

Subject Description Form

Subject Code	ARCH601
Subject Title	Reconstructing Architectural Knowledge with Advanced Technologies
Credit Value	3
Level	6
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject provides foundational knowledge to AI, machine learning, BIM, GIS of advanced technologies. It also critically investigates how advanced technologies are transforming both the object and method of traditional architectural inquiry. It moves beyond traditional methodologies to explore how technologies like AI, machine learning, BIM, GIS, and IoT are creating new epistemologies for understanding, interpreting, and reconstructing traditional architectural understanding. The subject prepares researchers to pioneer interdisciplinary approaches that blend historical scholarship with technological innovation.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a) Analyze the theoretical implications of technological shifts on traditional architectural knowledge and digital paradigms. b) Apply appropriate advanced technologies to specific traditional architectural research problems, selecting and justifying methodological choices. c) Critique the limitations and biases embedded within technological approaches to traditional reconstruction and interpretation. d) Reconstruct architectural traditional narratives using multi-layered technological analysis that challenges established historiographic boundaries. e) Design innovative research frameworks that integrate computational methods with traditional archival/ scholarship.

Subject Synopsis/ Indicative Syllabus	This subject examines how advanced technologies are transforming architectural historiography, moving from foundational theories of knowledge to practical digital methodologies. It begins by interrogating how computational tools reshape historical epistemology, then explores specific applications: AI and machine learning for analyzing imagery and texts; BIM for intelligent historical modeling; GIS for spatial and temporal mapping; IoT for heritage sensing; and digital archives alongside VR/AR for reconstruction and experience. Each module pairs technical instruction with critical discussion of ethical limits, interpretive biases, and the nature of evidence. The subject culminates by synthesizing these digital methods into new frameworks for scholarly research, publication, and the future of traditional practice.																	
Teaching/Learning Methodology	This subject is delivered primarily through Lectures or Project seminars or tutorials focused on the core theoretical debates and methodological frameworks at the intersection of AI and historiography. This formal instruction must be supplemented by substantial, critical self-study by students of the curated scholarly texts, case studies, and technical literature recommended by the subject lecturers. Students will each complete a series of critical analysis assignments based on set readings and emerging research. Each student will also undertake a significant, self-directed research project. This project will involve the application of an AI methodology to a defined traditional architectural question, using relevant digital tools and archives. These analytical and research exercises will provide students with hands-on experience in negotiating the epistemological challenges of the field and will require them to critically put theory into practice through the development of a rigorous, hybrid scholarly argument.																	
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <tr> <td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr> <tr> <td>a</td><td>b</td><td>c</td><td>d</td><td>e</td></tr> </table>						Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					a	b	c	d	e
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		a	b	c	d	e												

	1. Assignment	50	✓	✓	✓		
	2. Project report and presentation	50	✓	✓	✓	✓	✓
	Total	100 %					
	Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: Student will be assessed by two components: an Assignment (50%), and Project report & presentation (50%). The students will be required to conduct extensive reading after the lecture to complete an assignment. The assessment of the studies with respect to the understanding of the relevant subject matters, including the principles, methodologies, and techniques, by providing answers to the assignment questions. Moreover, an individual project and presentation is designed to assess the students' understanding on the critical assessment and effective communication of the results of data analysis in solving real world problems. A letter grading system will be used to assess students' performance. Students must attain at least a grade of D in the final grade to achieve a passing grade.						
Student Study Effort Expected	Class contact:						
	▪ Lectures / Project seminars or tutorials					39 Hrs.	
	Other student study effort:						
	▪ Project					30 Hrs.	
	▪ Self-Study					36 Hrs.	
	Total student study effort					105 Hrs.	

Reading List and References	<u>Reference books</u> • Picon, A. (2010). <i>Digital Culture in Architecture.</i> • Carmo, M. (2017). <i>The Second Digital Turn.</i> • M. Christine Boyer (1996). <i>CyberCities.</i> • Drucker, J. (2021). <i>The Digital Humanities Coursebook.</i> • Graham, S. et al. (2016). <i>Exploring Big Historical Data.</i> • Batuman, B. (2020). <i>The Architecture of the Cloud.</i> • Apollonio, F.I. (2016). <i>Handbook of Research on Emerging Digital Tools for Architectural Surveying, Modeling, and Representation.</i> • White, R. (2010). <i>What Is Spatial History?.</i> • Anderson, C. (2008). <i>The End of Theory.</i> Journals • <i>Digital Scholarship in the Humanities, Journal of the Society of Architectural Historians (JSAH), International Journal of Architectural Computing (IJAC), Virtual Archaeology Review.</i>
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