UNSW Course Outline

BENV7504 Digital Cities - 2024

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General Course Information

Course Code : BENV7504
Year : 2024
Term : Term 1
Teaching Period : T1
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

In Digital Cities, you will explore the breadth of data available to urban designers, planners, and policymakers, using real projects undertaken within the City Futures Research Centre and the School of Built Environment at UNSW. You will become familiar with a range of innovative spatial datasets and investigate how they can be used to improve policymaking. Australian cities

(especially Sydney) will be our laboratory, but international perspectives will also be incorporated. Importantly, you will also critically engage with the politics and power dynamics embedded in the emergence of the Smart City and the complexity associated with data access, knowledge production, and dissemination.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city
CLO2 : Assess the benefits and disadvantages of new data platforms and innovative technologies for analysing spatial and temporal data
CLO3 : Critique and apply cutting-edge public involvement methodologies, techniques and tools for enabling an effective smart city strategy
CLO4 : Use digital technology platforms such as data portals, GIS, digital planning tools, BIM, and 3D visualisations to support the planning process for future developments

Course Learning Outcomes	Assessment Item
CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city	• Smart City Strategy • City data and Indicators • Data-driven Decision Making • Tutorial and online engagement
CLO2 : Assess the benefits and disadvantages of new data platforms and innovative technologies for analysing spatial and temporal data	• Smart City Strategy • Tutorial and online engagement
CLO3 : Critique and apply cutting-edge public involvement methodologies, techniques and tools for enabling an effective smart city strategy	• City data and Indicators • Data-driven Decision Making • Tutorial and online engagement
CLO4 : Use digital technology platforms such as data portals, GIS, digital planning tools, BIM, and 3D visualisations to support the planning process for future developments	• City data and Indicators • Data-driven Decision Making • Tutorial and online engagement

Learning and Teaching Technologies

Moodle - Learning Management System

Additional Course Information

Why take this course?

Taking this course is essential for individuals who aspire to be city-makers and contribute to shaping the 21st-century urban landscape. Here are several compelling reasons why enrolling in this course is valuable:

1. **Navigating Urban Challenges with Transformative Technologies:** City-makers face the task of addressing complex urban challenges. This course equips students to navigate these challenges through new technologies and diverse data, enabling practical, informed decisions in urban development. Emphasizing real-time data, virtual reality, and smart building technologies, the course enhances our understanding of transformative methods for tackling cities and addressing policymakers' challenges.

2. **Cutting-edge Trends Exposure:** Students will be exposed to cutting-edge trends in data collection, modelling, social media, and digital technology. This exposure ensures that they stay ahead of the curve in utilizing the latest tools and methodologies crucial for effective urban planning and management.

3. **Practical Application Through Case Studies:** Through case studies of digital cities, students will witness how leading technologies are applied to create effective and efficient digital urban environments. This practical exposure enhances their ability to apply theoretical knowledge to real-world scenarios.

4. **Hands-on Exploration with Innovative Datasets:** With access to innovative nationwide spatial datasets through the Australian Urban Research Infrastructure Network (AURIN) and the NSW Digital Twin, students engage in hands-on exploration. This practical component allows them to apply theoretical knowledge to real-world datasets.

5. **Critical Thinking of Ethical Considerations:** Delving into real-time data, virtual reality, and smart building technologies, the course examines their transformative impact on the social, economic, and environmental facets of urban life. However, it equally scrutinizes concerns related to data ownership, access, and transparency. These ethical considerations take centre stage in discussions about planning digital integration into city processes, ensuring a comprehensive exploration of both opportunities and limitations.

6. **Political and Power Dynamics Awareness:** The course encourages students to critically examine the political and power dynamics inherent in data definition, management, and dissemination processes. This awareness is crucial for city-makers to navigate the

complexities of urban governance and policy implementation.

In summary, this course offers a comprehensive and practical education that not only equips individuals with the technical skills needed for urban development but also fosters a critical and ethical mindset essential for responsible city-making in the digital age.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Smart City Strategy Assessment Format: Individual	20%	
City data and Indicators Assessment Format: Individual	30%	
Data-driven Decision Making Assessment Format: Individual	35%	
Tutorial and online engagement Assessment Format: Individual	15%	

Assessment Details

Smart City Strategy

Assessment Overview

You will develop a Smart City Strategy Roadmap and Framework. Work will be marked against assessment criteria detailed in the class. Individual written feedback will be provided online.

Course Learning Outcomes

- CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city
- CLO2 : Assess the benefits and disadvantages of new data platforms and innovative technologies for analysing spatial and temporal data

City data and Indicators

Assessment Overview

You will generate insight and use digital strategies to inform and enhance the crisis response by government authorities. Marking will be done against assessment criteria and individual written feedback will be provided online.

Course Learning Outcomes

- CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city
- CLO3 : Critique and apply cutting-edge public involvement methodologies, techniques and tools for enabling an effective smart city strategy
- CLO4 : Use digital technology platforms such as data portals, GIS, digital planning tools, BIM, and 3D visualisations to support the planning process for future developments

Data-driven Decision Making

Assessment Overview

You will use available data layers in your study area and deploy visualisation tools to support the planning process for future developments. Marking will be done against assessment criteria and individual written feedback will be provided online.

Course Learning Outcomes

- CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city
- CLO3 : Critique and apply cutting-edge public involvement methodologies, techniques and tools for enabling an effective smart city strategy
- CLO4 : Use digital technology platforms such as data portals, GIS, digital planning tools, BIM, and 3D visualisations to support the planning process for future developments

Tutorial and online engagement

Assessment Overview

Active engagement across tutorial sessions and via the course moodle platform. Marking will be done against assessment criteria and individual written feedback will be provided online.

Course Learning Outcomes

- CLO1 : Identify new technologies and how best to use them in the social planning and management of a contemporary city
- CLO2 : Assess the benefits and disadvantages of new data platforms and innovative technologies for analysing spatial and temporal data
- CLO3 : Critique and apply cutting-edge public involvement methodologies, techniques and tools for enabling an effective smart city strategy
- CLO4 : Use digital technology platforms such as data portals, GIS, digital planning tools, BIM, and 3D visualisations to support the planning process for future developments

General Assessment Information

Grading Basis

Standard

Requirements to pass course

It is expected that students will attend all nine days of the course, as the course is designed to build on class discussions and participation is essential. Any prospective absence must be discussed with the course convenor.

We live in a world of deadlines, and you must take responsibility for the on-time submission of all work. Penalties are enforced for late submission (e.g., losing a percentage of marks for every day late without prior justification and agreement with the lecturer). Late assignments result in the loss of not less than **5% per day** (including weekend days) of the total mark of the specific course component after marking. Extensions may be given for the whole class based on changes in our progress or schedule. For personal or family circumstances and verifiable medical concerns (work commitments are not an acceptable reason), please seek special consideration and keep the course convener in the loop: https://www.student.unsw.edu.au/special-consideration.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Smart Cities - Introduction. Detailing origins, definition, strategies, and critiques of smart cities and fundamentals of city data . Class discussion: Critical thinking of smart city principles.
Week 2 : 19 February - 25 February	Lecture	Smart cities use cases - block 1 (smart campus). Review and discuss use cases of smart city implementation – smart campus. Class discussion: Exploring the immersive tour of UNSW smart campus
Week 3 : 26 February - 3 March	Lecture	Smart cities use cases - block 2 (smart communities). Review and discuss use cases of smart city implementation – smart communities, local government, and national strategies
Week 4 : 4 March - 10 March	Lecture	Sensors, intelligent sensing & IoT. Introduction and analysis to city data: sources, scales, methods, and strategies for data collection Class tutorial on sensing urban microclimate.
Week 5 : 11 March - 17 March	Lecture	Data infrastructure, governance & ethics. Review and tutorial of spatial data infrastructure data governance, privacy, security & ethics
Week 6 : 18 March - 24 March	Other	This is the flexibility week and therefore there will not no class.
Week 7 : 25 March - 31 March	Lecture	Data-driven decision making on housing and transport Review and discussion of data-driven decision making for addressing city challenges such as housing and transport.
Week 8 : 1 April - 7 April	Lecture	Digital communication and planning tools I (dashboards & portals). Introduction and tutorial of visualization of city data and dashboard.
Week 9 : 8 April - 14 April	Lecture	Digital communication and planning tools II (digital platforms) Introduction and tutorial of open-source digital communication platforms for data-driven city planning
Week 10 : 15 April - 21 April	Lecture	Digital Twin of the Built Environment Review and tutorial of digital twin of the built environment, its use and role in urban design and planning

Attendance Requirements

You are expected to be regular and punctual in attendance at all classes for the School of Built

Environment courses in which you are enrolled. If and where individual courses have specific attendance requirements, these will be stated in the course outline.

If you do not attend, engage, or participate in scheduled class activities, including lectures, tutorials, studios, labs, etc, you run the risk of failing a course.

If illness or unexpected circumstances beyond your control prevent you from completing a task on time, or substantially disturb your assessment performance, you should apply for Special Consideration, as soon as practicable, accompanied by appropriate documentation.

No special consideration will be provided if you miss out on essential course information and materials, or if you miss assessment tasks and deadlines due to unexplained absences or an unapproved lack of attendance.

You may be advised by the Course Convenor to withdraw from the course if significant learning activities are missed.

Course Resources

Course Evaluation and Development

We encourage and support students to maintain regular contact with the course convenor to provide informal feedback throughout the course. For specific issues or detailed feedback, please arrange a meeting with the course convenor via email.

In this course there is an option for students to provide anonymous feedback via the course's Moodle page, which is directly sent to the convenor. As a final step, students are invited to share their insights and experiences by completing the MyExperience survey. The feedback gathered each year is integral to the continuous enhancement and development of the course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Negin Nazarian		#2026, Lv2 H13 West Wing			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