COURSE INFORMATION					
Course Title	*Code*	*Semester*	*T+P+L Hour*	*Credits*	*ECTS*
Concepts of Programming Languages	CIS 513		3+0+0	3	10

Prerequisities	

Language of Instruction	English
Course Level	Master's Degree
Course Type	Elective
Course Coordinator	Asst. Prof. Engin KANDIRAN
Instructors	Asst. Prof. Engin KANDIRAN
Assistants	
Goals	This course aims to cover the theoretical background of programming languages that provides students with a wide-range-in-depth discussion of programming languages concepts. The course gives students a solid foundation of understanding the theory of programming languages. The course examines the most common languages and compare them alternately.
Content	The course will cover the following topics: Principles of design and implementation of programming languages. Meaningful properties in languages, Backus Naur Syntax and structuring, compilers, interpreters, data and control structures, procedural, functional and logical programming, modular programming, examples from object oriented programming languages.

Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
Information Systems graduates know how to distinguish between different types of programming languages such as imperative, object oriented, functional, and logic programming languages	6	1,4	A,B,C
Information Systems graduates know to recognizemeaningful properties in languages, Backus Naur Syntax and structuring	6,9,8	1,2,3,4	A,B,C
Knows how to use compilers, interpreters, data and control structures	6	1,2,3,4	A,B,C
Knows about the kinds of programming languages and their development and structure.	6	1	A
Can explain the conceptual basis of object-oriented programming languages and practice examples of them.	9,6,3	1,2,3,4	A,B,C,D
Can write reports about applications of the programming languages and discuss semantic and syntax analysis processes of compilation of the programs.	6	1,2,3,4	A,B,C
Can develop minor programs with using different types of programming languages.	9,8	1,2,3,4	A,B,C

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Discussion, 4: Lab Work

Assessment Methods:	A: Testing, B: Laboratory C: Homework D: Project

COURSE CONTENT

Week	Topics	Study Materials
1	Introduction to programming languages. Principles of design and implementation of programming languages.	Chapter 1-2
2	Meaningful properties in languages, Backus Naur Syntax and structuring.	Chapter 3-4
3	Compilers, interpreters, checking types and scopes.	Chapter 5
4	Data types and control structures.	Chapter 6
5	Expressions and assigments statements.	Chapter 7-8
6	MIDTERM EXAMINATION	
7	Subprograms and their implementation.	Chapter 9-10
8	Symbolic Programming.	Chapter 10
9	List oriented programming languages and artificial intelligence.	
10	Abstract data types, procedural and logical programming.	Chapter 11
11	Examples of object-oriented programming.	Chapter 12
12	Concurrency, modular programming.	Chapter 13
13	Exceptions handling and event handling.	Chapter 14
14	Functional programming languages.	Chapter 15
15	REVIEW AND MIDTERM EXAMINATION	

RECOMMENDED SOURCES

Textbook	Concepts of Programming Languages. International Edition 10th Edition by Roberto Sebesta (2008), ISBN: 9780321509680
Additional Resources	Papers, slides and lecturer notes

MATERIAL SHARING

Documents	Presentations and Laboratory Sheets, REDUCE and LISP documentations
Assignments	Homework Sheets
Exams	Old exam questions are furnished

ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-term	2	66
Quizzes	4	16
Homework	10	18
Total		**100**

Contribution of Final Examination to Overall Grade	40
Contribution of In-Term Studies to Overall Grade	60
Total	**100**

COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Information Systems graduates have the knowledge and the skills to design and develop the complete systems for multi-media visual user interface. (ACM 112,262)					
2	Information Systems graduates have advanced the knowledge and skills to design, develop and install the application systems for multi-media. (ACM365, 368,473)					
3	Information Systems graduates have the knowledge and the skills to design, develop and apply algorithms and data structures to solve the basic problems of information processing, within the framework of discrete mathematics (ACM 221,222).				X	
4	Information Systems graduates have the knowledge and the skills to design and develop computer applications, based on user specified requirements, using modern structured development tools and install them on various hardware platforms and deploy their usage.(ACM 311,322)			X		
5	Information Systems graduates have the knowledge and the skills to design and develop computer applications, based on user specificed requirements, using modern object-oriented development tools and install them on various hardware platforms and deploy their usage(ACM 321).				x	
6	Information Systems graduates know the logic of computer operating systems, the basic set of system commands, how to control access to system resources by users of different departments and how to monitor the running of jobs in the system (ACM 369, 370).					X
7	Information Systems graduates have the knowledge and the skills to design and develop data models serving different requirements, database applications that would access and process data using various types of software, including queries, reports and business applications.(ACM 211, 364)	X				
8	Information Systems graduates have the knowledge and the skills to design and develop business applications that would provide data acess, modification and processing for data kept in enterprise database systems (ACM 221,364).	X				
9	Information Systems graduates have the knowledge about computer networks, and have the skills to design, develop and monitor computer networks, how to configure them and how to maintain their performance. (ACM 361, 362, 363, 463, 464)					
10	Information Systems graduates have the knowledge and the skills to design and develop visual user interfaces for the web, web-based applications for n-tier client/server configurations, how to deploy them in enterprises (ACM 365, 368, 412).					

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Including the exam week: 15x Total course hours)	14	3	42

Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Homework	10	10	100
Quizzes	10	1	10
Midterm	**1**	10	10
Final	**1**	10	10
Total Work Load			242
Total Work Load / 25 (h)			9.6
ECTS Credit of the Course			10