AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Introduction to Building Information Modelling							
Course Code		MCE573		Couse Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	198 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		This course addresses the principles of building information modeling. The course also develops the key concepts of BIM and their relationship to digital design, detailing, and construction. Students will learn how to efficiently manage projects through BIM by developing, coordinating and communicating design intend as well as to convey data necessary for further building analysis such as materials take off, MEP, and structures.							
Course Content		Building Information Modelling (BIM) is revolutionizing design processes through the construction industry, and security is no exception. Just as Computer Aided Design (CAD) represented a sea change in how drawings are produced and shared, BIM, with 3D modeling capabilities, will deliver an equivalent or greater impact to the industry. This course presents a basic grounding in the technology and its benefits, potential applications in security, and likely implementation issues. Widespread adoption of 3D modeling enabled complex geometries and spatial relations to be tested, refined, and documented; gradually digital design moves beyond being a representational tool and is starting to have an impact on the design process and methodology. Iterative and non-linear design workflows are now much more flexible due to the evolving programs architects are adopting, with the concept of parametric simultaneously enabling precision with constraints while allowing for ambiguity and adaptability with outcome. Rather than designing “dead” geometry, we are constructing “live“ relationships and constraints that make a design adaptable and flexible. A design is no longer simply described through geometry, but rather defined through relationships of components in mathematical terms.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Project Based Study, Individual Study, Problem Solving					
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Final Examination	1	50
Seminar	1	15
Project	2	35

Recommended or Required Reading	
1	SACKS, R. -- TEICHOLZ, P. -- EASTMAN, C. BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. USA: John Wiley & Sons, 2011. 648 p. ISBN 978-0-470-54137-1.
2	TARDIF, M. -- SMITH, D. Building Information Modeling: A Strategic Implementation Guide for Architects, Engineers, Constructors, and Real Estate Asset Managers. USA: John Wiley & Sons, 2009. 216 p. ISBN 978-0-470-25003-7.
3	Building Information Modeling (BIM): A framework for Structural Design, by Nawari & Kuenstle, CRC press ISBN-13: 978-1482240436, ISBN-10: 1482240432, CRC Press, Taylor and Francis Group. http://www.crcpress.com/; spring 2015. By N. Nawari & M. Kuenstle.
4	Fundamentals of Building Construction, by Allen, Edward, Wiley.
5	http://wikihelp.autodesk.com/Revit/enu/20127
6	http://www.designreform.com
7	http://www.revitcity.com
8	http://www.cadplan.co.za/index.html

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to course syllabus
2	Theoretical	Information Technology development in AEC Industry
3	Theoretical	Principles and advantages of this innovative approach
4	Theoretical	Construction Project Delivery Methods
5	Theoretical	Introduction to BIM Fundamentals
6	Theoretical	Project Submission and presentation
7	Theoretical	Project Submission and presentation
8	Theoretical	Current BIM Technologies (Revit)
9	Theoretical	Barriers to BIM implementation

10	Theoretical	Linking of Vital information into the BIM Model
11	Theoretical	4D BIM - multidimensional planning of a construction process
12	Theoretical	5D BIM - advanced methods for cost analysis, automated quantity take off, - clash detection
13	Theoretical	Object cooperation in a BIM project lifecycle, roles of individual stakeholders and other integrated aspects (Health and Safety, Facility management, HVAC, MEP,..)
14	Theoretical	Review
15	Theoretical	Project Submission and presentation
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	15	5	3	120
Seminar	1	25	3	28
Project	2	13	3	32
Final Examination	1	15	3	18
			Total Workload (Hours)	198
			[Total Workload (Hours) / 25*] = **ECTS**	8

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	Sound understanding of these concepts and principles of BIM
2	Understand BIM basics and benefits
3	Describe how BIM can be used as a communication and collaboration tool, and its contributions to scheduling, estimating, and facilities management.
4	Manufacturers BIM objects
5	Explain the process of implementing BIM and how BIM-based designs for structural, mechanical, electrical, plumbing, communications, security, fire protection fit into the overall construction document fabric.
6	Learn and experience project solutions in a non-linear workflow and their relationships to the integrated design practices.
7	Understand the basic barriers to BIM implementation
8	Understand the innovative project procurement methods and their effects in the construction industry
9	Understanding the content of information in BIM-based projects as well as 2D and 3D information as well as 4B, 5B, 6B, and 7B
10	Understand the use of multi-dimensional knowledge base of BIM model in project and construction management

Programme Outcomes *(Civil Engineering Master)*

1	To be able to develop expertise knowledge in a Civil engineering area founded on their graduate competence.
2	To be able to use the theoretical and practical expertise knowledge gained in their specialty area.
3	To be able to use the information, problem solving and / or practical skills from the field, in interdisciplinary studies.
4	To be able to create new knowledge by integrating their knowledge area with the knowledge coming from different disciplines; and solve problems that need expertise by using scientific research methods
5	To be able to solve the problems related to his/her area by using appropriate research methods
6	To be able to devise a problem in their specialty area, develop a solution methodology, solve the problem, and interpret the results and take action if necessary
7	To be able to criticize the knowledge in their specialty area, guide the learning process, and independently direct high level studies
8	To be able to systematically communicate the recent developments in their specialty area and their own studies to groups both inside and outside their specialty area, orally, in writing and visually
9	To be able to use computer software at a level required by their specialty area with drawing upon information and communication technology at a high level
10	To be able to introduce scientific, technological, social and cultural advancements in the field of civil engineering and to contribute to the process of being an information of the society and to sustain it.
11	To be conscious of professional and ethical responsibility and contribute to the establishment of this consciousness.
12	To be able to protect social, scientific, and ethical values during collection, interpretation, and dissemination stages of the data associated with their specialty area; instruct and supervise these values
13	To be able to use at least one foreign language in a level to follow current developments related to the field.

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
P1	5	4	5	4	5	4	5	4	5	4
P2	4	4	4	5	4	5	4	5	4	5
P3	5	4	5	5	5	4	5	4	5	5
P4	4	4	4	4	4	5	4	5	4	5
P5	5	4	5	5	5	4	5	4	5	4
P6	4	4	4	4	5	5	4	5	5	4
P7	5	4	5	5	4	4	5	4	4	4
P8	4	4	4	5	5	5	4	5	4	4
P9	5	4	5	4	5	4	5	4	4	4
P10	4	4	4	5	5	5	5	5	5	4
P11	5	4	5	5	5	5	4	4	4	4
P12	5	4	5	5	4	5	5	5	5	4
P13	5	4	5	5	5	5	4	4	4	4