UNSW Course Outline

BENV7728 Geographical Information Systems and Urban Informatics - 2024

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General Course Information

Course Code : BENV7728
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Arts, Design and Architecture
Academic Unit : School of Built Environment
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Geographical Information Systems and Urban Informatics introduces a series of fundamental

and advanced GIS concepts and methods and their applications in urban studies, planning, public health, environmental planning, and business contexts. You will also learn about types of spatial data and their uses, GIS software functions used for applying spatial analysis methods, and spatial storytelling techniques.

Relationship to Other Courses

Students usually use the skills learnt in this course for other courses such as Geodesign, Transport planning, Landscape capstone course and theses or major projects in city planning or other disciplines.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain Geographical Information System (GIS) concepts, principles/methods, open data, and open software.
CLO2 : Analyse location data and apply spatial analysis methods in Geographical Information Systems (GIS) environments.
CLO3 : Evaluate Geographical Information Systems (GIS) open data and spatial analysis results.
CLO4 : Create a spatial storymap including embedded interactive web maps.

Course Learning Outcomes	Assessment Item
CLO1 : Explain Geographical Information System (GIS) concepts, principles/methods, open data, and open software.	• Computer Lab Assignments • Final Project • Online Quiz
CLO2 : Analyse location data and apply spatial analysis methods in Geographical Information Systems (GIS) environments.	• Computer Lab Assignments • Final Project
CLO3 : Evaluate Geographical Information Systems (GIS) open data and spatial analysis results.	• Online Quiz • Computer Lab Assignments • Final Project
CLO4 : Create a spatial storymap including embedded interactive web maps.	• Computer Lab Assignments • Final Project

Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate

Learning and Teaching in this course

This course implements in-person lectures and lab tutorials through individual and group work to inform and discuss. Lectures provide the basic introduction to key concepts in the course.

Lectures

The lecture material discusses the main elements of these concepts, their interpretations, and critical limitations and gives examples of how they have been used in practice, especially in planning and socio-economic and environmental related problems. An emphasis on the practical application of open-source GIS and spatial analysis tools will provide students with the opportunity to develop disciplinary skills and knowledge to identify suitable applications of GIS to critically analyse spatial issues.

Computer lab tutorials

The weekly computer laboratory classes are designed to introduce students to open-source tools and the methods used by GIS practitioners and deal specifically with the practice of concepts. The lab component is essential for the applied aspects of this course.

Marks and feedback

Marks of the online quiz will be given immediately after the assessment, and correct answers will be provided after the online quiz is closed. Computer lab tasks must be completed and the relevant homeworks to each tutorial must be submitted to the corresponding assignment task in Moodle. These tasks are marked, and feedback will be provided via Moodle.

Feedback meetings are added from 2020 to the course feedback strategy in order to further help students with the final group projects. Students have found these meetings very helpful for significant improvement of their final projects. The feedback meetings will be arranged between the lecturer and groups from week 5. Therefore, students are encouraged to start discussion on the final project within their groups from second week.

Additional Course Information

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Computer Lab Assignments Assessment Format: Individual	20%	Start Date: Not Applicable Due Date: Two weeks after each computer lab tutorial
Final Project Assessment Format: Group	60%	Start Date: Not Applicable Due Date: 09/08/2024 11:55 PM
Online Quiz Assessment Format: Individual	20%	Start Date: Not Applicable Due Date: 24/07/2024 12:00 AM

Assessment Details

Computer Lab Assignments

Assessment Overview

For this assignment you will complete weekly computer lab exercises. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Explain Geographical Information System (GIS) concepts, principles/methods, open data, and open software.
- CLO2 : Analyse location data and apply spatial analysis methods in Geographical Information Systems (GIS) environments.
- CLO3 : Evaluate Geographical Information Systems (GIS) open data and spatial analysis results.
- CLO4 : Create a spatial storymap including embedded interactive web maps.

Detailed Assessment Description

See **Moodle - Assessments hub** for detailed assignment brief.

Assignment submission Turnitin type

Not Applicable

Final Project

Assessment Overview

Working in teams, you will develop a storymap by applying the digital skills and GIS techniques to uncover spatial patterns, discern trends, and/or address spatial challenges. Grading will be done against assessment criteria, accompanied by written feedback. Individual contributions will be assessed.

Course Learning Outcomes

- CLO1 : Explain Geographical Information System (GIS) concepts, principles/methods, open data, and open software.
- CLO2 : Analyse location data and apply spatial analysis methods in Geographical Information Systems (GIS) environments.
- CLO3 : Evaluate Geographical Information Systems (GIS) open data and spatial analysis results.
- CLO4 : Create a spatial storymap including embedded interactive web maps.

Detailed Assessment Description

See **Moodle - Assessments hub** for detailed assignment brief.

For the essay part of this assessment task, you may use AI-based software to research and prepare prior to writing your assessment. You are permitted to use standard editing and referencing functions in word processing software. This is limited to spelling and grammar checking and reference citation generation in the creation of your submission. You must not use any functions that generate or paraphrase or translate passages of text, whether based on your own work or not.
Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text, you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Assessment information

See **Moodle - Assessments hub** for detailed assignment brief.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Online Quiz

Assessment Overview

You will be quizzed on topics covered in the course. Feedback will be provided in the form of the correct answers.

Course Learning Outcomes

- CLO1 : Explain Geographical Information System (GIS) concepts, principles/methods, open data, and open software.
- CLO3 : Evaluate Geographical Information Systems (GIS) open data and spatial analysis results.

Detailed Assessment Description

The quiz questions are designed for assessing students understanding of the pre-lecture and lecture materials as well as in class discussions. The Quiz is multiple-choice with 20% weight of your total mark. 20 random questions will be chosen from a question bank.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

For each of the above assessment items, the marking criteria are published on Moodle. Students are advised to read this information before attempting the assessment tasks.

For the essay part of assessment 2, you may use AI-based software to research and prepare prior to writing your assessment. You are permitted to use standard editing and referencing functions in word processing software. This is limited to spelling and grammar checking and reference citation generation in the creation of your submission. You must not use any functions that generate or paraphrase or translate passages of text, whether based on your own work or not.
Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text, you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Grading Basis

Standard

Requirements to pass course

To pass this course, students need to obtain a mark of at least 50 out of 100.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Lecture	GIS and urban informatics
	Laboratory	Introduction to QGIS
Week 2 : 3 June - 9 June	Lecture	Fundamental GIS concepts and map design principle
	Laboratory	Introduction to Urban and Regional Planning Concepts
Week 3 : 10 June - 16 June	Lecture	Types and dimensions of GIS data
	Laboratory	Data for Urban and Regional Planning
Week 4 : 17 June - 23 June	Lecture	Web mapping and GIS-based dashboards for 2D and 3D data
	Laboratory	Spatial story telling with Story maps
Week 5 : 24 June - 30 June	Lecture	Spatial Analysis and Geocoding
	Laboratory	1. Managing and Monitoring Urban Activities 2. Geocoding
Week 7 : 8 July - 14 July	Lecture	Multi-Criteria evaluation
	Laboratory	Optimizing Your Site Selection Process ArcGIS online tutorial on suitability analysis
Week 8 : 15 July - 21 July	Lecture	Network analysis for Transportation planning
	Laboratory	Tutorial on network analysis
Week 9 : 22 July - 28 July	Lecture	Urban Remote sensing, AI, GIS and SDGs
	Laboratory	Processing remote sensing data within GIS environment
Week 10 : 29 July - 4 August	Lecture	GIS and digital planning tools for Impact assessment, Strategy development and policy making
	Laboratory	Impact Assessment: An Essential Planning Task, Defining and Mapping the Spatial Components of Strategic Planning

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Course Weekly Schedule

Week 1

29th May

GIS and urban informatics - Introduction to QGIS

Week 2

5th June

Fundamental GIS concepts and map design principle

Introduction to Urban and Regional Planning Concepts

Week 3

12th June

Types and dimensions of GIS data

Data for Urban and Regional Planning

Week 4

19th June

Web mapping and GIS-based dashboards for 2D and 3D data

Spatial story telling with Story maps

Week 5

26th June

Spatial Analysis and Geocoding

Feedback meetings for the final project assignment

Week 6 - Flexibility week. There is no class.

Week 7

10th July

Multi-Criteria evaluation

Optimizing Your Site Selection Process

Feedback meetings for the final project assignment

Week 8

17th July

Network analysis for Transportation planning

Feedback meetings for the final project assignment

Week 9

24th July

Urban Remote sensing, AI, GIS and SDGs

Week 10

31st July

GIS for Impact assessment, Strategy development and policy making

Feedback meetings for the final project assignment

Course Resources

Prescribed Resources

Resources will be introduced to students during the lectures.

Recommended Resources

Resources will be introduced to students during the lectures.

Additional Costs

NA

Course Evaluation and Development

Student feedback will be gathered informally via questionnaires distributed to students from week 2 via Moodle. In addition, students are very welcome to provide early feedback to the course convenor from week 2 during the lab tutorial hours. Students are also encouraged to request for meeting with the course convenor or send an email to outline their informal

feedback. Formal feedback will be gathered through myExperience survey close to week 8.

The feedback gathered through formal and informal methods, explained above, have been found invaluable for improving the course content, teaching method and schedule of this course over the last several years.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Sara Shir owzhan		2018 Anita B building	+61 2 9348 0139	Wednesday (morning and 4-5pm) in office, via email on all other days	No	Yes

Other Useful Information

Academic Information

Due to evolving advice by NSW Health, students must check for updated information regarding online learning for all Arts, Design and Architecture courses this term (via Moodle or course information provided).

Please see: https://www.unsw.edu.au/arts-design-architecture/student-life/resources-support/protocols-guidelines for essential student information relating to:

- UNSW and Faculty policies and procedures;
- Student Support Services;
- Dean's List;
- review of results;
- credit transfer;
- cross-institutional study and exchange;
- examination information;
- enrolment information;
- Special Consideration in the event of illness or misadventure;
- student equity and disability;

And other essential academic information.

Academic Honesty and Plagarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without

acknowledgement.

UNSW groups plagiarism into the following categories:

- Copying: Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment without appropriate acknowledgement.
- Inappropriate paraphrasing: Changing a few words and phrases while mostly retaining the original information, structure and/or progression of ideas of the original without acknowledgement. This also applies in presentations where someone paraphrases another's ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.
- Collusion: Working with others but passing off the work as a person's individual work. Collusion also includes providing your work to another student for the purpose of them plagiarising, paying another person to perform an academic task, stealing or acquiring another person's academic work and copying it, offering to complete another person's work or seeking payment for completing academic work.
- Inappropriate citation: Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.
- Duplication ("self-plagiarism"): Submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another university.

The UNSW Academic Skills support offers resources and individual consultations. Students are also reminded that careful time management is an important part of study. One of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and proper referencing of sources in preparing all assessment items. UNSW Library has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW, but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of

UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Use of AI for assessments

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where the use of AI tools, such as ChatGPT, has been permitted by your course convener, they must be properly credited and your submissions must be substantially your own work.

In cases where the use of AI has been prohibited, please respect this and be aware that where unauthorised use is detected, penalties will apply.

Use of AI for assessments | UNSW Current Students

Submission of Assessment Tasks

Turnitin Submission

If you encounter a problem when attempting to submit your assignment through Turnitin, please telephone External Support on 9385 3331 or email them on externalteltsupport@unsw.edu.au

Support hours are 8:00am – 10:00pm on weekdays and 9:00am – 5:00pm on weekends (365 days a year). If you are unable to submit your assignment due to a fault with Turnitin, you may apply for an extension, but you must retain your ticket number from External Support (along with any other relevant documents) to include as evidence to support your extension application. If you email External Support, you will automatically receive a ticket number, but if you telephone, you will need to specifically ask for one. Turnitin also provides updates on their system status on Twitter.

Generally, assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, alternative submission details will be stated on your course's Moodle site. For information on how to submit assignments online via Moodle: https://student.unsw.edu.au/how-submit-assignment-moodle

Late Submission Penalty

UNSW has a standard late submission penalty of:

- 5% per calendar day,
- for all assessments where a penalty applies,
- capped at five calendar days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request Special Consideration as early as possible before the deadline. Support with Time Management is available here.

School Contact Information

beadmin@unsw.edu.au