School/Faculty/Institute	Faculty of Arts, Design and Architecture	
Program	B.Sc. in Architecture	Elective

Course Code	ARC 476			
Course Title in English	BIM in Architectural Design			
Course Title in Turkish	Mimari Tasarımda YBS(BIM)			
Language of Instruction	English			
Type of Course	Flipped			
Level of Course	Undergraduate			
Semester	Spring			
Contact Hours per Week	Lecture: 3	Recitation:	Lab:	Studio:
Estimated Student Workload	128 hours per semester.			
Number of Credits	5 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	None			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To comprehend the background and current impact of BIM in practice and discover BIM fundemantals such as clash detection and work-sharing.			
Course Description	The course adopts a process based approach to BIM education, teaching common multi-software, multi-disciplinary workflows at a basic level. Revit Architecture will be the BIM medium of choice. However training Revit modelers is not the aim of the course. Instead, the focus will be on making students comfortable and productive in BIM related projects, and have an increased understanding of the roles taken by all the partners involved, whether they are modeling application documents in Revit, reviewing projects on Navisworks or designing a unique element in Rhinoceros. A strong emphasis on interoperability will be preserved throughout the course, an exercise which will both introduce students to information sharing among BIM partners and how they can integrate other design tools such as Rhinoceros with Revit. Students will work in teams to experiment worksharing and different angles of being in a BIM team. They will develop conceptual prototypes based on their ideas, and try to transform such abstract information in the digital-material environment of Revit. Developing basic Revit skills is a major aspect of the course. Students are expected to be comfortably navigating the software after completion. The aim of the course is to build a strong framework and pave the path for guided self-learning.			
Course Description in Turkish	BIM eğitimine süreç odaklı yaklaşan bir derstir. Yaygın kullanılan çok disiplinli, çoklu yazılımlı iş akışları giriş düzeyinde verilecektir. Tercih edilen BIM ortamı Revit'tir. Ancak dersin amacı Revit modelcileri yetiştirmek değil, katılımcıları, BIM ile entegre projelerde, proje içerisindeki rollerinden bağımsız olarak rahat ve üretken hale getirmektir. BIM sürecinde, Revit üzerinde uygulama dökümanları üretmek, Navisworks üzerinde proje revizyonu yapmak veya Rhinoceros ortamında özel bir nesne tasarlamak gibi, farklı rollerin nasıl dağıldığı konusundaki anlayışı artırmak hedefler arasındadır. Program süresince karşılıklı çalışabilirlik vurgusu korunacaktır. Hem BIM ortamında bilgi paylaşımı, hem de Rhinoceros ve Autocad gibi programlar ile Revit arasındaki iş akışları çalışılacaktır. Takım çalışması ile iş paylaşımı modelleri deneyimlenecektir. Soyut			

	tasarım girdilerini, sayısal ve malzeme verilerini içeren BIM ortamına dönüştürme süreci çalışılacaktır. Giriş seviyesinde Revit öğrenmek dersin amaçlarından biridir. Katılımcıların programın çalışma biçimlerine hakim olması hedeflenmektedir. Temel amaç BIM için gelişime açık bir altyapı kazandırmaktır.
Course Learning Outcomes and Competences	1. comprehend BIM in it's theorical, historical and economical entirety; 2. use Revit at an introductory level; 3. integrate Revit with Rhinoceros and Autocad; 4. work in teams in BIM through common workflows.

Relation to Program Outcomes and Competences: N=None   S=Supportive   H=Highly Related

Program Outcomes and Competences	Level	Assessed by
	N/S/H	Reviews, HW, Assignment.
1. Ability to read, write and speak effectively in Turkish and English, equivalent to a B2 European Language Passport Level in English.	H	
2. Ability to question and interpret ideas considering diverse points of view; gather and use data, develop concepts related to people, places and the environment, and make individual decisions.	H	
3. Ability to use appropriate graphical methods including freehand and digital drawing techniques, (ECDL advanced) in order to develop ideas in addition to communicate the process of design.	H	
4. Ability to use fundamental principles of architectural design considering the place, climate, people, society as factors, and simultaneously express present principles in relevant precedents.	N	
5. Understanding of architectural principles belonging to global and local cultures shaped by the climatic, technological, socioeconomic, cultural factors, in addition to principles of historic preservation while developing architectural and urban design projects.	N	
6. Understanding the theories and methods used to describe the relationship between human behavior and physical environment; and concurrently understanding different needs, values, behavioral norms, social and spatial patterns of different cultures.	N	
7. Ability to apply various stages of design processes considering the client and user needs, which include space and equipment requirements besides site conditions and relevant laws and standards.	H	
8. Understanding the role of applied research in determining function, form and systems and their impact on human conditions and behavior.	S	
9. Understanding of the basic principles of static and dynamic structural behavior that withstand gravity and lateral forces, in addition to the evolution and applications of structural systems.	S	
10. Ability to apply the principles of sustainability in architectural and urban design projects that aim to preserve the natural and historic resources and provide healthful environments.	S	
11. Ability to apply the fundamental principles of building and safety systems such as mechanical, electrical, fire prevention, vertical circulation additionally to principles of accessibility into the design of buildings.	S	
12. Understanding the basic principles in the selection of materials, products, components and assemblies, based on their characteristics together with their performance, including their environmental impact and reuse possibilities.	H	
13. Ability to produce a comprehensive architectural project from the schematic design phase to design development phase, while integrating structural systems, life safety and sustainability principles.	H	
14. Understanding the principles of environmental systems such as energy preservation, active and passive heating and cooling systems, air quality, solar orientation, day lighting and artificial illumination, and acoustics; in addition to the use of appropriate performance assessment tools.	S	
15. Ability to choose appropriate materials, products and components in the implementation of design building envelope systems.	S	
16. Ability to understand the principles and concepts of different fields in multidisciplinary design processes and the ability to work in collaboration with others as a member of the design team.	H	

17. Understanding the responsibility of the architect to organize and lead design and construction processes considering the environmental, social and aesthetic issues of the society.	H	
18. Understanding the legal to responsibilities of the architect of the architect effecting the design and construction of a building such as public health and safety; accessibility, preservation, building codes and regulations as well as user rights.	H	
19. Ability to understand the ethical issues involved in the design and construction of buildings and provide services for the benefit of the society. In addition to the ability to act with social responsibility in global and local scales that contribute to the well being of the society.	N	
20. Understanding the methods for competing for commissions, selecting consultants and assembling teams, recommending project delivery methods, which involve financial management and business planning, time management, risk management, mediation and arbitration.	H	

Prepared by and Date	**İrem Korkmaz 11.03.2020**	
Semester	**Spring 2019-2020**	
Name of Instructor	**Abdulkadir Eren Öztürk**	
Course Contents	**Week**	**Topic**
	1.	**Roadmap of the course + discussion: what is BIM**
	2.	**Phases of a BIM project and how it differs from other common processes**
	3.	**Revit Control Board and Revit fundemantals**
	4.	**Mass modeling, plans, sections, elevations**
	5.	**Interoperability discussion: What are BIM software, when are software BIM.**
	6.	**Rhinoceros to Revit workflow excercise**
	7.	**Revit library and families**
	8.	**Revit walls and floor slabs**
	9.	**Revit windows and doors**
	10.	**Floorplans**
	11.	**Documentation: Annotation and sheets**
	12.	**Worksharing fundemantals among architects and other disciplines, Navisworks control board**
	13.	**Autocad-Rhinoceros-Revit workflow exercise**
	14.	**Team work exercise**
	15.	**Final Assessment**
	16.	**Final Assessment**
Required/Recommended Readings	**Recommended Reading:** **BIM and Integrated Design: Strategies for Architectural Practice, Randy Deutsch 2011.** **BIM Design: Realising the Creative Potential of Building Information Modelling, AD, Richard Garber.** **The Impact of Building Information Modelling, Ray Crotty.** **BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers, R. Sacks, C. Eastman, G. Lee, P.M. Teicholz 2008.**	
Teaching Methods	**BIM in Architectural Design has a process based approach to teaching.** **Lectures and discussions will take place to build a framework for BIM in general, and basic exercises will be used to demonstrate discussed issues. This theorical work is necessary for every beginner in the field of BIM to eliminate common misconceptions and getting familiar with unique aspects, processes and challenges of BIM projects. Difference in representation of information in abstract design tools and BIM will be experienced. Model preparing, importing and exporting among these programs will be learned.**	

Homework and Projects	2 assignments
Laboratory Work	Yes
Computer Use	Yes
Other Activities	-
Assessment Methods	Performance in studio and attendance: 40 Assignment1: 20 Assignment2: 40
Course Administration	GSM: +90 533 490 2685 Email: aberenozturk@gmail.com 80% attendance is compulsory for a successful outcome. Academic Dishonesty and Plagiarism: YÖK Disciplinary Regulation.

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lecture	14	2	3	1	84	A*(B+C+D)
	Lab etc.					0	
	Midterm(s)					0	A*(B+C+D)
	Assingment, Project, Presentation, Jury	2	20	2		44	A*(B+C+D)
	Final Examination					0	A*(B+C+D)
	Total Workload					128	
	Total Workload/25					5,12	
	ECTS					**5**	