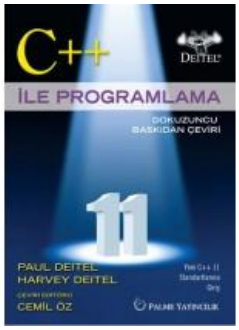
NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Computer Programming	BİM-213	2/I	2+0+2	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Purpose of the computer programming course is; develop students' problem solving skills and programming abilities by teaching them C++ language which is modern, most common oop language and used in academic and business areas.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Know C++ terminology 2. Know OOP concepts 3. Develop Object Oriented programs 4. Analysis any C++ program 5. Test any C++ program
Content of the Course	:	Object oriented programming and generic programming techniques, C++ basic members,functions, pointers,class concept, data abstraction and other object oriented concepts

<table>
<tr><td>Course Book</td><td>1. C++ Programming(Paul Deitel, Harvey Deitel,Çeviri Editörü : Cemil Öz, Translate from 9. Pres PALME, 2016)
 
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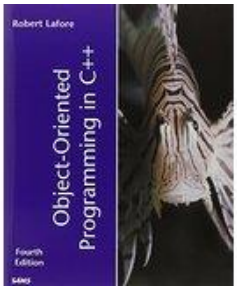
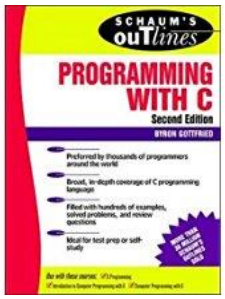
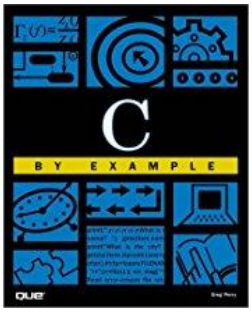
<tr><td>Other Sources</td><td>1. Object-Oriented Programming in C++ (4.Press) , Robert LAFORE
2. Programming With C, Byron S. GOTTFRIED
3. C By Example, Greg PERRY
 

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<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab. Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
</table>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**				**2**			**3**		**4**		**5**		
			Very Low				Low			Medium		High		Very High		
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	3	1	1	1	5	1	3	4	3	1	1	1	2	1	2	1
DK-2	3	1	1	1	5	4	3	4	3	1	1	1	2	1	2	1
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DK-4	1	3	5	1	5	1	3	3	5	1	1	1	2	1	2	1
DK-5	1	1	5	1	5	1	3	3	5	1	1	1	5	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Computers and improvment of their usage, basic hardware and software informations, introduction to operation systems, network and computer network, internet, cable/wireless communication.	
2	Computer systems used in marine. Examples of the use of computer and computerized systems in shipping.	
3	Symbolic computation. Programming languages : a) programming languages' description and their improvement b) examples to programming languages and optional usings.	
4	Using ready programming systems : a) Examples to finished softwares, b) Using computer as word processor (Word etc.).	
5	Using ready program systems: c) Using of computational tables in computer(Lotus, Exce Quatpro etc.), scientific visualization, preparing presentation.	
6	Using ready program systems: d) data storage, e) network systems,communication with computer (Web, internet).	
7	Enter to C++ programming language, basic members of C++.	Programming.
8	Control structures	Programming.
9	Midterm	
10	Input Output process	Programming.
11	Functions	Programming.
12	Arrays	Programming.
13	Pointers ve String	Programming.
14	Class Concept and Data abstraction	Programming.
15	Operator Overloading	Programming.
16	Inheritance and Composition of Classes	Programming.

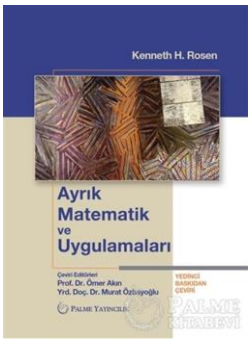
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	2	30
Application	15	2	30
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	28.02.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Discrete Mathematic	BİM-214	2/I	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Purpose of the course is; improve students' mathematical modelling and abstract thinking skills by teaching them fundemental mathematical structures and methods which are used in computer engineering study field.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows computer mathematic. 2. Knows proving methods and apply them. 3. Knows correlation and functions and apply them to problems. 4. Knows graph problems and solutions and to able to apply them to problems. 5. To able to examinate problems from a scientific perpective.
Content of the Course	:	Computer arithmetic, algorithms, logical circuit design, finite state machines from formal perpective. Proof methods between subjects, graphic theory, trees, recur, combination problems, counting methods, and finite state machines.

<table>
<tr><td>Course Book</td><td>1. Discrete Mathematic and Applications (K.H.Rosen, Translation Editors : Prof.Dr.Ömer Akın, Yrd.Doç.Dr.Murat Özbayoğlu, PALME)
 
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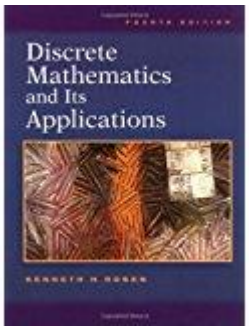
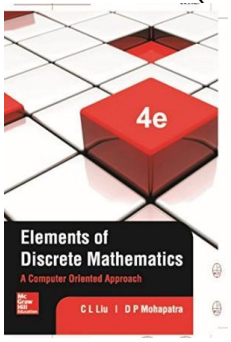
<tr><td>Other Sources</td><td>1. Discrete Mathematıcs (K.H. Rosen)
2. Elements Of Discrete Mathematıcs (C.L. Liu)
 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<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
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		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**				**2**			**3**		**4**			**5**	
			Very Low				Low			Medium		High			Very High	
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	5	4	2	1	3	4	1	1	1	1	1	1	2	1	2	1
DK-2	5	4	2	1	3	4	1	1	1	1	1	1	2	1	2	1
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DK-4	5	4	2	1	3	4	1	1	1	1	1	1	2	1	2	1
DK-5	5	4	2	1	3	4	1	1	1	1	1	1	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Introduction to Discrete Mathematic	Problem Solving
2	Mathematical Prof Methods	Problem Solving
3	Clustering Theory and Clustering Algebra	Problem Solving
4	Correlation and Operations	Problem Solving
5	Functions	Problem Solving
6	Functions	Problem Solving
7	Cage Structures and Boolean Algebra	Problem Solving
8	Cage Structures and Boolean Algebra	Problem Solving
9	Midterm	
10	Graph Concept	Problem Solving
11	Graph Concept	Problem Solving
12	Trees	Problem Solving
13	Graph Concept and Applications	Problem Solving
14	Replication Correlations	Problem Solving
15	Replication Correlations	Problem Solving
16	Finite State Machines	Problem Solving

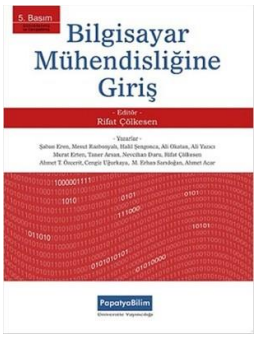
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	01.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Introduction to Computer Engineering	BİM-215	2/I	2+0+0	2	2

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Purpose of the course is; Giving fundemental informations which belong to computer engineering subjects and earn basic informations/concepts to person about lectures which were given througout his/her education.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Learn goal of the lectures that he/she will take in his/her comp. eng. education. 2. Have common information about computer engineering.
Content of the Course	:	Basic concepts in computer engineering, boolean algebra, algorithms and flow diagram, programming languages, operation systems, computer architecture and hardware, computer network and internet, count system and code, software engineering, data structures and models, database management system and SQL, hardware engineering.

<table>
<tr><td>Course Book</td><td>1. Introduction to Computer Engineering , Rıfat Çölkesen
 
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<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab. Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
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1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**			**2**			**3**	**4**		**5**				
			Very Low			Low			Medium	High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	3	1	1	1	5	1	3	4	3	1	1	1	2	1	2	1
DK-2	3	1	1	1	5	4	3	4	3	1	1	1	2	1	2	1

WEEKLY TOPICS	
Week	**TOPICS**
1	Fundemental Concepts in Computer Engineering
2	Boolean Algebra
3	Boolean Algebra
4	Algorithms and Flow Charts
5	Programming Languages
6	Operation Systems
7	Microprocessors and Assembly Programming
8	Computer Network and Internet
9	Midterm
10	Count and Code Systems
11	Software Engineering
12	Software Engineering
13	Data Structures and Models
14	Data Structures and Models
15	Database Management System and Hardware
16	Hardware Engineering

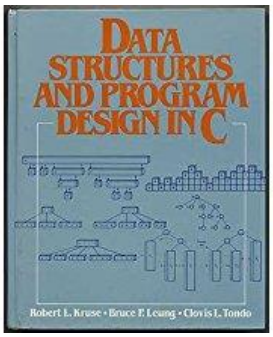
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	2	30
Application	-	-	-
Studying Period out of Course			
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	1	1
Individual Study for Mid-Term	1	1	1
Final Exam	1	1	1
Individual Study for Final Exam	1	27	27
TOTAL WORKLOAD	60 Hour		
ECTS OF COURSE	Total workload / 30 = 60 / 30 = 2		2 Credit

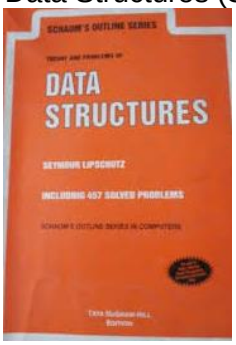
Last update date	01.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Data Structures and Algorithms	BİM-221	2/II	2+0+2	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to enable students to understand the methods of data presentation and storage in computer programming, sort data in a Data Group, reach the desired data most effectively, to know the basic index and graph algorithms and to realize these algorithms.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Know fundemental algortihm analysis 2. Know basic data structures in computer programming. 3. Develop program by using data structure. 4. Apply recursive approach. 5. Apply sorting and searching algorithms. 6. Apply basic graph and index algorithms.
Content of the Course	:	Basic concepts in algorithms, algorithm analysis, recursion logic, lists, queue, heap, tree data structures, search and sorting algorithms and basic index and graph algorithms are described in this course. The students will be taught the methods used in organizing, accessing and organizing data while implementing information system projects and the advantages/disadvantages of each other. In this course, it will be ensured that this information will be improved through programming projects on the applications of data structures and algorithms.

<table>
<tr><td>Course Book</td><td>1. Data Structures and Algorithms (Rıfat Çölkesen – PAPATYA 2002 ANKARA)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Data Structures and Program Design in C (Robert Kruse, C.L. Tondo, Bruce Leung)
2. Theory and Problems of Data Structures (S. Lipschutz)
 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Sheet No	Program Qualifications	Course Contribution Level				
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1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level.		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**			**4**			**5**		
	Very Low		Low					Medium			High			Very High		
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	4	5	2	3	5	4	2	1	2	3	3	3	2	1	2	1
DK-2	4	5	2	3	5	4	2	1	2	3	3	3	2	1	2	1
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DK-4	4	5	2	3	5	4	2	1	2	3	3	3	2	1	2	1
DK-5	4	5	2	3	5	4	2	1	2	3	3	3	2	1	2	1
DK-6	4	5	2	3	5	4	2	1	2	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO ALGORITHMS - Introduction to Algorithms - Basic Concepts	Program development
2	ALGORITHM ANALYSIS - Algorithm Analysis - RAM Model	Program development
3	QUEUE DATA STRUCTURE AND RELATED LİSTS - Related Lists - Queue Data Structure - Priority Queue - Circle Queue	Program development
4	STACK DATA STRUCTURE - Stack data structure - Related Stacks	Program development
5	RECURSION - Recursion Definition and Recursive Tracking - Recursive Algoritm Design	Program development
6	TREE DATA MODEL - Basic Concepts about Tress - Keeping Trees on RAM - Binary Trees and Accessing Nodes	Program development
7	SEARCHING ALGORITHMS - Binary Search and Binary Search Trees	Program development

	- Algorithms for Binary Search Trees - Balanced Trees and AVL Tree Structure	
8	SEARCHING ALGORITHMS - Hash Tables - Hash Functions - Open Adressing	Program development
9	MİDTERM	
10	SORTING ALGORITHMS - Basic Concepts - Insertion Sorting - Selection Sort	Program development
11	SORTING ALGORITHMS - Bubble Sort - Merge Sort - Quick Sort	Program development
12	SORTING ALGORITHMS - Heap Sort	Program development
13	SORTING ALGORITHMS - Comparing Algorithms	Program development
14	DIRECTORY PROCESSING - Simple Directory Matching Algorithm - Rabin-Karp Algorithm - Huffman Codification	Program development
15	BASIC GRAPH ALGORTIHMS - Graph Presentation - Depth-First Search - Breath-First Search	Program development
16	BASIC GRAPH ALGORTIHMS - Shortest Path Problem ve Dijkstra Algorithm - Minimum Spanning Tree Problem ve Kruskal’s Algorithm	Program development

ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	2	30
Application	15	2	30
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	04.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Object Oriented Programming	BİM-222	2/II	1+0+2	2	2

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to teach problem solving and structural programming techniques using Java, to enable students to comprehend research methods, to have positive and scientific views and ideas and to prepare the groundwork and to make them think deeply and deeply.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Develop programms by using JAVA. 2. Knows object-oriented programming conceps. 3. Develop programms by design graphical user interface 4. Knows use of multiple threads 5. Will be able to develop programs that process data in the file.
Content of the Course	:	In this course, the basics of Object Oriented Programming, basic concepts of Java and programming, class definition, applets, file operations, directories, and search/sort algorithms are processed and application is made. Topics include object oriented Programming, Java programming concept, inheritance, encapsulation and polymorphism, event mechanism, error capture, graphical user interface, multiple threads and file and directory operations.

<table>
<tr><td>Course Book</td><td>1. Java Programming Language and Software Design (Altuğ B. Altıntaş – PAPATYA 2012 Ankara)
 
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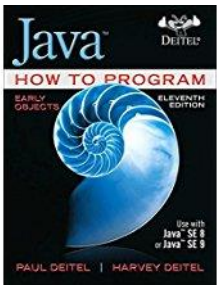
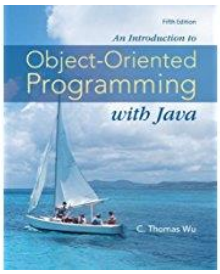
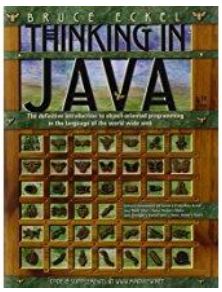
<tr><td>Other Sources</td><td>1. Java How to Program - Deitel&Deitel
2. An Introduction to OOP with JAVA - Thomas WU
3. Thinking in JAVA - Bruce ECKEL
 

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<tr><td>Other Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
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1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**					**2**				**3**	**4**		**5**	
			Very Low					Low				Medium	High		Very High	
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-5	1	1	5	1	1	1	1	4	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO OBJECT ORIENTED PROGRAMMING - Internet and Network Programming - Intorduction to JAVA - History of JAVA	Problem Solving
2	CONTROL STRUCTURES AND ARRAYS - Operators - Selection and Loop Structures - break and continue statement - Arrays' Definition and usage	Problem Solving
3	CONTROL STRUCTURES AND ARRAYS - Operators - Selection and Loop Structures - break and continue statement - Arrays' Definition and usage	Problem Solving
4	METHODS - Java Programming Modules - Method Definiton - Transferring parameters to Methods	Problem Solving
5	OBJECT-ORIENTED PROGRAMMING - Scope - Access Control to Class Members - Constructor and Finalizer Concepts	Problem Solving
6	STRİNG AND CHARACTERS - Fundementals of String and Characters - Using String Class and its Methods	Problem Solving

7	OBJECT-ORIENTED PROGRAMMING - Super and Subclass Concepts - Encapsulation, Information Hiding - Inheritance, Polymorphism	Problem Solving
8	OBJECT-ORIENTED PROGRAMMING - Calling Dynamic Method - Abstract Classes	Problem Solving
9	MIDTERM	
10	OBJECT-ORIENTED PROGRAMMING - Inner Classes - Event Mechanism	Problem Solving
11	EXCEPION HANDLİNG - Exception Mechanism - Try-catch Block	Problem Solving
12	GRAPHICAL USER INTERFACES - Swing packages - AWT packages - GUI basic members - Layout Managers	Problem Solving
13	GRAPHICAL USER INTERFACES - Usage of Other GUI Members	Problem Solving
14	GRAPHICAL USER İNTERFACES - Preparing programms using GUI	Problem Solving
15	MULTITHREADING - Thread Concept - Using Threads	Problem Solving
16	FILE OPERATIONS - File Operations - Using File Operations in Programms	Problem Solving

ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	1	15
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	60 Hour		
ECTS OF COURSE	Total workload / 30 = 60 / 30 = 2		2 Credit

Last update date	04.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Algorithm Analysis and Design	BİM-311	3/I	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming, Object-Oriented Programming, Data Structures and Algorithms
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Purpose of this course is; teaching students how to use algorithmic approach , basic algorithms, algorithm analysis and design tecniques for solution of problems
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Will be able to algorithmically approach the solution of problems. 2. Knows basic algorithms. 3. Will be able to analyze algorithms. 4. Will be able to design algorithms to solve problems 5. Know accountabilities.
Content of the Course	:	In this course, the basic concepts will be explained by introducing the algorithms and then calculating the time and complexity of the algorithms. Complex analysis of recursion and recursion algorithm analysis methods and sorting algorithms will be taught. General design techniques; divide and conquer, Dynamic Programming Greedy approach will be provided. After detailed indexing and basic graph algorithms, general information about NP Completeness theory will be given.

<table>
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 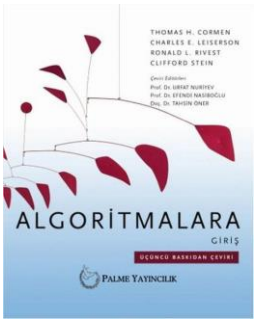 </td></tr>
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 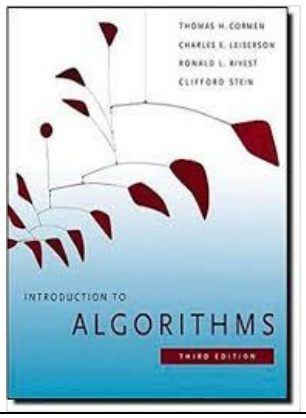 </td></tr>
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2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
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PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-5	4	5	3	3	5	5	2	1	3	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	ALGORITHMS - Introduction to Algorithms - Basic Concepts - Algorithm Analysis and Design	Problem Solving
2	ALGORITHM ANALYSIS - Running Time Function - Algorithm Classification - Asymptotic Notation	Problem Solving
3	RECURSIVE ALGORITHM ANALYSIS - Recursıve Functions and Iteration Method - Substitution Method - Master Method	Problem Solving
4	SORTING AND COMPLEXITY ANALYSIS - Heap Sort Algortihm and Analyze - Quick Sort Algortihm and Analyze - Random Quick Sort Algortihm and Analyze	Problem Solving
5	LINEAR TIME SORTING - Lower Limit In Ranking - Unparalleled Sorting Counting Sort Radix Sort and Bucket sort	Problem Solving
6	DIVIDE & CONQUER - DIVIDE & CONQUER Members - Max-Min Problems - Merge Sort	Problem Solving

7	SEQUENCE STATISTICS - Random Divide & Conquer - Expected Linear Time – Selection in Analysis - The Worst Linear Time Selection in Analysis	Problem Solving
8	GREEDY APPROACH - Greedy Approach Members - Task Scheduling Problem - Hufmann Codification	Problem Solving
9	MIDTERM	
10	DYNAMIC PROGRAMMING APPROACH - Introduction to Dynamic Programming - Dynamic Programming Members - 0/1 Knapsack Problem	Problem Solving
11	DYNAMIC PROGRAMMING - The Matrix Array Multiplication Problems - Longest Common Subsequence Problem - Dynamic Programming and Greedy Approach Comparing	Problem Solving
12	AMORTIZATION ANALYSIS - Dynamic Tables and Aggregation Method - Accounting Method - Potential Method	Problem Solving
13	BASIC GRAPH ALGORITHMS - Graph Presentation, Depth-First and Breath-First Search - Minimum Spanning Tree Problem and Kruskal Algorithm - The Shortest Path Problem and Dijkstra Algorithm - All Binary The Shortest Path Problem and Bellman-Ford Algorithm	Problem Solving
14	GRAPH ALGORITHMS - Floyd-Warshal Algorithm - Johnson Algorithm - Travel Salesman Problem ve Network Flow Problem	Problem Solving
15	DIRECTORY MAPPING - Basic Directory Mapping Algorithm - Rabin-Karp Algorithm - Knuth-Morris-Pratt Algorithm	Problem Solving
16	NP-COMPLETENESS THEORY - Polynomial Time Problems - NP Complexity Class - NP-Completeness and Reducibility	Problem Solving

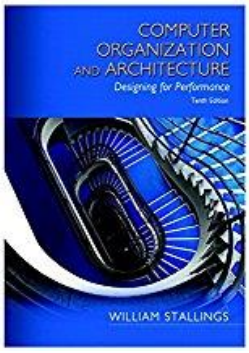
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	13	13
Final Exam	1	2	2
Individual Study for Final Exam	1	13	13
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 5		3 Credit

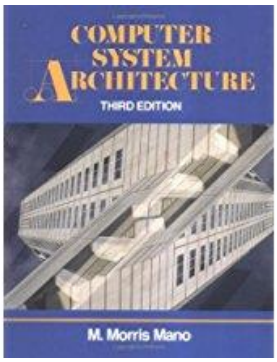
Last update date	04.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Computer Organization and Architecture	BİM-312	3/I	3+0+0	3	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to enable students to have knowledge about computer hardware, operating principles and design to establish the relationship between computer hardware and software and to be able to perform microgramming on a basic level.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Will be able to know computer arithmetic and command structure 2. Will be able to know member of computer architecture and their functions. 3. Will be able to know computer organization and its principles of operation. 4. Will be able to do microprogramming 5. Will be able to know business line structure, array processors and multiple processor architecture.
Content of the Course	:	In this course, computer arithmetic, computer organization and design, computer programming, Central Processing Unit, The Business Line operations and directory structure, memory, and input/output Organization, multiple processors topics are covered.

<table>
<tr><td>Course Book</td><td>1. Computer Organization and Architecture (William STALLINGS)
2. Computer System Architecture (M. Morris MANO)
 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<tr><td>Other Sources</td><td></td></tr>
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<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab. Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**				**2**			**3**		**4**		**5**		
			Very Low				Low			Medium		High		Very High		
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	5	4	1	4	1	4	4	1	3	3	3	2	1	2	1
DK-2	2	5	4	1	4	1	4	4	1	3	3	3	2	1	2	1
DK-3	2	5	4	1	4	1	4	4	4	3	3	3	2	1	2	1
DK-4	5	5	4	1	4	4	4	4	4	3	3	3	2	1	2	1
DK-5	3	5	4	1	4	1	4	4	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	DATA STRUCTURES -Data Structures Display and Arithmetic Integer and ve floating-point arithmetic	Problem Solving
2	INFORMATION FLOW BETWEEN DIGITAL MODULES -Register transfer and microprocessors -Data path and Memory Transfer -Arithmetic, logic and floating operations - Arithmetic microprocessors -Logic microprocessors -Floating microprocessors	Problem Solving
3	IMPORTANCE OF COMPUTER ORGANİZATION -Basic Computer Organization Command Codes, Timing and Control	Problem Solving
4	COMPUTER ORGANİZATION AND DESIGN -Memeory referance commands and I/O -Basic Computer Design -I/O,break and Commands -Logical Control Gates -Register and memory control -Shared data Path Control	Problem Solving
5	COMPUTER PROGRAMMING -Basic Computer Programming - Machine Language and Assembly Programming Language	Program Development

6	CENTRAL OPERATION UNIT -Adressing,program control - Adressing Modes -Data Transfer, program control -RISC structure	Program Development
7	CONTROL'S ADVENTAGES AND DISADVENTAGES WITH MICROPROGRAM -Control with microprogramming -Control Memory -Adressing	Program Development
8	CENTRAL OPERATION UNIT - Central Operation Unit -Command Formats and Stack Organization -Common register organization -Stack organization -Command Codes	Program Development
9	MIDTERM	
10	PİPELİNE STRUCTURE AND ARRAY PROCESSORS -Pipeline structure and array processors -Parallel Operation -Arithmetic Command and RISC pipeline structure	Program Development
11	PİPELİNE STRUCTURE AND ARRAY PROCESSORS -Vector and array processors -Folder processors (Attached, SIMD)	Program Development
12	INPUT OUTPUT ORGANIZATION -Input/Output Organization - Input/Output interface -Asynchronous Data Transfer -Transfer Modes	Program Development
13	INPUT OUTPUT ORGANIZATION -Cutting and DMA structure	Program Development
14	MEMORY ORGANIZATION -Cache and display memory -Main Memory (RAM ROM chips) -External Associative Cache Display Memories	Program Development
15	MEMORY ORGANIZATION -Memory Management - Memory Management Hardware	Program Development
16	MULTIPROCESSORS -Parallel computer architecture -Internal Link structure and communication	Program Development

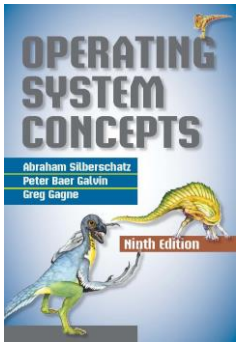
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	5	3	15
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	10	10
Final Exam	1	2	2
Individual Study for Final Exam	1	16	16
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

Last update date	04.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Operating Systems	BİM-313	3/I	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Organization and Architecture
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	In this course, students will be informed about what the operating system is, how it is designed and developed, the common features of the operating system, the relationship between the operating system and the hardware, process management.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Will be able to know operating systems and working principles 2. Will be able to know process and process management. 3. Will be able to know memory management. 4. Will be able to know file systems.
Content of the Course	:	Introduction to computer operating systems and general structures, process concept, concurrent processes, process management and job scheduling methods and algorithms, deadlock prevention, memory management, secondary and tertiary memory, file systems, input/output operations topics are covered.

<table>
<tr><td>Course Book</td><td>1. Operating Systems and System Programming (Mutlu Avcı, Buse Melis Özyıldırım, Onur Ülgen, KARAHAN, 2000)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Operating System Concepts, A. Sılberschatz-P.Galvın
 
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<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**			**2**			**3**		**4**		**5**			
			Very Low			Low			Medium		High		Very High			
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-3	5	4	1	4	4	3	4	3	4	3	3	3	2	1	2	1
DK-4	3	3	5	4	5	3	4	3	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO OPERATING SYSTEMS - Shared Time Systems - Parallel systems - Distributed Systems	Problem Solving
2	COMPUTER SYSTEM STRUCTURE - I/O structure - Memory Structure, memory hierarchy - Common system architecture	Problem Solving
3	OPERATING SYSTEM STRUCTURES - Operating system services - System programms - System design and occur	Problem Solving
4	PROCESSES - Process Time Algorithms - Process Operations - Communication between Processes	Problem Solving
5	CPU TIME ALGORITHMS - CPU timing criterias - CPU timing algorithms - Algorithm Evaluation	Problem Solving
6	PROCESSES' SYNCHRONIZATION - Semaphores - Synchronization Problems - Monitors	Problem Solving

7	DEADLOCKS - Deadlock Example - Deadlock detect - Deadlock escape	Problem Solving
8	MEMORY MANAGEMENT - Logical/Physical adres area - Paging - Segmentation	Problem Solving
9	MIDTERM	
10	VIRTUAL MEMORY MANAGEMENT - Demand paging - Page Replacement - Thrashing	Problem Solving
11	FILE SYSTEM INTERFACE - File Concept - Folder Structure - Security	Problem Solving
12	FILE SYSTEM IMPLEMENTATION - Allocated Methods - Free Space Management - Recovery and Activity	Problem Solving
13	I/O SYSTEMS - I/O Hardware - Application and I/O relation - Performance	Problem Solving
14	SECONDERY MEMORY STRUCTURE - Disc Structure - Disc Management - Disc Security	Problem Solving
15	TERTIARY MEMORY MANAGEMENT - Tertiary Memory Devices - Encountered Issues - Performance Issues	Problem Solving
16	OPERATING SYSTEMS EXAMPLES - Unix - MS Operatıng Systems	Problem Solving

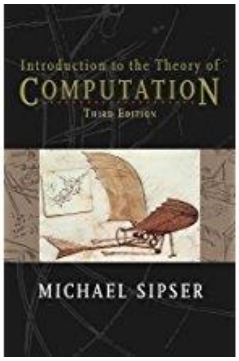
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	05.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Formal Languages and Virtual Machines	BİM-321	3/II	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	This course aims to teach formal languages and computational models, which are the basis of Computer Science in general, and to enable students to comprehend the mathematical methods of design of programming languages and the tools for the requirements of acceptance of a computer program.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Will be able to know formal languages 2. Will be able to know computational models. 3. Will be able to convert regular expressions,grammar and finite state machine to one another. 4. Will be able to convert Context-Independent Grammar and mass-built automats to one another. 5. Will be able to know Turing Machines and computability.
Content of the Course	:	Topics include formal languages, grammars, regular expressions, finite state machines, obvious and non-obvious automatons, context-independent grammars, and mass-structured automatons, Turing machine and computability.

<table>
<tr><td>Course Book</td><td>1. Introduction to The Theory of Computation Michael SIPSER
 
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 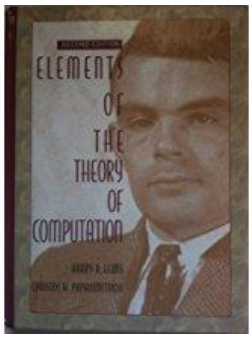
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Sheet No	Program Qualifications	Course Contribution Level				
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1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-4	3	3	5	1	1	1	1	1	1	3	3	2	1	2	1	1
DK-5	1	1	5	1	1	1	1	1	1	3	3	2	1	2	1	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO COMPUTING THEORY - Vending Theory, - Complexity Theory, - Computability Theory	Problem Solving
2	MATHEMATICAL TERMINOLOGY AND PROOF METHODS	Problem Solving
3	REGULAR LANGUAGES - Finite State Machines - Regular Processes	Problem Solving
4	REGULAR LANGUAGES - Unstable Finite State Machines - Stable / Unstable Finite State Machines Transformation	Problem Solving
5	REGULAR LANGUAGES - Regular Expressions - Non Regular Languages	Problem Solving
6	CONTEXT INDEPENDENT LANGUAGES - Context Independent Grammars - Unknown Grammars - Normal Formats	Problem Solving
7	CONTEXT INDEPENDENT LANGUAGES - Decomposition Tree	Problem Solving
8	CONTEXT INDEPENDENT LANGUAGES - Mass-Built Vending Machines	Problem Solving
9	MIDTERM	

10	CONTEXT INDEPENDENT LANGUAGES - Context Independet Languages and Mass-Built Vending Machines Equality - Context dependent Languages	Problem Solving
11	CHURCH-TURİNG THESIS -Turing Machines - Turing Machines Computation	Problem Solving
12	TURING MACHINES TYPES - Multi Tape TMs - Unstable TMs	Problem Solving
13	TURING MACHINES - Turing Machine Instances	Problem Solving
14	DESICION ACCOUNTABILITY - Decision Accountable Languages - Halting Problem	Problem Solving
15	DESICION ACCOUNTABILITY - Unsolved Problems about Regular and Context Independent Grammars - Unsolved Problems about TM	Problem Solving
16	Computational Complexity P-Class NP-Class	Problem Solving

ECTS / WORKLOAD TABLE

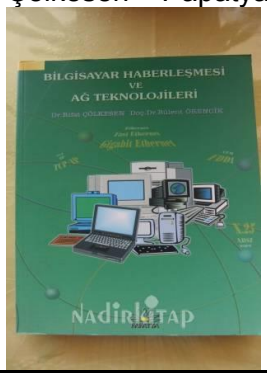
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	05.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Computer Networks	BİM-322	3/II	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Operating Systems
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to teach the basic concepts and laws of computer networks, which are the basis of development in contemporary world, to bring students to the level of rapid development in this field, to enable students to comprehend the ways of research, to have positive and scientific views and ideas and to prepare the groundwork, to help them.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Will be able to know concepts of computer networks. 2. Will be able to know computer network structures and protocols. 3. Espicially, will be able to know processes of application, transportation, network and link layers. 4. Can develop basic network programs.
Content of the Course	:	After giving general information about computer networks and the internet primarily, the top-down approach, starting from the application layer, the layers and the protocols in these layers are discussed in detail. In this context, the aims and types of computer networks, LAN and WAN networks, design factors, security, productivity, cost, reliability, addressing are examined in terms of factors such as.

<table>
<tr><td>Course Book</td><td>1. Computer Communication and Network Technologies (Rıfat Çölkesen – Papatya 2013, İstanbul)
 
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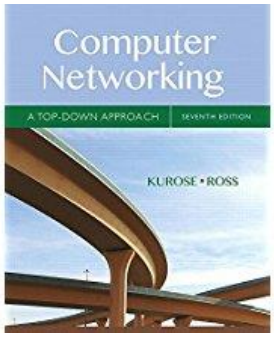
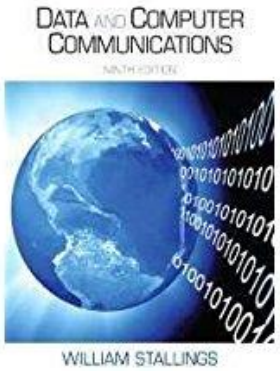
<tr><td>Other Sources</td><td>1. Computer Networking: A Top-Down Approach (James Kurose)
1. Data and Computer Communications, William Stallings
 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<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab. Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level		**1**			**2**			**3**	**4**		**5**				
		Very Low			Low			Medium	High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	4	2	3	5	4	5	4	3	3	3	3	2	1	2	1
DK-2	2	4	2	3	5	4	5	4	3	3	3	3	2	1	2	1
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DK-4	2	3	2	3	4	4	5	4	4	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Computer Networks and Internet Introduction What is Internet Introduction Computer Networks Lab application (internet)	Project Development
2	Computer Networks and Internet Main Networks services Package-switch networks Protocol layer and service models Lab application (TCP/IP and UDP protocols)	Project Development
3	Application Layer Basic Principles www and http Internet applications Lab application (www and http)	Project Development
4	Application Layer e-mail SMTP MAP Lab application (e-mail)	Project Development
5	Application Layer Dns P2p applications P2p file distrubution Lab application (dns and p2p)	Project Development
6	Application Layer Tcp and socket programming Udp and socket programming Server/client programming Lab application (java and tcp/udp programming)	Project Development
7	Transportation Layer Layer Services Mux/demux Principles of safe data communication Lab application (term project)	Project Development

8	Midterm Week	
9	Transportation Layer Udp protocol Tcp protocol Lab application (term project)	Project Development
10	Transportation Layer Congestion Control Lab application (term project)	Project Development
11	Network Layer Virtual cycles and datagram Networks Routers Ip protocol Lab application (term project)	Project Development
12	Network Layer Routing Algorithms Ls and dv routing Algorithms Hierarchical routing Lab application (term project)	Project Development
13	Network Layer Routing on Internet Rip, ospf, and bgp Broadcast, multicast and unicast Lab application (term project)	Project Development
14	Link Layer and local network areas Error Detection and Correction Multiple acces protocols Link layer adressing Lab application (term project)	Project Development
15	Link Layer and local network areas Ethernet protocols Link layer services ppp Lab application (term project)	Project Development
16	Wireless and mobile networks Cdma Wireless lan Cellular internet, mobility management Lab application (term project)	Project Development

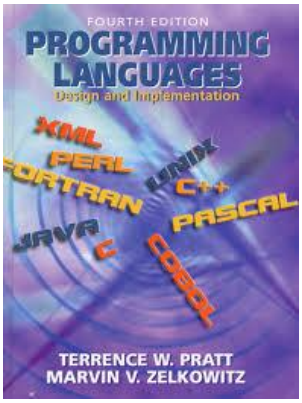
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	5	5
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	07.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Programming Languages' Principles	BİM-323	3/II	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming, Object-Oriented Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to provide the student with a general knowledge about programming languages in various categories and to teach the basic differences between languages and to enable the student to develop more effective programs.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Can design software programms 2. Know programms working conditions 3. Know data structures in programming languages and appy them in programms. 4. Know checking order in programming languages and transitions between functions. 5. Know structural and logical differences between programming languages.
Content of the Course	:	Basic concepts of programming languages and working principles, compiling structures and applications in programming languages, compilation models, grammar and Automata Structures, Data types, information hiding, inheritance, sequence control, sub-program control, differences between programming languages.

<table>
<tr><td>Course Book</td><td>1. Programming Languages - T. PRATT, M. ZELKOWITZ
 
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Sheet No	Program Qualifications	Course Contribution Level				
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1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
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Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-5	3	4	1	1	4	5	1	1	4	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	GENERAL CONSIDERATIONS OF PROGRAMMING LANGUAGES - Why Do We Learn Programming Languages? - Characteristics of a good language - Application Areas Of Programming Languages - Impact of environment on languages	Problem Solving
2	STRUCTURE AND FUNCTIONING OF A COMPUTER - Definitions : computer, real computer, software simulation computer, compiler -Components of a computer -The structure of a computer -Von-Neuman architecture - Computer states	Problem Solving
3	VIRTUAL COMPUTER AND TIME LIMITS - Firmware computer -The compiler types -Software simulation - Syntax ,semantics -Hierarchical structure of a computer Binding, binding times -Language types	Problem Solving
4	PROGRAMMING LANGUAGE STRUCTURE, COMPILATION - Generic syntax criteria - Eliminate uncertainties - Compiling - The structure of a compiler	Problem Solving
5	COMPILATION MODELS-BNF GRAMMAR - BNF grammar notation and structure - The purpose of BNF grammar - Parse trees	Problem Solving

	-Ambiguity - Improved BNF notation	
6	COMPILATION MODELS - State machine - Specific FSA, uncertain FSA - Regular grammar Regular expressions - Pushdown Automata - Active parse algorithms - Semantic modeling	Problem Solving
7	COMPILATION MODELS - State machine - Specific FSA, uncertain FSA - Regular grammar Regular expressions - Pushdown Automata - Active parse algorithms - Semantic modeling	Problem Solving
8	DATA TYPES -Data object, data value, variable, constant, literal -The properties of a data object - Basic elements of data types -Type Control and type conversion -Side effects	Problem Solving
9	MIDTERM	
10	HIDING INFORMATION - Abstract data type -Sub-programs and information hiding -Memory management phases -Memory management methods	Problem Solving
11	INHERITANCE -Generic abstract data type -Creating new types of generic abstract data type -Inheritance , types of Inheritance -Derived classes -Polymorphism	Problem Solving
12	SEQUENCE CONTROL -Sequence control structures -Notations: Prefix, Infix, Postfix -The advantages and disadvantages of each type of notation - Order control in non-arithmetic expressions - Structural control sequence -Exceptional circumstances	Problem Solving
13	SUB-PROGRAM CONTROL - Naming data objects and sub-programs -Range of a variable, range types - Local reference, global reference - Static UI rules in block-structured languages - Parameter and parameter passing methods	Problem Solving
14	INNOVATIONS IN LANGUAGE DESIGN -Changes in sub-program design -Exceptional circumstances -Ko routines - Parallel programming	Problem Solving
15	FUNCTIONAL LANGUAGES, OBJECT-ORIENTED LANGUAGES -C -Pascal -Ada	Problem Solving

16	FUNCTIONAL LANGUAGES, OBJECT-ORIENTED LANGUAGES ,LOGICAL LANGUAGES -C++ -Java -LİSP -Prolog	Problem Solving

ECTS / WORKLOAD TABLE

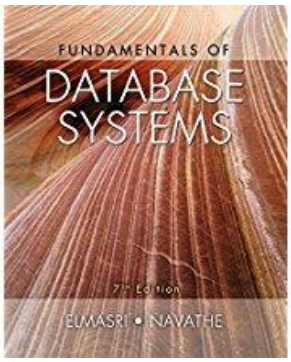
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	07.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Database Management	BİM-324	3/II	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Organization and Architecture
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to give the student the knowledge and experience about the concept of database, database architecture, design and application of various data models.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows the concepts of database. 2. Knows database architectures. 3. Design database models. 4. You can query the database 5. Analyze and normalize the database 6. Knows the techniques of recording and storing
Content of the Course	:	In this course, the concept of database, database architecture, design of various data models are explained and application is made. Topics include database and database users, database system concept and architecture, ER diagram in database model setup, Relational Database Model, relational operations, Relational Database Language, functional dependencies and normalization, object-oriented database applications are being developed in the PC lab to reinforce what is taught.

<table>
<tr><td>Course Book</td><td>1. Fundamentals of Database Systems NAVATHE
  </td></tr>
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2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-6	4	1	5	1	4	5	4	4	4	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	DATABASE, DATABASE USERS AND DATABASE MANAGEMENT SYSTEM - Database and database basic features, - Database users, management systems and components - Database management system advantages and disadvantages	Problem Solving
2	DATABASE CONCEPT AND ARCHITECTURE - Categories Of Data Models - Database schema - Database languages - Database interfaces	Problem Solving
3	E / R DIAGRAM IN DATABASE MODEL SETUP - Symbols used in E / R diagram	Data Model Design
4	RELATIONAL DATABASE MODEL -Relational database concepts - Constraints on the relational database model -Update processes on relationships	Data Model Design
5	RELATIONAL OPERATIONS -Types of transactions - Select, project, and set operations -Cartesian product,join, Division operations - Outer join, inner join,Natural Join operations - Examples of relational algebra	Problem Solving

6	RELATIONAL DATABASE LANGUAGE, SQL - Schema, catalog definitions - Create schema, drop schema, create table, drop table, and Alter table commands - Insert, Delete, and update commands	Program Development
7	RELATIONAL DATABASE LANGUAGE, SQL - Select commands that include join - Nested queries - IN/not in, EXISTS/not EXISTS operator - Union, intersect,MINUS operations	Program Development
8	RELATIONAL DATABASE LANGUAGE, SQL - Roles - Indexes - Embedded SQL	Program Development
9	MIDTERM	
10	FUNCTIONAL DEPENDENCIES AND NORMALIZATION IN RELATIONAL DATABASES - Informal measures and functional dependencies for relational schema design -Normal form based on primary key and Boyce-Codd normal form	Problem Solving
11	FUNCTIONAL DEPENDENCIES AND NORMALIZATION IN RELATIONAL DATABASES -Second and third normal forms - Fourth and fifth normal forms	Problem Solving
12	OBJECT - ORIENTED DATABASES - Object structure, method and inheritance - Object-oriented data model/Odmg data model - Object definition language - Object linguistic language	Problem Solving
13	RECORD STORAGE AND BASIC FILE ORGANIZATIONS - Secondary storage media - The placement of the recording files on the disk and the operations on the file - Files from unusual and sequential files - Hashing techniques	Problem Solving
14	INDEX STRUCTURE FOR FILES - Index types - Main and secondary index - Cluster index - Multilevel indexes	Problem Solving
15	QUERY PROCESSING AND TRANSACTION PROCESSING - Query cost measurement - Select operation, inquiry, join operation - Transaction concept and features - Schedule , recoverability and serializability	Problem Solving
16	RECOVERY TECHNIQUES AND DATABASE ARCHITECTURES - Rescue techniques - Emergency, backup and recovery operations - Centralized systems, client server systems - Parallel systems	Problem Solving

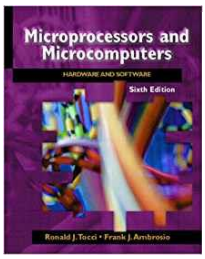
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	13	13
Final Exam	1	2	2
Individual Study for Final Exam	1	13	13
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

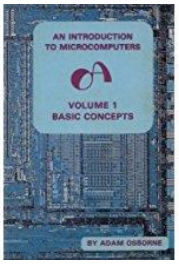
Last update date	07.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Microprocessors and Assembly Language	BİM-325	4/I	2+0+2	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Teaching students general structure and working principles of microprocessors, software/hardware properties and to make them gain the ability to write programs in Assembly language.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows the number systems and arithmetic operations used. 2. Knows the concepts of microprocessor and microcomputers. 3. Students will be able to write program in assembly language with microprocessor instruction sets. 4. Knows the input/output techniques and the structure of the interrupt. 5. Knows the structure of DMA.
Content of the Course	:	In this course, General Computer Organization and working principles of microprocessors and command sets, program writing in Assembly language, Interrupt and DMA techniques will be taught.

<table>
<tr><td>Course Book</td><td>1. Microprocessors and Intel Computers Family and IBM PC (Haluk Gümüşkaya, ALFA 2002 ve 2007, İstanbul)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Microprocessors & Microcomputers (R.J.Tocci – F.J.Ambrosio)
1. Mikrobilgisayar Ders Kitabı, D.H.O Basımı
2. Digital Computer Fundemantals, Bartee
3. Mikroişlemciler ve Mikrobilgisayarlar, Adalı
4. An Introduction to Microcomputers, Osborne
 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<tr><td>Homeworks and Projects</td><td></td></tr>
<tr><td>Computer Usage</td><td></td></tr>
<tr><td>Other Applications</td><td></td></tr>
<tr><td>Achievement Evaluation System</td><td>
<table>
<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
</table>
</td></tr>
</table>

Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	3	3	5	3	1	1	4	1	3	3	3	2	1	2	1
DK-2	2	3	3	5	3	1	1	4	1	3	3	3	2	1	2	1
DK-3	2	3	3	5	3	1	1	4	1	3	3	3	2	1	2	1
DK-4	2	3	3	5	3	1	1	4	1	3	3	3	2	1	2	1
DK-5	2	3	3	5	3	1	1	4	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	MICROPROCESSOR/MICROCOMPUTER DEFINITIONS -Microprocessor,microcomputer definitions -Historical Development Of Computer -Computer Electronic Technology parallelism -Classification microcomputer	Project Development
2	NUMBER SYSTEMS AND ARITHMETIC OPERATIONS -Binary Number System -Octet Number System -Hexadecimal Number System -Data Definitions -Character Codes -Microprocessor General Structure -Command and machine count	Project Development
3	MICROPROCESSOR GENERAL STRUCTURE -Microprocessor internal architecture -8085 processor internal structure -Interrupt system -Flagler -Control signals	Project Development
4	MICROPROCESSOR INSTRUCTION SETS - Data transfer commands - Arithmetic operations commands - Logic commands - Program control group commands - I/O and stack commands	Project Development
5	PROGRAMMING IN ASSEMBLY LANGUAGE -Basic transfer programs -Basic arithmetic operations program -Basic algorithms	Project Development

6	PROGRAMMING IN ASSEMBLY LANGUAGE -Basic transfer programs -Basic arithmetic operations program -Basic algorithms -Floating-point display	Project Development
7	ALGORITHM IMPROVEMENTS -Stack definition and stack operations -Stack control commands -Subprograms	Project Development
8	MEMORY -Memory types -Memory resolution -Main and auxiliary concepts concepts	Project Development
9	MIDTERM	
10	INPUT / OUTPUT TECHNIQUES -Hardware-controlled input/output -I / O With Interrupt control -Program controlled I/O	Project Development
11	INTERRUPT SYSTEM - The interrupt classification - Memory systems - service program writing	Project Development
12	INTERRUPT SYSTEM - The interrupt classification - Memory systems - service program writing	Project Development
13	DMA TECHNIQUE -DMA as I/O With Interrupt control -Example I/O design	Project Development
14	DMA -DMA structure	Project Development
15	DMA -DMA structure	Project Development
16	GENERAL REVIEW	Project Development

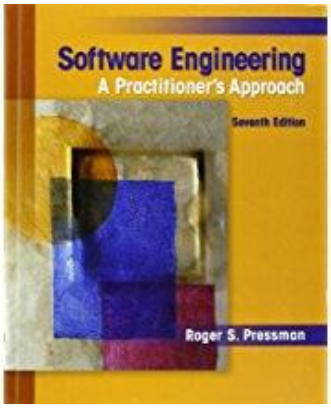
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	2	30
Application	15	2	30
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	07.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Software Engineering	BİM-411	4/I	4+0+0	4	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming, Object-Oriented Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	In this course, we aim that students have knowladge about software development process, system / requirement analysis, design, testing, maintenance-attitude stages on the sample projects, software standards and project management.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. To know software development processes. 2. To know the techniques used in software development processes. 3. To be able to apply software development processes on sample projects. 4. Know software standards. 5. To know the principles of Project Management
Content of the Course	:	In this course, System Analysis, need analysis, initial design, final design, program production, test, usage and maintenance attitude operations are described in stages. The prototypes and spiral software development techniques are explained. Procedures, principles and documentation that will be applied at each stage are examined in detail. The topics discussed are given examples of the techniques available. All subjects are converted into practice on a project. In addition, modern computer aided design tools in software engineering are studied.

<table>
<tr><td>Course Book</td><td>1. Software Engineering (Roger S. Pressman)
 
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<tr><td>Other Sources</td><td>Yoktur</td></tr>
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<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
</table>
</td></tr>
</table>

Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	3	2	4	5	4	3	5	5	5	3	3	2	1	2	1
DK-2	2	3	2	4	5	4	3	5	5	5	3	3	2	1	2	1
DK-3	2	3	2	4	5	4	3	5	5	5	3	3	2	1	2	1
DK-4	2	3	2	4	5	4	3	5	5	5	3	3	2	1	2	1
DK-5	2	3	2	4	5	4	3	5	5	5	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO SOFTWARE ENGINEERING -The importance of software -Features of the software -Definition of software engineering	Project Development
2	PROJECT PLANNING, METRICS -Measurement of software -Dimensioning methods -Planning	Project Development
3	REQUIREMENT ANALYSIS -System and computer engineering -Requirement analysis and principles -Software prototype	Project Development
4	STRUCTURAL ANALYSIS AND PROGRAMMING -History of structural analysis -Analytical approaches to structural analysis -Structural analysis modeling and techniques	Project Development
5	OBJECT ORIENTED ANALYSIS AND MODULAR DESIGN -Object-oriented analysis modeling -Data modeling -Modular design	Project Development
6	SOFTWARE DESIGN PRINCIPLES - Efficient modular design - Functional design - Design documentation	Project Development
7	DATA-ORIENTED DESIGN -Design, and data structure -Jackson system design -Data-based system design	Project Development

8	DATA FLOW DESIGN -Design and data flow -Design criteria -Transfrom / transaction analysis, optimization	Project Development
9	MIDTERM	
10	OBJECT-ORIENTED DESIGN -Object-oriented design methods -Class and object definition -Object Oriented Programming	Project Development
11	PROGRAMMING LANGUAGES AND CODING - Properties of programming languages, fundamentals, classes - Codification - Event	Project Development
12	SOFTWARE TESTING AND QUALITY CONTROL -Software quality and definition -Software metrics, formal approaches -Software security	Project Development
13	SOFTWARE TESTING AND QUALITY CONTROL -Software testing techniques -Strategic approach -Testing types	Project Development
14	SOFTWARE MAINTENANCE AND OPERATION -Features of maintenance -Side effects of maintenance -Re-engineering	Project Development
15	CONFIGURATION MANAGEMENT AND AUTOMATION -Software configuration objects -Version control	Project Development
16	CONFIGURATION MANAGEMENT AND AUTOMATION -Status reports, standards	Project Development

ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	4	60
Application	-	-	-
Studying Period out of Course	15	1	15
Completing Homeworks and Delivering as a report	-	-	-
Term Project	1	30	30
Project Presentation	1	1	1
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	5	5
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

Last update date	07.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Graduation Project-I	BİM-414	4/I	0+2+0	1	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	To provide students with an opportunity to have experience at all levels of design within the framework of an engineering problem, to develop innovative ideas of the students and to encourage team awareness, to contribute to their professional and ethical development, to give students an oral and written presentation experience.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Students will be able to follow the literature in the field of engineering and computer engineering and conduct research. 2. Presents the work and effort in the format of the thesis booklet. 3. Develop software, methods and / or architecture. 4. Students will be able to integrate computer engineering concepts within and with other fields.
Content of the Course	:	This course includes an application of all phases from selection of a suitable project to completion in order to gain a comprehensive design experience by using the knowledge gained in undergraduate learning. In this course, the design of a system or a process is open-ended, are discussed in the context of projects. The problem in the project is solved with the help of teams of students.

Course Book	Scientific literature, Ph. D., master's and Bachelor's thesis, books and software in selected or designated fields related to the thesis topic.
Other Sources	-
Homeworks and Projects	-

Computer Usage	-					
Other Applications	-					
Achievement Evaluation System	**Activites**		**Base Mark**	**Unit**	**Contribution in Evaluation, %**	
	Midterm		50	-	-	
	Semester Evaluation	Short-Exams	50	-	%	100
		Homeworks	50	-	%	
		Projects	50	1	%	
		Term Homework/Project	50	-	%	
		Lab Application	50	-	%	
		Other Applications	50	-	%	
	Final Exam		50	-	-	
	Integration / NYS		50	-	-	
	One Course / Add. NYS		50	-	-	

Sheet No	**Program Qualifications**	**Course Contribution Level**				
		1	**2**	**3**	**4**	**5**
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,				x	
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,					x
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x

8	To able to develop software and setting special computer background for solutions,					x
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.			x		
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,					x
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					x
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,				x	
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION

Contribution Level	**1**	**2**	**3**	**4**	**5**
	Very Low	Low	Medium	High	Very High

Computer Engineering

	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	1	1	1	1	1	1	1	1	4	1	1	5	2	1	2	1
DK-2	1	1	1	1	1	1	1	1	1	1	1	1	5	1	5	1
DK-3	3	3	3	3	3	3	5	5	4	1	1	3	2	1	2	1
DK-4	3	3	3	3	3	3	5	5	5	1	1	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Discuss issues with consultants	--
2	Discuss issues with consultants	--
3	Finalizing the thesis topic	--
4	Literature review	--
5	Literature review	--
6	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
7	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
8	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
9	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
10	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
11	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
12	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
13	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
14	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
15	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
16	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--

ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	-	-	-
Application	14	2	28
Studying Period out of Course	15	4	60
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	1	2	2
Quiz	-	-	-
Midterm	-	-	-
Individual Study for Mid-Term	-	-	-
Final Exam	-	-	-
Individual Study for Final Exam	-	-	-
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

Last update date	08.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Graduation Project-II	BİM-424	4/I	0+2+0	1	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	To provide students with an opportunity to have experience at all levels of design within the framework of an engineering problem, to develop innovative ideas of the students and to encourage team awareness, to contribute to their professional and ethical development, to give students an oral and written presentation experience.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Students will be able to follow the literature in the field of engineering and computer engineering and conduct research. 2. Presents the work and effort in the format of the thesis booklet. 3. Develop software, methods and / or architecture. 4. Students will be able to integrate computer engineering concepts within and with other fields.
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Course Book	Scientific literature, Ph. D., master's and Bachelor's thesis, books and software in selected or designated fields related to the thesis topic.
Other Sources	-
Homeworks and Projects	-

Computer Usage	-					
Other Applications	-					
Achievement Evaluation System	**Activites**		**Base Mark**	**Unit**	**Contribution in Evaluation, %**	
	Midterm		50	-	-	
	Semester Evaluation	Short-Exams	50	-	%	100
		Homeworks	50	-	%	
		Projects	50	1	%	
		Term Homework/Project	50	-	%	
		Lab Application	50	-	%	
		Other Applications	50	-	%	
	Final Exam		50	-	-	
	Integration / NYS		50	-	-	
	One Course / Add. NYS		50	-	-	

Sheet No	**Program Qualifications**	**Course Contribution Level**				
		1	**2**	**3**	**4**	**5**
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,				x	
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,					x
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x

8	To able to develop software and setting special computer background for solutions,					x
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.			x		
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,					x
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					x
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,				x	
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION

Contribution Level	**1**	**2**	**3**	**4**	**5**
	Very Low	Low	Medium	High	Very High

Computer Engineering

	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	1	1	1	1	1	1	1	1	4	1	1	5	2	1	2	1
DK-2	1	1	1	1	1	1	1	1	1	1	1	1	5	1	5	1
DK-3	3	3	3	3	3	3	5	5	4	1	1	3	2	1	2	1
DK-4	3	3	3	3	3	3	5	5	5	1	1	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
2	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
3	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
4	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
5	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
6	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
7	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
8	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
9	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
10	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
11	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
12	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
13	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
14	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
15	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--
16	Research/project development / experimental study / thesis writing under the supervision of advisor / instructor	--

ECTS / WORKLOAD TABLE

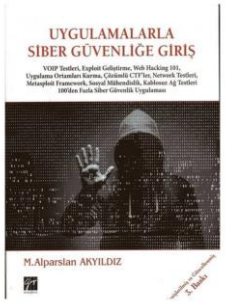
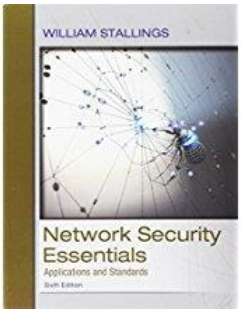
ACTIVITIES	NUMBER	TIME(HOUR)	PREDICTION of WORKLOAD
Teoric Course	-	-	-
Application	14	2	28
Studying Period out of Course	15	4	60
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	1	2	2
Quiz	-	-	-
Midterm	-	-	-
Individual Study for Mid-Term	-	-	-
Final Exam	-	-	-
Individual Study for Final Exam	-	-	-
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

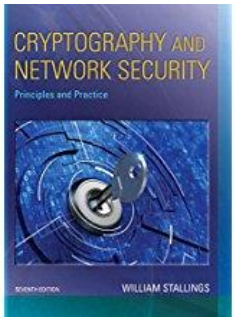
Last update date	08.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

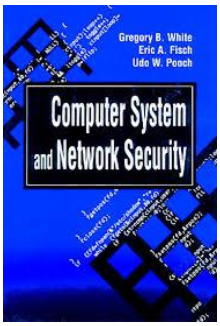
NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Cyber Security	BİM-425	4/II	2+0+0	2	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	In this course, it is aimed to teach the techniques of how to protect the information from the threats that we have today as an information age, and to enable students to understand the research methods, have positive and scientific views and thoughts and to prepare the ground for the deep and detailed thinking of the events. By making the students ready for the ongoing cyber war, it is aimed to bring the executive staff of the future to the level to follow the technological developments in this direction.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Understand the basics of computer security. 2. Knows encryption techniques and applications. 3. Know the principles of Information Security. 4. Knows the precautions against viruses and harmful software. 5. Knows the concept of firewalls
Content of the Course	:	

<table>
<tr><td>Course Book</td><td>1. Introduction to Cyber Security with Applications (M.Alparslan Yıldız, Gazi Kitabevi, 2017)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Network Security Essentials William Stallings
2. Cryptography and Network Security (William Stallings)
3. Computer System and Network Security (Gregory B. White, Eric A. Fish, Udo W. Pooch)
 

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<tr><td>Homeworks and Projects</td><td></td></tr>
<tr><td>Computer Usage</td><td></td></tr>
<tr><td>Other Applications</td><td></td></tr>
<tr><td>Achievement Evaluation System</td><td>
<table>
<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
</table>
</td></tr>
</table>

Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**			**5**			
	Very Low		Low					Medium		High			Very High			
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-2	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-3	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-4	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-5	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Basics of computer security	
2	Risk Management	
3	Risk calculation and decision making process	
4	Corporate and personal measures in computer security	
5	Corporate and personal measures in computer security	
6	The process of cyber attacks (Discovery-Discovery))	
7	Process of cyber attacks (developing/implementing exploiting code))	
8	MIDTERM	
9	Web Security (proxy server, content filtering))	
10	E-Mail Security	
11	Safe Use Of Social Media Accounts	
12	Fundamentals of cryptography and application area	
13	Fundamentals of cryptography and application area	
14	Safe Use Of Smart Phones	
15	Safe Use Of Smart Phones	
16	Final Exams	

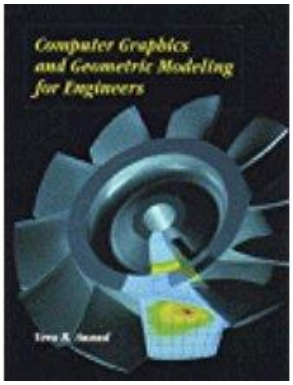
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	2	30
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	10	10
Final Exam	1	2	2
Individual Study for Final Exam	1	16	16
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

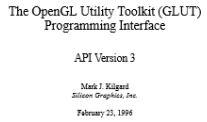
Last update date	08.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Computer Graphics	BİM-431	3/II	3+0+0	3	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Programming,Object-Oriented Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	Bu derste, bilgisayar tarafından görüntü üretiminde kullanılan donanım ve yazılım prensiplerinin uygulamaları ile birlikte öğretilmesi amaçlanmaktadır.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows the concepts of computer graphics systems and models. 2. Knows input methods and computer interaction techniques. 3. Knows imaging techniques. 4. Knows lighting and shading techniques. 5. Hierarchical and object-oriented modeling knows.
Content of the Course	:	In this course, the principles and applications of hardware and software used in image production will be taught and the project will be developed using OpenGL. In this course, a teaching technique from top to bottom will be used and theoretical topics will be explained with the application of OpenGL which is a standard graphics library.

<table>
<tr><td>Course Book</td><td>1. Interactive Computer Graphics, Edward ANGEL</td></tr>
<tr><td>Other Sources</td><td>1. Computer Graphics and Geometric Modeling for Engineers, Vera B. Anand
2. The OpenGL Utility Toolkit Programming Interface, Mark J., Kilgard
 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<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
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</table>
</td></tr>
</table>

Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
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DK-3	5	4	3	1	5	5	4	3	1	3	3	3	2	1	2	1
DK-4	3	3	3	1	5	1	4	3	5	3	3	3	2	1	2	1
DK-5	3	3	3	1	5	1	4	3	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Computer Graphic Systems and Models	Project Development
2	Basics of Graphic Programming	Project Development
3	Graphic Programming Tecniques	Project Development
4	Input methods and computer interaction techniques	Project Development
5	Input methods and computer interaction techniques	Project Development
6	Definition of geometrical objects	Project Development
7	Transformations	Project Development
8	Imaging Techniques	Project Development
9	MIDTERM	
10	Imaging Techniques	Project Development
11	Lighting and shading Techniques	Project Development
12	Lighting and shading Techniques	Project Development
13	Discrete Techniques	Project Development
14	Correction Of Overlays (ANTIALISING) and imaging issues	Project Development
15	Hierarchical and object-oriented modeling	Project Development
16	Hierarchical and object-oriented modeling	Project Development

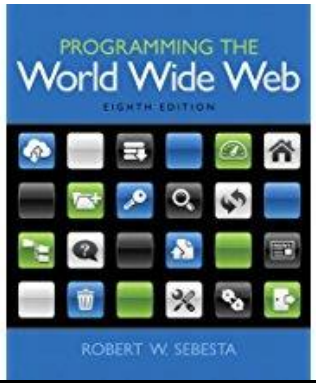
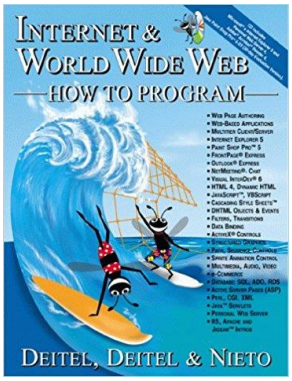
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	3	45
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	1	1	1
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	15	15
Final Exam	1	2	2
Individual Study for Final Exam	1	10	10
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

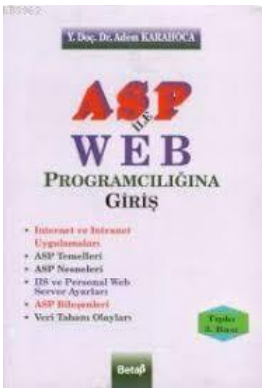
Last update date	08.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Internet Technologies	BİM-432	4/I	3+0+0	3	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Object-Oriented Programming
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to provide the students with the knowledge of design and coding of a dynamic web site with a graphical interface, as well as being aware of the technologies behind various services running on the internet and being aware of Service and application development software on the web.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows the concepts about internet technologies. 2. Knows the tools and methods of web site preparation. 3. Knows the languages used in Internet technologies and web programming. 4. Can design a web site. 5. A web site can develop.
Content of the Course	:	In this course, students will learn about the services that work on the web server, how to develop applications that work on the web site, and at least one of the standard or widely used web programming languages will be taught well, and other languages will be emphasized in terms of similar or different aspects of the web server, .And new concepts and Technologies which are emerged various parts of the world will be teached.

<table>
<tr><td>Course Book</td><td>1. Programming the World Wide Web, Robert W. Sebesta
 
</td></tr>
<tr><td>Other Sources</td><td>1. Internet & World Wide Web HOW TO PROGRAM, H.M.Deitel, P.J.Deitel, T.R.Nieto,
2. ASP ile WEB Programcılığına Giriş, Dr. Adem Karahoca
 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<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
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<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**		**4**		**5**				
	Very Low		Low					Medium		High		Very High				
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	3	2	5	5	1	5	5	5	4	3	3	2	1	2	1
DK-2	2	3	2	5	5	1	5	5	5	4	3	3	2	1	2	1
DK-3	2	3	2	5	5	1	5	5	5	4	3	3	2	1	2	1
DK-4	2	3	2	5	5	1	5	5	5	4	3	3	2	1	2	1
DK-5	2	3	2	5	5	1	5	5	5	4	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO INTERNET TECHNOLOGIES - Client and presenters - URL, mime, HTTP protocol - Tools and software for web programmers	Project development
2	Web site preparation techniques and methods - Macromedia Dreamweaver, Frontpage - Website design	Project development
3	INTRODUCTION TO INTERNET TECHNOLOGIES - Client and presenters - URL, mime, HTTP protocol - Tools and software for web programmers	Project development
4	Web site preparation techniques and methods - Macromedia Dreamweaver, Frontpage - Website design	Project development
5	INTRODUCTION TO INTERNET TECHNOLOGIES - Client and presenters - URL, mime, HTTP protocol - Tools and software for web programmers	Project development
6	Web site preparation techniques and methods - Macromedia Dreamweaver, Frontpage - Website design	Project development
7	VBScript --Class and objects (class&object)) - Control structures - Use in ASP	Project development
8	CSS - CSS levels - define style for font, list, font, image - and tags	Project development
9	MIDTERM	

10	JAVASCRIPT - Primitives, operators and expressions - Show results to the screen using dialogs - Control scripts	Project development
11	JAVASCRIPT - Object creation - Array and functions - Pattern matching	Project development
12	XML - DOM (Document Object Model) The purpose of use and Writing - XML development tools	Project development
13	PHP, Apache, MySQL - Tools setup - Prepatring website with PHP - Accessing MySQL database	Project development
14	WAP, WML - The purpose of use and working environments - syntax - Application examples	Project development
15	Advanced Internet Technologies - Wireless Internet and M-Business - VRML (Virtual Reality Modelling Language)	Project development
16	Advanced Internet Technologies -State reports, standards - SMIL (Synchronized multienvironmental integrated language)	Project development

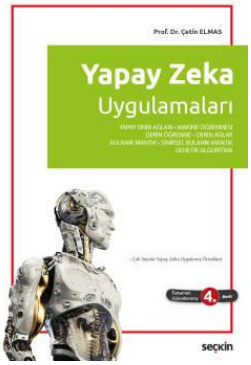
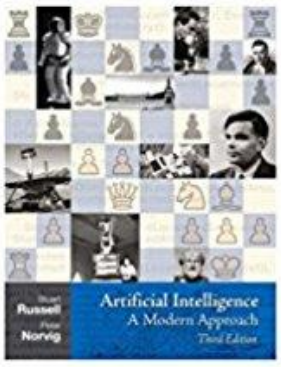
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	15	15
Final Exam	1	2	2
Individual Study for Final Exam	1	26	26
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

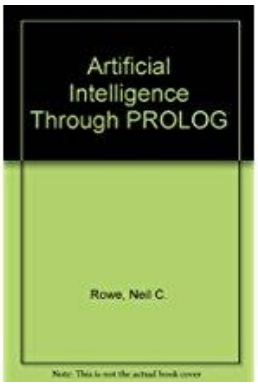
Last update date	08.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Artificial Intelligence	BİM-433	4/II	3+0+0	3	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Algorithm Design and Analysis
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	The aim of this course is to teach the basic concepts of artificial intelligence, artificial intelligence problem types and solution methods of problems and application of these methods.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Know the concepts of artificial intelligence and to be intelligent. 2. Knows the methods of searching. 3. Knows the concept of Game playing. 4. Know the concepts of logic and reasoning. 5. Knows planning and learning algorithms.
Content of the Course	:	In this course, problem solving with search methods, game theory, first order logic, logical reasoning systems, planning, practical planning, reasoning methods and learning and features of PROLOG programming language are explained, then computer vision and robots from artificial intelligence applications are given.

<table>
<tr><td>Course Book</td><td>1. Artificial Intelligence Applications (Prof.Dr.Çetin Elmas, ŞEÇKİN, 2016)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Artıfıcıal Intellıgence A Modern Approach (Stuart Russel, Peter Norvıg)
2. Artıfıcıal Intellıgence Through Prolog (Neıl Rowe)
 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<table>
<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short-Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**			**4**			**5**		
	Very Low		Low					Medium			High			Very High		
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	4	5	3	2	5	5	1	1	3	3	3	3	2	1	2	1
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DK-4	4	5	3	2	5	5	1	1	3	3	3	3	2	1	2	1
DK-5	4	5	3	2	5	5	1	1	3	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	INTRODUCTION TO ARTIFICIAL INTELLIGENCE -Definition Of Artificial Intelligence -History Of Artificial Intelligence - Smart things	Project Development
2	PROBLEM SOLVING WITH SEARCH METHOD - Ways to solve the problem - Types of problems - The parts of a problem - Sample problems	Project Development
3	SEARCH METHODS (BLIND CALL) -Breadth-First Search -Uniform-Cost Search - Depth-First Search Depth - Limited Search - Iterative Deepening Search - Bidirectional Call	Project Development
4	SEARCH METHODS (DATE SEARCH) Best-first search - Heuristic functions - Iterative deepening a* Search (Ida)*) - SMA* search - Hill climbing calling	Project Development

5	GAME PLAYING - Search problem and games - Perfect decisions in binary games - Evaluation functions - Cutting search - Alpha-Beta Pruning - Game Programs	Project Development
6	FIRST ORDER LOGIC - Syntax and semantics - Use of First - Order logic	Project Development
7	INFERENCE İN FİRST ORDER LOGİC - Unification - Forward ve Backward Chaining - Completeness - Resolution	Project Development
8	LOGICAL REASONING SYSTEMS - Indexing, retrieval and unification - Logic programming systems - Theorem proofs - Roofing systems and semantics networks	Project Development
9	MIDTERM	
10	PLANNING - Basic presentations for planning - Statement of status and targets - Expression of movements - State space and plan space. - Statements of plans - Solution	Project Development
11	PLANNING - Partial Sequence Planning Example - Partial Sequence Scheduling Algorithm - Knowledge Engineering For Planning	Project Development
12	PRACTICAL PLANNING -Split into hierarchical parts -Analysis of hierarchical parts -Resource constraints	Project Development
13	VAGUE INFORMATION (KNOWLEDGE) AND REASONING (REASONING)) -Uncertainty (Uncertainty) -Basic Probability Notation -Bayes rule and usage -Probabilistic Reasoning (Probabilistic Reasoning) -Trust (Blief) Networks	Project Development
14	LEARNING - Learning from observation - Learning With Artificial Neural Networks - Learning With Confidence (Belief) Networks - Reinforcement Learning	Project Development
15	COMPUTER VISION AND ROBOTS - Image Processing - Object presentation - Object recognition	Project Development

16	COMPUTER VISION AND ROBOTS -Robots -Robot architecture -Navigation and navigation planning	Project Development

ECTS / WORKLOAD TABLE

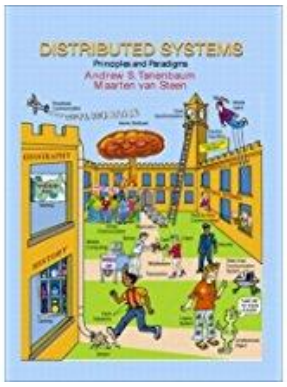
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	3	45
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	10	10
Final Exam	1	2	2
Individual Study for Final Exam	1	16	16
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

Last update date	11.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Distributed Systems	BİM-434	4/II	3+0+0	3	3

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	Computer Networks
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	In this course, the reasons and consequences of the emergence of distributed systems will be explained and the solutions and techniques that are brought to the problems will be explained.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Knows the principles of distributed system (DS). 2. Knows the concept of communication and the methods used. 3. Know processes and their use. 4. Knows examples of distributed systems. 5. Knows the security methods used in distributed systems.
Content of the Course	:	In this course, communication, process, naming, synchronization, consistency and replication, fault tolerance and security issues that arise as common issues of distributed systems will be discussed in detail. Distributed object-oriented systems, distributed file systems, distributed document-based systems, such as some examples from existing applications will provide a better understanding of the concept of distributed distem.

<table>
<tr><td>Course Book</td><td>1. Dıstrıbuted Systems-Prıncıples And Paradıgms,Andrew Tanenbaum,Maarten Van Steen, Prentıce Hall, 2002
  </td></tr>
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Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level	**1**		**2**					**3**	**4**				**5**			
	Very Low		Low					Medium	High				Very High			
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	2	3	3	3	4	3	5	3	1	3	3	3	2	1	2	1
DK-2	2	3	3	3	4	3	5	3	1	3	3	3	2	1	2	1
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DK-4	2	3	3	3	4	3	5	3	1	3	3	3	2	1	2	1
DK-5	2	3	3	3	4	3	5	3	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	DISTRIBUTED SYSTEMS (DS) PRINCIPLES AND EXAMPLES - Definition of DS - DS objectives - Multi-processors, homogeneous/heterogeneous, multi-computer systems	Project Development
2	DISTRIBUTED SYSTEMS (DS) PRINCIPLES AND EXAMPLES - Distributed and network operating systems (dos , nos)) - Middleware - Client-server model	Project Development
3	COMMUNICATION - Lower, transport and top-level protocols - RMI (remote method execution) - RPC (remote procedure call)	Project Development
4	COMMUNICATION - A message-based communication - Stream-based communication	Project Development
5	PROCESSES - Threads - Use of thread in distributed systems - Multi-thread client-presenters	Project Development
6	PROCESSES - X-windows - Kod taşıma - Yazılım ajanları	Project Development
7	NAMING - Names, identifiers, addresses - Name resolution - The realization of the name space	Project Development

8	NAMING - Determining the location of moving assets - Simple solutions, home-based and hierarchical solutions - Cleaning of non-reference materials	Project Development
9	MIDTERM	
10	SYNCHRONIZATION - Clock synchronization and logical hours - Elimination methods - Distributed transaction processing	Project Development
11	CONSISTENCY AND REPLICATION - The necessity of replication - Data-centric consistency models - Client- centric consistency models	Project Development
12	CONSISTENCY AND REPLICATION - Distribution protocols - Consistency protocols	Project Development
13	FAULT TOLERANCE - Secure client-presenter communication - Secure group communication - Distributed commit and rescue	Project Development
14	SECURITY - Secure channels and access control - Security management - Sample applications : Sesame, Kerberos, electronic payment systems	Project Development
15	DS SAMPLE APPLICATIONS - Distributed object based systems - Distributed File Systems	Project Development
16	DS SAMPLE APPLICATIONS - Distributed document-based systems - Distributed coordination systems	Project Development

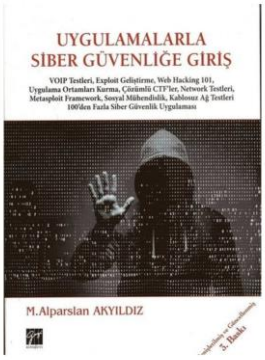
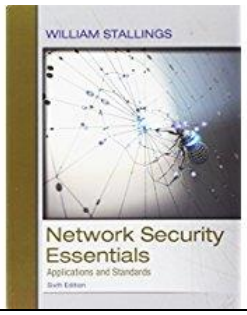
ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	3	45
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	5	5
Final Exam	1	2	2
Individual Study for Final Exam	1	6	6
TOTAL WORKLOAD	90 Hour		
ECTS OF COURSE	Total workload / 30 = 90 / 30 = 3		3 Credit

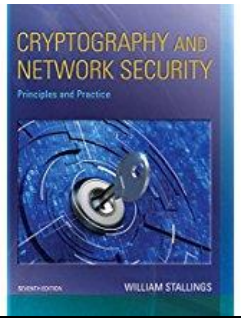
Last update date	11.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL

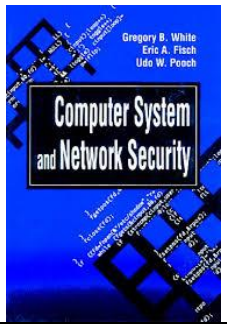
NAVAL ACADEMY
COMPUTER ENGINEERING DEPARTMENT
COURSE INTRODUCTION INFORMATION

Course Name	Code	Class/Semester	Course Time (H+T+L)	Credit	ECTS
Information Systems Security	BİM-435	4/II	4+0+0	3	4

Course Language	:	Turkish
Course Level	:	First Cycle (undergraduate)
Course Precondition	:	No
Course Instructor	:	Computer Eng. Instructor
Purpose of the Course	:	In this course, it is aimed to teach how to protect information systems from threats and these threats. It will be ensured that the students will be aware of information warfare and reach the level that will follow the technological developments in the future.
Course's Learning Outcomes	:	Students who have successfully completed this course; 1. Understand the basics of computer security. 2. Knows encryption techniques and applications 3. Know the principles of Information Security. 4. Knows the precautions against viruses and harmful software. 5. Knows the concept of firewalls
Content of the Course	:	In this course, students will be able to prepare themselves for the information war that is going on today and reach the level to follow the technological developments in this direction.

<table>
<tr><td>Course Book</td><td>1. Introduction to Cyber Security with Applications (M.Alparslan Yıldız, Gazi Kitabevi, 2017)
 
</td></tr>
<tr><td>Other Sources</td><td>1. Network Security Essentials William Stallings
2. Cryptography and Network Security (William Stallings)
3. Computer System and Network Security (Gregory B. White, Eric A. Fish, Udo W. Pooch)
 

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<tr><td>Homeworks and Projects</td><td></td></tr>
<tr><td>Computer Usage</td><td></td></tr>
<tr><td>Other Applications</td><td></td></tr>
<tr><td>Achievement Evaluation System</td><td>
<table>
<tr><th colspan="2">Activites</th><th>Base Mark</th><th>Unit</th><th colspan="2">Contribution in Evaluation, %</th></tr>
<tr><td colspan="2">Midterm</td><td>45</td><td>1</td><td colspan="2">24%</td></tr>
<tr><td rowspan="6">Semester Evaluation</td><td>Short Exams</td><td>45</td><td>1</td><td>%</td><td rowspan="6">16%</td></tr>
<tr><td>Homeworks</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Projects</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Term Homework/Project</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Lab Application</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td>Other Applications</td><td>45</td><td>1</td><td>%</td></tr>
<tr><td colspan="2">Final Exam</td><td>45</td><td>1</td><td colspan="2">60%</td></tr>
<tr><td colspan="2">Integration / NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
<tr><td colspan="2">One Course / Add. NYS</td><td>45</td><td>-</td><td colspan="2">100%</td></tr>
</table>
</td></tr>
</table>

Sheet No	Program Qualifications	Course Contribution Level				
		1	2	3	4	5
1	To able to apply mathematic,science and engineering knowladge,					x
2	To able to use basic computer engineering concepts, algorithms, applications and solutions during encountered problems' identification, solution and analysis,					x
3	Experiment design, data analysis and interpretation skill,					x
4	Setting, configuring, managing and operating a system or its part which is based on computer background to provide desired needs under economical, environmental, social, political, etical, healthy, trusty, productive restrictions,			x		
5	To able to formulate, find solutions and identificate problems about information and softwares systems according to their needs,				x	
6	To able to finding appropriate method and apply to solve problem,					x
7	To able to use IT technologies effeciently,					x
8	To able to develop software and setting special computer background for solutions,				x	
9	Being aware of neccessary methods and software packages for computer engineering,				x	
10	Verbal or written, communicating with customers and team members in work ethic.		x			
11	Having professional and ethic responsibility conciousness,			x		
12	Self-development by understand importance of lifetime learning and following innovations in science and technology area,				x	
13	Setting Communication and expressing ideas in verbal or written way clearly by having individual study and making decition independently,					
14	Having a conscious of service based on principles of democratic, secular and social law in line with Atatürk's principles and revolutions,	x				
15	To be able to use Turkish in oral and written environments,	x				
16	Having a foreign language knowladge to be able to use resources related to his / her field in an international environment and to be able to communicate with his / her colleagues and having a second foreign language knowladge in medium level,		x			

PROGRAM QUALIFICATIONS AND COURSE'S LEARNING OUTCOMES RELATION																
Contribution Level			**1**				**2**			**3**		**4**		**5**		
			Very Low				Low			Medium		High		Very High		
Computer Engineering																
	PY-1	**PY-2**	**PY-3**	**PY-4**	**PY-5**	**PY-6**	**PY-7**	**PY-8**	**PY-9**	**PY- 10**	**PY- 11**	**PY- 12**	**PY- 13**	**PY- 14**	**PY- 15**	**PY- 16**
DK-1	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-2	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-3	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-4	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1
DK-5	3	4	2	4	4	3	3	1	1	3	3	3	2	1	2	1

WEEKLY TOPICS		
Week	**TOPICS**	
	Teoric	**Application**
1	Basics of Computer Security	Project Development
2	Encryption Techniques	Project Development
3	Message Vaccination	Project Development
4	Digital Sign	Project Development
5	Vaccination Applications	Project Development
6	E-mail Security	Project Development
7	E-mail Security	Project Development
8	IP Security	Project Development
9	MIDTERM	
10	WEB Security	Project Development
11	Network Management Security	Project Development
12	Security Attacks	Project Development
13	Viruses and Malicious Softwares	Project Development
14	Viruses and Malicious Softwares	Project Development
15	Firewalls	Project Development
16	Trusted Systems	Project Development

ECTS / WORKLOAD TABLE			
ACTIVITIES	**NUMBER**	**TIME(HOUR)**	**PREDICTION of WORKLOAD**
Teoric Course	15	4	60
Application	-	-	-
Studying Period out of Course	15	2	30
Completing Homeworks and Delivering as a report	-	-	-
Term Project	-	-	-
Project Presentation	-	-	-
Quiz	-	-	-
Midterm	1	2	2
Individual Study for Mid-Term	1	10	10
Final Exam	1	2	2
Individual Study for Final Exam	1	16	16
TOTAL WORKLOAD	120 Hour		
ECTS OF COURSE	Total workload / 30 = 120 / 30 = 4		4 Credit

Last update date	11.03.2019
Updated Person	Dr.Öğ.Üyesi Müh.Kd.Alb.Tolga ÖNEL