



UNIVERSITAS PENDIDIKAN INDONESIA

SEMESTER LEARNING PLAN (RPS)

Course Identity

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite	Published
Research Methods in Geographic Information Science	SA305	2	90	Compulsory Course	5	-	2025-09-09 11:26:56

Prepared by Lecturer	Reviewed by QA Team	Approved by Head of Programme
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Course Description and Graduate Learning Outcomes (CPL)

Course Description	Research Methods in Geographic Information Science is a compulsory course for third-year students of the Geographic Information Science Study Programme. The course material covers the identification of geosphere problems, identification of Geographic Information Science problems, formulation of research background, formulation of research problems and questions, formulation of research benefits, formulation of literature review and prior research, formulation of research methods, research design, formulation of data sources, variables and parameters, formulation of population and sample, formulation of data analysis, and writing a research proposal. The product of this course is a research proposal produced by each student.
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Graduate Learning Outcomes (CPL) Assigned to the Course		
1	To demonstrate religious, humanistic, Pancasila-spirited, patriotic, environmentally conscious, and	

	professionally responsible attitudes and behaviours in an independent manner.
2	To be able to master the theoretical concepts of research methods (research background, problem formulation, research objectives and benefits, literature review, research methods, research design, data sources, and data analysis) and to be able to write a research proposal.
3	To be able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology while considering and applying humanistic values appropriate to the field of expertise.
4	To be able to make well-informed decisions in the context of resolving problems in the field of expertise, based on the analysis of information and data.
5	To be able to manage learning independently.
6	To be able to design, develop, produce, utilise, control, and evaluate models of analysis and geospatial information theories based on science and technology.

Course Learning Outcomes (CPMK)		
1	To be able to identify problems in geographic information science encompassing geosphere problems through the use of geospatial information technology.	
2	To be able to understand sample research proposals in the field of geographic information science.	
3	To be able to formulate the components of a research proposal, covering research background, research problem formulation, research benefits, literature review formulation, techniques for searching literature sources, techniques for writing the literature review and for compiling the bibliography, as well as the formulation of methods, research design, research workflow, data sources, variables and parameters, population and research sample, and data analysis techniques.	
4	To be able to produce a research proposal appropriate to the discipline of Geographic Information Science.	

Sub-Course Learning Outcomes		
1	CPMK-1: Students are able to identify and formulate geosphere problems relevant to the use of geospatial information technology.	
2	CPMK-1: Students are able to apply geospatial information technology to map and analyse geosphere problems in depth.	
3	CPMK-2: Students are able to analyse the structure and key components of a geographic information science research proposal.	
4	CPMK-2: Students are able to demonstrate an understanding of the research workflow and the methodology used in the reviewed research proposal.	
5	CPMK-3: Students are able to formulate the research background, research problem, research benefits, and to conduct a search for and compilation of a relevant literature review.	
6	CPMK-3: Students are able to formulate research methods, research design, and data analysis techniques appropriate to the research objectives and the discipline of Geographic Information Science.	
7	CPMK-4: Students are able to compile a complete research proposal with a structure and components consistent with academic standards in the field of Geographic Information Science.	
8	CPMK-1: Students are able to revise and refine the research proposal based on feedback from the lecturer or peers.	

Course Material		
1	Basic concepts of Geographic Information Science research	
2	Research themes in Geographic Information Science	
3	Formulation of research problems in Geographic Information Science	
4	Identification of geosphere problems in the context of Geographic Information Science	

5	Identification of prior research in Geographic Information Science
6	Approaches in Geographic Information Science research
7	Data collection techniques in Geographic Information Science research
8	Research variables in Geographic Information Science
9	Population and research sample in Geographic Information Science
10	Data analysis techniques in Geographic Information Science research
11	Mid-Semester Examination
12	Spatial Statistical Analysis in Geographic Information Science research
13	Preparing a Geographic Information Science Research Proposal
14	Final Semester Examination

Learning Outcomes at End of Course	By the end of the course, students are expected to be able to design a comprehensive research proposal encompassing all key elements of Geographic Information Science research methodology. Students will demonstrate the ability to identify and formulate research problems, construct a strong research background, develop relevant research questions, and design appropriate research methods and designs. As evidence of their learning achievement, students will submit a written research proposal that includes a literature review, research methods, research design, and the planned data analysis. This proposal will serve as the final product reflecting the students' ability to compile and design research that is ready to be implemented at the next stage.
Learning Strategy	Case Method; Team-based Project
Learning Steps	The course on Research Methods in Geographic Information Science is designed to equip students with the skills and knowledge required to design and conduct research in the field of Geographic Information Science. Learning begins with an introduction to the basic concepts of geosphere problem identification and Geographic Information Science, followed by the formulation of relevant research backgrounds, problems, and questions. Students will learn to formulate research benefits, conduct literature reviews and prior research studies, and develop appropriate research methods and designs. Subsequent stages encompass the formulation of data sources, variables, parameters, population, sample, and data analysis. Throughout the

course, students will be guided to systematically compile a research proposal through discussions, group work, and individual exercises.

Semester Learning Plan

Week	Sub-CPMK	Achievement Indicators	Course Material	Assessment	Weight (%)	Learning Method
1	Students are able to identify and formulate geosphere problems relevant to geospatial information technology.	Introduction	Basic concepts of GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test
2	Students are able to identify and formulate geosphere problems relevant to geospatial information technology.	Able to identify geosphere problems in GIS inquiry.	Identification of geosphere problems in GIS context	Participatory	5	Face-to-face; Find relevant sources; Oral test
3	Students are able to identify and formulate geosphere problems relevant to geospatial information technology.	Able to formulate research problems in GIS.	Formulation of research problems in GIS	Participatory	5	Face-to-face; Find relevant sources; Oral test
4	Students are able to analyse the structure and key components of a GIS research proposal.	Able to understand GIS research themes.	GIS research themes	Participatory	5	Face-to-face; Find relevant sources; Oral test
5	Students are able to formulate research methods,	Able to understand prior research in GIS.	Identification of prior research in GIS	Participatory	5	Face-to-face; Find relevant sources; Oral test

	design, and data analysis techniques.					
6	Students are able to formulate research methods, design, and data analysis techniques.	Able to understand approaches in GIS research.	Approaches in GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test
7	Students are able to formulate research methods, design, and data analysis techniques.	Able to understand data collection techniques in GIS research.	Data collection techniques in GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test
8	Mid-Semester Examination (UTS)		Mid-Semester Examination	Essay	15	Face-to-face examination
9	Students are able to formulate research methods, design, and data analysis techniques.	Able to understand research variables in GIS.	Research variables in GIS	Participatory	5	Face-to-face; Find relevant sources; Oral test
10	Students are able to compile a complete research proposal.	Able to analyse population and sample in GIS research.	Population and sample in GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test
11	Students are able to compile a complete research proposal.	Able to apply data analysis techniques in GIS research.	Data analysis techniques in GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test
12	Students are able to formulate research methods, design, and data	Able to conduct spatial statistical analysis in GIS research.	Spatial Statistical Analysis in GIS research	Participatory	5	Face-to-face; Find relevant sources; Oral test

	analysis techniques.					
13	Students are able to formulate research methods, design, and data analysis techniques.	Able to prepare a GIS research proposal.	Preparing a GIS Research Proposal	Participatory	5	Face-to-face; Find relevant sources; Oral test
14	Students are able to revise and refine the research proposal.	Able to prepare a GIS research proposal.	Preparing a GIS Research Proposal	Participatory	5	Face-to-face; Find relevant sources; Oral test
15	Students are able to demonstrate understanding of the research workflow.	Able to prepare a GIS research proposal.	Preparing a GIS Research Proposal	Participatory	5	Face-to-face; Find relevant sources; Oral test
16	Final Semester Examination (UAS)		Final Semester Examination	Performance	15	Face-to-face; Research proposal report

Student Study Time (Workload)

Activity	Synchronous	Asynchronous	Student Preparation	Total
Lectures/Tutorials	14 × 100 min = 1,400 min	14 × 50 min = 700 min	14 × 20 min = 280 min	2,380 min (39.7 hrs)
Project-based Learning	6 × 50 min = 300 min	6 × 50 min = 300 min	6 × 20 min = 120 min	720 min (12.0 hrs)
Discussion	—	—	—	0 min (0.0 hrs)
Total Learning				3,100 min (51.7 hrs)
Participation During Learning	14 × 50 min = 700 min	—	—	700 min (11.7 hrs)
Project Work	4 × 170 min = 680 min	4 × 50 min = 200 min	—	880 min (14.7 hrs)

Assignments	4 × 50 min = 200 min	4 × 50 min = 200 min	–	400 min (6.7 hrs)
Quizzes	4 × 30 min = 120 min	–	–	120 min (2.0 hrs)
Formative				100 min (1.7 hrs)
Summative				100 min (1.7 hrs)
Total Workload				5,400 min (90 hrs)
Ideal Hours				90 hrs
Credits (SKS)				2
Compliance with Credit Hours				Compliant

CPMK Assessment Criteria

No.	CPMK	Taxonomy	Weight	Achievement Criteria
1	To be able to identify problems in geographic information science encompassing geosphere problems through the use of geospatial information technology.	1	35	80% of all students obtain a score of at least 75 (on a scale of 100)
2	To be able to understand sample research proposals in the field of geographic information science.	2	25	80% of all students obtain a score of at least 75 (on a scale of 100)
3	To be able to formulate the components of a research proposal.	3	30	80% of all students obtain a score of at least 75 (on a scale of 100)
4	To be able to produce a research proposal appropriate to the discipline of Geographic Information Science.	6	10	80% of all students obtain a score of at least 75 (on a scale of 100)

Collaborative Assignment Design

Assignment Title	Research Proposal Design
Learning Method	Team-based Project
Assessment Weight	25
Sub-CPMK	Students are able to compile a complete research proposal with a structure and components consistent with academic standards in the field of Geographic Information Science.

Assignment Description

Students are assigned to compile a research proposal design involving problem identification, literature review, research methods, and a data analysis plan. The proposal must be relevant to a research theme in the field of Geographic Information Science (GIS) and must demonstrate a thorough understanding of the techniques to be employed. Students are given the freedom to discuss with peers working on similar research themes during the process of refining their research proposal.

Steps for Completing the Assignment

1. **Determination of Research Topic:** Each student selects a research topic appropriate to the field of GIS, then discusses the ideas and basic concepts to be pursued.
2. **Literature Review:** Conduct a literature review related to the selected topic to understand the context and prior research.
3. **Problem Formulation:** Compile a research problem formulation based on gaps or voids identified in the literature.
4. **Research Method Design:** Determine the appropriate research method, including the research design, data collection techniques, and analysis tools to be used.
5. **Data Analysis Plan:** Plan how the collected data will be analysed and what results are expected.
6. **Proposal Writing:** Compile a complete research proposal in accordance with the specified format, incorporating all components that have been planned.
7. **Revision and Refinement:** Conduct an internal revision session with peers and receive feedback from the lecturer before the final proposal is submitted.

Outputs Produced	Research Proposal Document: A complete research proposal encompassing all main sections (title, background, problem formulation, literature review, research methods, data analysis plan, and bibliography). Proposal Presentation: A PowerPoint presentation summarising the content of the proposal and presenting the research plan systematically.
Assessment Indicators, Criteria, and Weights	Research Topic Selection (20%): Relevance and clarity of the chosen topic. Literature Review (15%): Quality and depth of the literature analysis used as the basis of the research. Problem Formulation (20%): Clarity and critical rigour of the

	research problem formulation. Research Methods (25%): Alignment of the methods with the research objectives and clarity of the procedures to be carried out. Data Analysis Plan (10%): Appropriateness and completeness of the data analysis plan. Proposal Presentation (10%): Ability to present and defend the proposal effectively.
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Implementation Schedule		
Activity	Implementation Time	
Determination of Research Topic	Week 2	
Literature Review	Weeks 3–4	
Research Method Design	Weeks 7–8	
Data Analysis Plan	Weeks 9–10	
Proposal Writing	Weeks 11–12	
Revision and Refinement	Weeks 13–14	
Submission of Final Proposal	Weeks 15–16	

References

References		
1	Yunus, H. S. (2010). Metodologi penelitian wilayah kontemporer. Pustaka Pelajar.	