COURSE INFORMATON					
Course Title	*Code*	*Semester*	*L+P Hour*	*Credits*	*ECTS*
Rehabilitation Engineering	BME517		(3+0+0)	3	10

Prerequisites	-

Language of Instruction	English
Course Level	Master's Degree
Course Type	Technical Elective
Course Coordinator	Prof. Ali Ümit Keskin
Instructors	Assist. Prof. Gokhan Ertas
Assistants	
Goals	To provide knowledge on rehabilitation engineering
Content	Application of biomedical engineering analysis and design expertise to overcome disabilities and improve quality of life. Investigation of common disabilities and assistive technologies. Exploration of the relationship between engineering innovation, the engineering design process, the human-technology interface, and the physical medicine and rehabilitation medical community. Unmet technological needs and design solutions.

Course Learning Outcomes	**Program Learning Outcomes**	**Teaching Methods**	**Assessment Methods**
1) Knowledge of application of biomedical engineering analysis and design expertise to overcome disabilities and improve quality of life.	2,4,5,6,7,11	1,2,4	A,C,D
2) Exploration of the relationship between engineering innovation, the engineering design process, the human-technology interface, and the physical medicine and rehabilitation medical community.	2,4,5,6,7,11	1,2,4	A,C,D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
Assessment	A: Testing, B: Experiment, C: Homework, D: Project

Methods:	

COURSE CONTENT		
Week	**Topics**	**Study Materials**
1	Application of biomedical engineering analysis expertise to overcome disabilities and improve quality of life.	Lecture Notes, Articles
2	Application of biomedical engineering design expertise to overcome disabilities and improve quality of life.	Lecture Notes, Articles
3	Investigation of common disabilities and assistive technologies.	Lecture Notes, Articles
4	Investigation of common disabilities and assistive technologies.	Lecture Notes, Articles
5	Engineering innovation process	Lecture Notes, Articles
6	Engineering innovation process	Lecture Notes, Articles
7	MID-TERM	Lecture Notes, Articles
8	Engineering design process	Lecture Notes, Articles
9	Engineering design process	Lecture Notes, Articles
10	Human-technology interface	Lecture Notes, Articles
11	Human-technology interface	Lecture Notes, Articles
12	Student Presentations on unmet technological needs and design solutions	Lecture Notes, Articles
13	Student Presentations on unmet technological needs and design solutions	Lecture Notes, Articles
14	Student Presentations on unmet technological needs and design solutions	Lecture Notes, Articles

RECOMMENDED SOURCES	
Textbook	Albert M. Cook and Janice M. Polgar. Assistive Technologies (Fourth Edition) Principles and Practice. Elsevier, 2015.
Additional Resources	-

MATERIAL SHARING	
Documents	-
Assignments	-
Exams	-

ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-terms	1	50
Homework	10	20
Presentation	1	30
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		**100**

COURSE CATEGORY	Expertise/Field Courses

	COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution					
		0	1	2	3	4	5
1	Ability to reach wide and deep knowledge through scientific research in the field of Biomedical Engineering, evaluate, interpret and apply.					**X**	
2	Ability to use scientific methods to cover and apply limited or missing knowledge, and to integrate the knowledge of different disciplines to identify, define, formulate solutions to complex engineering problems.				**X**		
3	Ability to construct Biomedical Engineering problems, develop methods to solve the problems and use innovative methods in the solution.				**X**		
4	Ability to develop new and/or original ideas, tools and algorithms; develop innovative solutions in the design of system, component or process.					**X**	
5	Ability to have extensive knowledge about current techniques and methods applied in Biomedical Engineering and their constraints.				**X**		
6	Ability to design and implement analytical modeling and experimental research, solve and interpret complex situations encountered in the process.					**X**	
7	Ability to use a foreign language (English) at least at the level of European Language Portfolio B2 in verbal and written communication.					**X**	
8	Ability to lead in multidisciplinary teams, develop solutions to complex situations and take responsibility.				**X**		
9	Ability to pass process and the results in Biomedical Engineering field, in national and international area in or outside of the field, systematically and clearly in written or oral form.				**X**		
10	Awareness of the social, legal, ethical and moral values and environmental dimensions. The ability to conduct research and implementation work within the framework of these values.				**X**		

11	Awareness of the new and emerging applications in Biomedical Engineering field, and the ability to examine them and learn if necessary.					**X**	
12	Ability to read, understand, present, critise research work and conduct original theoretical or applied research.				**X**		

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	12	3	36
Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Midterm examination	2	3	6
Homework	5	6	30
Presentation	1	20	20
Final examination	1	3	3
Total Work Load			240
Total Work Load / 25 (h)			9.6
ECTS Credit of the Course			10