



**USK**  
UNIVERSITAS  
SYIAH KUALA

**FACULTY OF AGRICULTURE**  
**DEPARTMENT OF SOIL SCIENCE**

**UNDERGRADUATE PROGRAM**

**MODULE HANDBOOK**

Module designation	Applied Geographic Information System (SSOL6015)
Semester(s) in which the module is taught	7 <sup>th</sup> semester
Person responsible for the module	Muhammad Rusdi
Language	Indonesian, English
Relation to curriculum	Elective module for Soil Science Department
Teaching methods	Lecture, small group discussion, presentation
Workload (incl. contact hours, self-study hours)	<ul style="list-style-type: none"> <li>✓ 100 minutes lecture and discussion per week</li> <li>✓ 120 minutes structured tasks per week</li> <li>✓ 120 minutes learn to be independent per week</li> </ul>
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> <li>✓ Students know and understand spatial basics as a tool and method for land data inventory. Able to carry out activities of downloading and acquiring earth observation satellite imagery, improving spatial data and other analysis for geoprocessing purposes.</li> <li>✓ Students are able to explain the concept of spatial analysis and its application and actual application.</li> <li>✓ Students are able to carry out various geoprocessing applications through different data and case studies with accuracy based on data topology.</li> <li>✓ Students are proficient in conducting geoprocessing analysis and combining it with other spatial clients such as remote sensing and drones. Able to present analysis results through layout and data conversion.</li> </ul>
Content	Study and analysis of spatial database development (vector and raster models), spatial analysis models and their applications, GIS for agriculture and industry, environmental management, urban GIS, and disaster management.
Exams and assessment formats	Quiz, assignments, midterm exam, final exam
Study and examination requirements	<ul style="list-style-type: none"> <li>✓ Assignments: 20%</li> <li>✓ Quiz: 20%</li> <li>✓ Midterm exam: 30%</li> <li>✓ Final exam: 30%</li> </ul>

Reading list	<ol style="list-style-type: none"> <li>1. Roosli. 2018. An Indonesian Study of Mixed Methods: An Example of Methodological Triangulation: Cambridge Scholars Publishing <a href="https://www.cambridgescholars.com/product/978-1-5275-1594-9">https://www.cambridgescholars.com/product/978-1-5275-1594-9</a>.</li> <li>2. Rahajo B dan M Ihsan. 2019. Tutorial ArcGIS Desktop, Geosiana Press</li> <li>3. Prahasta, E. 2019. Konsep-konsep dasar sistem informasi geografis, Penerbit ANDI</li> <li>4. ESRI. 2025. Understanding GIS: An ArcGIS Project Workbook. <a href="https://www.esri.com/en-us/esri-press/browse">https://www.esri.com/en-us/esri-press/browse</a></li> <li>5. Penuntun Praktikum Sistem Informasi Geografis. 2021. Lab Penginderaan Jauh dan Kartografi USK</li> <li>6. Kang-Tsung, Chang. 2016. Introduction to Geographic Information Systems. Edisi ke-8. Mc Graw-Hill Education. Singapore</li> <li>7. QGIS. 2025. Resources Books. <a href="https://qgis.org/resources/books/">https://qgis.org/resources/books/</a></li> <li>8. Clark CGA, 2025. Geospatial Research. <a href="https://www.clarku.edu/centers/geospatial-analytics/research/">https://www.clarku.edu/centers/geospatial-analytics/research/</a></li> <li>9. Precisely.2025. Resource center. <a href="https://www.precisely.com/resource-center/">https://www.precisely.com/resource-center/</a></li> <li>10. Gepplanning. 2025, Geoplanning: Journal of Geomatics and Planning. <a href="https://ejournal.undip.ac.id/index.php/geoplanning/index">https://ejournal.undip.ac.id/index.php/geoplanning/index</a></li> <li>11. ArcGISHelp,2025 ArcGIS Help Library. <a href="https://resources.arcgis.com/en/help/main/10.2/">https://resources.arcgis.com/en/help/main/10.2/</a></li> <li>12. Badan Informasi Geospasial. 2025, Geospatial untuk Negeri <a href="https://tanahair.indonesia.go.id/portal-web/">https://tanahair.indonesia.go.id/portal-web/</a>.</li> <li>13. Indonesia Geospasial. 2025 Sistem Informasi Geografi &amp; Penginderaan Jauh. <a href="https://www.indonesia-geospasial.com/">https://www.indonesia-geospasial.com/</a></li> </ol>
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