

 FLORIDA ATLANTIC UNIVERSITY	NEW COURSE PROPOSAL Undergraduate Programs		UUPC Approval <u>2-23-26</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Urban & Regional Planning College Charles E. Schmidt College of Science <i>(To obtain a course number, contact erudolph@fau.edu)</i>		
Prefix URP Number 4702	<i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i> Lab Code	Type of Course <div style="border: 1px solid red; padding: 2px;">Lecture</div>	Course Title AI Applications in Design & Planning
Credits <i>(See Definition of a Credit Hour)</i> 3	Grading <i>(Select One Option)</i> Regular <input checked="" type="radio"/> Sat/UnSat <input type="radio"/>	Course Description <i>(Syllabus must be attached; see Template and Guidelines)</i> This undergraduate course examines the intersection of Geodesign—a collaborative, data-driven approach to urban planning using GIS and stakeholder input—and Artificial Intelligence (AI). Students explore how AI tools such as machine learning, generative AI, and digital twins enhance planning and design through simulation, prediction, and sustainability. The course moves from conceptual foundations to practical applications, ethics, and case studies, emphasizing how these technologies address today's urban challenges	
Effective Date <i>(TERM & YEAR)</i> Spring 2027	Prerequisites, with minimum grade* No prerequisites		Corequisites N/A
		Registration Controls <i>(Major, College, Level)</i>	
*Default minimum passing grade is D-. Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course			
WAC/Gordon Rule Course <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <small>WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines.</small>		Intellectual Foundations Program (General Education) Requirement <i>(Select One Option)</i> None <small>General Education criteria must be indicated in the syllabus and approval attached to the proposal. See Intellectual Foundations Guidelines.</small>	
Minimum qualifications to teach course MLA, MURP, or PhD in Urban Planning, Architecture, Urban Design			
Faculty Contact/Email/Phone Stephanie Wakefield, Jun Wang swakefield@fau.e		List/Attach comments from departments affected by new course	
Approved by Department Chair <u>DMitsova</u> College Curriculum Chair <u>[Signature]</u> College Dean <u>[Signature]</u> UUPC Chair <u>Korey Sorge</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____			Date 02/10/2026 2/11/26 <u>2/13/26</u> 2-23-26 2-23-26 _____ _____

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.



FLORIDA ATLANTIC UNIVERSITY

URP 4702 AI Applications in Design & Planning 3 Credit(s) Spring 2027 - 1 Full Term

Instructor Information

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Course Description

This undergraduate course examines the intersection of **Geodesign**—a collaborative, data-driven approach to urban planning using GIS and stakeholder input—and **Artificial Intelligence (AI)**. Students explore how AI tools such as machine learning, generative AI, and digital twins enhance planning and design through simulation, prediction, and sustainability. The course moves from conceptual foundations to practical applications, ethics, and case studies, emphasizing how these technologies address today's urban challenges.

Course Learning Objectives

1. Understand core concepts of Geodesign and AI in urban contexts
2. Analyze AI's role in enhancing planning tools like digital twins and simulations
3. Evaluate ethical, social, and technical challenges of AI in planning
4. Apply conceptual knowledge of AI to solve urban planning problems through readings, discussions, and a final project

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct [University Regulation 4.007](#).

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter

– however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Course Evaluation Method

- Participation and Weekly Discussions: 20%
- Reading Reflections (Weeks 2-12): 20% (short 300-word responses)
- Midterm Paper: 20% (on conceptual themes)
- Group Assignments (e.g., case studies): 20%
- Final Project: 20% (group presentation on an AI/Geodesign application)

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

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Attendance is mandatory even in an online class. Students are expected to access the Canvas course page at least three times per week during the semester. If you are unable to meet this requirement, prior notice must be given at least one week before the anticipated missed module. Failure to do so may result in missed coursework regardless of the reason. If you miss a week due to an unanticipated event, it is your responsibility to notify the instructor via email in a reasonable amount of time. **It is expected that a student contacts the instructor within one week following an unanticipated absence.**

Religious Accommodation Policy Statement

In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out- of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[University Regulation 4.002](#) of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late Work, and Incompletes

Late submissions for discussions and assignments will be accepted; however, **10 points will be deducted for each 24 hours past the deadline**. For example, if the assignment is due at 11:59 PM and you submit it at 12:01 AM, you have already lost 10 points.

Policy on Recording Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject.

Recording class activities other than class lectures, including but not limited to student presentations (whether individually

or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited.

Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. [\[Policy 12.16 Artificial Intelligence\]](#). Class policies regarding AI use are determined by the individual faculty member. Some faculty may permit AI use in some assignments but not others, while others may prohibit it entirely in their course. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

AI Encouraged Policy:

The use of AI to assist in work assigned on this specific course is encouraged for various purposes. The instructor hereby permits the use of AI to assist in work assigned for this course, unless the instructor expressly indicates AI is not permitted on a particular assignment. Use must be properly documented and [cited](#) per instructor guidelines.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment. Failure to comply with the requirements related to the use of AI may constitute a violation of the [Florida Atlantic Code of Academic Integrity, Regulation 4.001](#).

Proper Citation: If the use of AI is permitted for a specific assignment, the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit <https://fau.edu/ai/citation>

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, goto <http://www.fau.edu/counseling/>

Student Support Services and Online Resources

[Center for Learning and Student Success \(CLASS\) Counseling and Psychological Services \(CAPS\)](#)
[FAU Libraries](#)
[Math Learning Center](#)
[Office of Information Technology Helpdesk](#) [Center for Global Engagement](#)
[Office of Undergraduate Research and Inquiry \(OURI\)](#)
[Science Learning Center](#) [Speaking Center](#)
[Student Accessibility Services](#)
[Student Athlete Success Center \(SASC\) Testing and](#)

Title IX Statement

In any case involving allegations of sexual misconduct, you are encouraged to report the matter to the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at <https://www.fau.edu/ocr9/title-ix/>. You may also contact Victim Services at victimservices@fau.edu or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297- CAPS.

Course Topical Outline

Week	Topics	Assigned Readings / Videos	Assignments
1	Introduction to Geodesign and AI in Urban Planning Overview of course; definitions of Geodesign; intro to AI (ML, generative AI) in urban planning; historical context (GIS to smart cities).	- Steinitz, C (2012) <i>A Framework for Geodesign</i> , Ch.1. - Sanchez, T (2023) "Planning with Artificial Intelligence," APA Report. - Video: <i>What is Geodesign?</i> (ESRI, 5 min).	In-class discussion on urban tech. Post one AI-in-planning question (end of week).
2	Conceptual Foundations of Geodesign in Urban Design Core principles: iterative processes, impact models, decision-making; sustainability and resilience; GIS overview.	- Steinitz, C (2012) Ch. 2 <i>Six Models</i> . - Miller, W (2012) "Introducing Geodesign." - Video: <i>Geodesign Framework Overview</i> (Carl Steinitz).	<i>Reading Reflection #1</i> (300 words): How does Geodesign differ from traditional planning/design? Due Week 3.
3	AI Fundamentals and Their Relation to Cities AI basics (ML, NLP, neural nets, LLMs); urban data (IoT, satellite imagery); bias and ethics.	- Cai, M (2021) "NLP for Urban Research." - Vaswani et al (2017) "Attention Is All You Need." - R2D3: <i>Visual Intro to ML</i> .	<i>Reading Reflection #2</i> (300 words): One urban challenge AI could address. Due Week 4.
4	Symbiotic Relationship Between AI and Geodesign Generative AI for scenario modeling; AI in GIS and Geodesign tools.	- Fu, X (2024) "NLP in Urban Planning." - Nishant et al (2020) "AI for Sustainability." - Video: <i>AI & Architecture: An Experimental Perspective</i> (2021).	<i>Reading Reflection #3</i> (300 words): How AI enhances Geodesign. Due Week 5. Form groups for case study.
5	Digital Twins in Urban Planning (Part 1) Intro to digital twins; AI integration; city applications.	- White, G. et al (2021) "A Digital Twin Smart City." - Pereira, D (2023) "Virtual Singapore." - Video: <i>What is a Digital Twin?</i> (IBM, 3 min).	<i>Reading Reflection #4</i> (300 words): Benefit of digital twins. Due Week 6. <i>Group Assignment #1</i> : Case study on Virtual Singapore (2 pp). Due Week 7.
6	Digital Twins in Urban Planning (Part 2) AI in digital twins: prediction, optimization, resilience.	- Shahat, E et al (2021) "City Digital Twin Potentials." - Bai, O et al (2025) "Hangzhou City-Brain." - Video: <i>NVIDIA Digital Twin AI Agents</i> (2025).	<i>Reading Reflection #5</i> (300 words): Challenges in implementing digital twins. Due Week 7.
7	Autonomous Vehicles and the Autonomous City AI in AVs; impacts on urban design and equity; Geodesign for AV planning.	- Duarte, F & Ratti, C (2018) "Impact of AVs on Cities." - Fraedrich, E et al (2019) "Transition Pathways to Automated Driving."	<i>Reading Reflection #6</i> (300 words): Evaluate equity issues in AV adoption. Due Week 8. <i>Midterm Paper</i> : 5 pp essay on AI/Geodesign themes. Due Week 9.
8	AI for Mobility and Traffic Management Traffic optimization, forecasting, mobility equity.	- Hammon, M (2024) "AI Traffic Management in DFW." - Teale, C (2022) "AI Cameras for Bus Lanes." - Nie, T et al (2025) "LLMs in Transportation."	<i>Reading Reflection #7</i> (300 words): Geodesign approach to AI mobility. Due Week 9.
9	AI, Sustainability, and Environmental Management AI/Geodesign for hazards, sustainability, and resource planning.	- Vinuesa, R et al (2020) "AI and SDGs." - Fluet, J (2021) "Data Centers Evolved."	<i>Reading Reflection #8</i> (300 words): AI and SDG links. Due Week 10. <i>Group Assignment #2</i> : Helsinki digital twin (3 pp). Due Week 11.

Week	Topics	Assigned Readings / Videos	Assignments
10	Citizen Engagement and Governance with AI/Geodesign AI in participatory planning; ethics and transparency.	- Descant, S (2024) "Cities Using AI for Transparency." - Brinkley, C & Stahmer, C (2024) "Using NLP on City Plans."	<i>Reading Reflection #9</i> (300 words): AI in participatory planning/design. Due Week 11.
11	Infrastructure and Predictive Maintenance AI/Geodesign in asset management, zoning, and optimization.	- Blanco, JL et al (2018) "AI: Construction Tech Frontier." - Liang, X et al (2024) "Human-in-the-Loop ML for Vacant Properties."	<i>Reading Reflection #10</i> (300 words): Human-AI collaboration in infrastructure. Due Week 12.
12	Challenges and Ethical Considerations Data privacy, bias, interoperability, and future of AI/Geodesign.	- Sanchez, TW et al (2024) "Ethical Concerns of AI in Planning." - Green, B (2022) "Flaws of Human Oversight Policies." - APA (2024) "Planning Ethics and Generative AI."	<i>Reading Reflection #11</i> (300 words): Solution to one ethical challenge. Due Week 13.
13	AI System Impacts on Urban Futures Environmental, labor, and economic impacts of AI systems.	- Crawford, K (2021) <i>Atlas of AI</i> (excerpt). - Saenko, K (2023) "Generative AI's Carbon Footprint."	<i>Final Project Proposal</i> : 1-page outline. Due Week 14.
14	Conclusion and Project Work Review and final project workshop.	None (focus on projects).	Continue final project; in-class peer feedback.
15	Final Presentations and Reflections Group presentations; wrap-up and future trends.	None.	<i>Final Project</i> : Group presentation & 5-page report (AI/Geodesign application). Due in class.