The University of Jordan
School of Engineering

Department	Course Name	Course Number	Semester
Mechanical Engineering	Technology of the Built Environment	0934349	

2005 Course Catalog Description

Instructors

Name	E-mail	Sec	Office Hours	Lecture Time		

Text Books

	Text book 1	Text book 2
Title	Architectural technology*	
Author(s)	Emmitt, S.	
Publisher, Year, Edition	John Wiley and Sons., 2012	
* The text book is available as an e-book at the electronic library of the University (http://ju.coe.deep-knowledge.net). After you sign in, go to: ProQuest Ebook Central Database and search for: Architectural Technology).		

References

Books & readings

Leach, N. (2002). Designing for a digital world.
Goodhouse, A. (2017) When Is the Digital in Architecture? Sternberg Press
Oxman, R., & Oxman, R. (Eds.). (2014). Theories of the Digital in Architecture (Vol. 99). Abingdon: Routledge.
Carpo, M. (Ed.). (2013). The digital turn in architecture 1992-2012. John Wiley & Sons.
Menges, A., & Ahlquist, S. (2011). Computational design thinking: computation design thinking. John Wiley
& Sons.
Gerber, D. J., & Ibañez, M. (Eds.). (2015). Paradigms in computing: making, machines, and models for design
agency in architecture. eVolo Press.
Garber, R. (2014). BIM design: realising the creative potential of building information modelling. John Wiley
& Sons.
Jabi, W. (2013). Parametric design for architecture. Laurence King Publishing.
Hensel, M., Menges, A., & Weinstock, M. (2013). Emergent technologies and design: towards a biological paradigm for architecture. Routledge.
Kieran, S., & Timberlake, J. (2004). Refabricating architecture: How manufacturing methodologies are poised to transform building construction. McGraw Hill Professional.
Kolarevic, B., & Parlac, V. (Eds.). (2015). Building dynamics: exploring architecture of change. Routledge.
Brownell, B. E., & Swackhamer, M. T. (2015). Hypernatural: Architecture's new relationship with nature. Princeton Architectural Press.
Linn, C. (2014). Kinetic architecture: design for active envelopes. Images publishing.
Schröpfer, T. (2012). Material design: informing architecture by materiality. Walter de Gruyter.
Leach, N., Turnbull, D., & Williams, C. J. (2004). Digital tectonics.

	Lynn, G. & Gage, M. F. (2010). Composites, surfaces, and software: high performance architecture. Yale School of Architecture. Dunn, N. (2012). Digital fabrication in architecture. Laurence King. Meredith, M., & Sasaki, M. (2008). From control to design: parametric/algorithmic architecture. Actar-D. Andia, A., & Spiegelhalter, T. (2014). Post-parametric automation in design and construction. Artech House Retsin, G. (2019). Discrete: Reappraising the Digital in Architecture. John Wiley & Sons.
Journals	
Internet links	

Prerequisites

Prerequisites by topic	
Prerequisites by course	
Co-requisites by course	-
Prerequisite for	

Topics Covered

Week	Topics	Chapter in Text
1, 2	Introduction Physical Design Generators Social Design Generators	Fundamentals of Architectural Technology (from text book)
3, 4, 5	Regulatory Design Generator Humane Design Generator Physical Interfaces	
6, 7	The Art of Detailing The Art of Specifying The Art of Informing	
8	Assembling the Parts Living with Buildings Disassembly and reuse	
9	Selected topics in contemporary architectural technology	Latest Technologies in Architecture
10	Selected topics in contemporary architectural technology	
11	Selected topics in contemporary architectural technology	
12-15	Selected topics in contemporary architectural technology	

Mapping of Course Outcomes to ABET Student Outcomes

NAAB	Course Outcomes
(NAAB C.1.)	Understanding of the theoretical and applied research methodologies and practices used during the design process.

(NAAB C.6.)	Understanding of the techniques and skills architects use to work collaboratively in the building design and construction process and on environmental, social, and aesthetic issues in their communities.
(NAAB B.7.)	Understanding of the basic principles involved in the appropriate selection and application of building envelope systems relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.
(NAAB B.8.)	Understanding of the basic principles used in the appropriate selection of interior and exterior construction materials, finishes, products, components, and assemblies based on their inherent performance, including environmental impact and reuse.
(NAAB B.9.)	Understanding of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems.

Evaluation

Assessment Tools	Expected Due Date	Weight
Participation and Assignments		10 %
Research		20 %
Midterm Exam		20 %
Final Exam		50 %

Contribution of Course to Meet the Professional Components

- Understanding of the established and emerging systems, technologies, and assemblies of building construction, and the methods and criteria architects use to assess those technologies against the design, economics, and performance objectives of projects.
- Understanding the integrated relationship between technology, design, user requirements, regulatory requirements and codes, site conditions, building systems and other considerations of the built environmental.

Remarks

I. Minimum Student Materials	Lab. Manual, class handouts, engineering calculator.
II. Attendance	Attendance of classes is obligatory. Absence must be verified according to the university's regulation.
III. Quizzes	There will be a number of unannounced quizzes during the semester. Students are expected to be ready to take a quiz any time they have a lab. There will be no make-up quizzes.
IV. Report	●The report must represent an individual work of each subgroup. All reports should be submitted on the due date. The Reports should be collected at the beginning of the laboratory on the due date. Late report will NOT be accepted (i.e., it will be awarded a zero). Please write only on one side of the page. Your name and ID number should be clearly written on first page. Clearly mark your answers in a box (Never use a red pen in your work). Staple the pages together. Copying any text or graphics from another group's report may be viewed as an attempt of plagiarism, and will be heavily penalized. All cases of academic dishonesty will be handled in accordance with university policies and regulations. ●Reports should be written on paper of standard size (A4, size 21 cm x 29.7 cm). The cover should have the title and students' names and numbers. On the cover page of the report, rewrite the title at the middle of the top. ●The report should proceed as follows: 1.Title Page 2.Objective(s) as points 3.Apparatus containing schematic drawings if necessary 4.Introduction and brief theory 5.Procedure as steps

	6.Results containing tables, figures…etc. if necessary 7.Discussion of Results 8.Conclusions 9.References 10. Appendices if necessary

Updated by ABET Committee, 2020