2009. Applications of remote sensing in geomorphology. *Progress in Physical Geography*, *33*(4), pp.568-582.
* Epstein, P.R., 1998. Health applications of remote sensing and climate modeling. *People and pixels: Linking remote sensing and social science*.
 |  |
| 3 | 1.7 | 1.1, 1.2 | Remote sensing for urban area and water source | * Lectures and discussions
* Reading references
* Discussion
 |  |  | * Mishra, D.R., Ogashawara, I. and Gitelson, A.A. eds., 2017. *Bio-optical Modeling and Remote Sensing of Inland Waters*. Elsevier.
* Thenkabail, P.S. ed., 2015. *Remote sensing of water resources, disasters, and urban studies*. CRC Press.
 |  |
| 4 | 1.7 | 1.1, 1.2 | Reviewing paper for selected applications | * Lecturing about review process on journal or selected paper
* Conducting a search for reference journals
* Reviewing selected journal
* Presenting review results
 |  |  | All sources of scientific journals |  |
| 5 | 1.7 | 1.1, 1.2 | Reviewing paper for selected applications | * Lecturing about review process on journal or selected paper
* Conducting a search for reference journals
* Reviewing selected journal
* Presenting review results
 |  |  | All sources of scientific journals |  |
| 6 | 1.7 | 1.1, 1.2 | Reviewing paper for selected applications | * Lecturing about review process on journal or selected paper
* Conducting a search for reference journals
* Reviewing selected journal
* Presenting review results
 |  |  | All sources of scientific journals |  |
| 7 | 1.7 | 1.1, 1.2 | Reviewing paper for selected applications | * Lecturing about review process on journal or selected paper
* Conducting a search for reference journals
* Reviewing selected journal
* Presenting review results
 |  |  | All sources of scientific journals |  |
| 8 |  |  | **MID TERM EXAM** |  |  |  |  | **Review on paper (20%)** |
| 9 | 1-7 | 1.3, 1.4 | Remote sensing application on selected area | * Students select a topic and conduct consultation sessions to design individual projects
 |  |  | All sources of scientific journals |  |
| 10 | 1-7 | 1.3, 1.4 | Remote sensing application on selected area | * Students construct the research background
 |  |  | All sources of scientific journals |  |
| 11 | 1-7 | 1.3, 1.4 | Remote sensing application on selected area | * Students prepare literature reviews and methods
 |  |  | All sources of scientific journals |  |
| 12 | 1-7 | 1.3, 1.4 | Remote sensing application on selected area | * Students construct results
 |  |  | All sources of scientific journals |  |
| 13 | 1-7 | 1.3, 1.4 | Remote sensing application on selected area | * Student set research report
 |  |  |  All sources of scientific journals |  |
| 14 | 1-7 | 1.3, 1.4 | Presenting result analysis for selected topics (individual) | * Presentation
* Writing an essay for selected topic
 |  |  | All sources of scientific journals | Presentation(40%) |
| 15 | 1-7 | 1.3, 1.4 | Presenting result analysis for selected topics (individual) | * Presentation
* Writing an essay for selected topic
 |  |  | All sources of scientific journals | Presentation (40%) |
| 16 |  |  | **FINAL TERM EXAM** |  |  |  |  | **Essay (40%)** |

**COURSE LESSON PLAN – SUBJECT: APPLIED REMOTE SENSING**

**SEMESTER: 6, SUBJECT CODE: GEOG6080**

**CREDIT SCORE: 3/3, LECTURER: ……………………………………………………**

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| --- | --- | --- |
| **Meeting**  | **Learning Activities** | **Assessment Method** |
| **Offline** | **Online -Synchronous** | **Online - Asynchronous** |
| 1 | * Lectures and discussions
* Reading references
* Discussion
 |  |  | Brief reflection |
| 2 | * Lectures and discussions
* Reading references
* Discussion selected method
 |  |  |  |
| 3 | * Lectures and discussions
* Reading references
* Discussion selected method
 |  |  |  |
| 4 | * Lecturing on selected journal about remote sensing
* Lecturing about review process on journal
* Identifying advance methods on remote sensing
 |  |  | Paper Review (Mid Term Exam) |
| 5 | * Students search for selected reference journals according to their area pf expertise
* Students conduct a study and discuss with the group
* Students make essays / critical review reports on selected journals
 |  |  |  |
| 6 | * Conduct advanced remote sensing technique practicum – spectral analysis and modeling
 |  |  |  |
| 7 | * Conduct advanced remote sensing technique practicum – object-based segmentation and classification
 |  |  |  |
| **MID TERM EXAM (MEETING 8)** |
| 9 | * Students select a topic and conduct consultation sessions to design individual projects
* Conduct discussion and consultation sessions on selected topic
* Prepare a research design
* Read study literature and references
 |  |  | Presentation |
| 10 | * Individual Project
 |  |  |  |
| 11 | * Individual Project
 |  |  |  |
| 12 | * Individual Project
 |  |  |  |
| 13 | * Individual Project
 |  |  |  |
| 14-15 | * Presentation
* Writing an essay for selected topic
 |  |  | Essay (Final Term Exam) |
| **FINAL TERM EXAM (MEETING 16)** |