



HASAN KALYONCU UNIVERSITY
Faculty of Engineering
Course Description Form

COURSE: Programming Language Concepts					
CODE: CENG401		SEMESTER: FALL			
LANGUAGE: ENGLISH		TYPE: COMPULSORY			
PRE-REQUISITES: -		THEORY	PRACTICAL	CREDIT	ECTS
CO-REQUISITES: -					
WEEKLY HOURS:		3	0	3	5

CONTENT OF THE COURSE:

Structure of programming languages. Concepts and paradigms. Values and Types. Variables and Storage. Bindings, Scope, and run-time storage. Procedural abstraction and encapsulation. Data abstraction and encapsulation. Type systems. Control Flow. Concepts will be introduced using a functional language and C++.

OBJECTIVE OF THE COURSE:

Aim of this course is to introduce the student to the fundamental concepts and paradigms of programming languages and provides the tools necessary to critically evaluate existing and future programming languages.

WEEKLY SCHEDULE

Week	Topics
1	Overall introduction to the course
2	Values
3	Types – composite types
4	Types – type checking and equivalence
5	Variables & Storage – classification of variables, semantics, and lifetime
6	Variables & Storage – semantics and structures of commands and expressions
7	Binding
8	Scope
9	Procedural abstraction – types of abstraction
10	Procedural abstraction – parameter passing mechanisms
11	Data abstraction – types of abstraction
12	Data abstraction – relations, accessibility, and semantics
13	Type systems
14	Control flow

TEXTBOOK: David A. Watt, Programming Language Design Concepts, Wiley & Sons, 2004.

REFERENCE BOOKS: Bjarne Stroustrup, The C++ Programming Language (3rd Edition), Addison Wesley, 1997.

EVALUATION SYSTEM:		
IN-TERM STUDIES	QUANTITY	PERCENTAGE (%)
Midterm Exam	1	30
Homework	0	0
Laboratory works	0	0
Quiz	5	30
Final Exam	1	40
TOTAL	7	100
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE	6	60
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	1	40
TOTAL	7	100

COURSE CATEGORY:	PERCENTAGE (%)
Mathematics and Basic Sciences	30
Engineering	70
Engineering Design	
Social Sciences	

TABLE OF ECTS / WORKLOAD:			
Activities	QUANTITY	Duration (Hour)	Total Workload
Course Duration	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	6	84
Laboratory works	0	0	0
Mid-term	1	2	2
Final examination	1	2	2
Homework	0	0	0
Quiz	5	1	5
Total Work Load			132
Total Work Load / 30			4.4
ECTS Credit of the Course			5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
LO1	1	3	0	3	3	0	0	0	0	0	0
LO2	1	3	0	3	3	0	0	0	0	0	0
LO3	1	3	0	3	3	0	0	0	0	0	0
LO4	1	3	0	3	3	0	0	0	0	0	0
LO5	1	3	0	3	3	0	0	0	0	0	0

LO6	3	3	0	2	2	0	0	0	0	0	0
Values: 0: None 1: Low 2: Medium 3: High PO: Program Outcome LO: Learning Outcome											

INSTRUCTOR(S):	Asst. Prof. Dr. Ulaş GÜLEÇ
FORM PREPARATION DATE:	23.05.2019

LEARNING OUTCOMES OF THE COURSE:	PROGRAM OUTCOMES:
<p>LO1: Evaluate modern, representative programming languages critically.</p> <p>LO2: Choose a suitable programming paradigm and language for a given problem or domain.</p> <p>LO3: Define dynamic semantics of small subsets of programming languages, e.g., control structures.</p> <p>LO4: Select and apply appropriate expressions and control structures for a given programming task.</p> <p>LO5: Analyze and evaluate data and control abstractions of programming languages.</p> <p>LO6: Recognize major programming languages.</p>	<p>PO1: Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.</p> <p>PO2: Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.</p> <p>PO3: Ability to design a complex system, process, device or product under realistic constraints and condition, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.</p> <p>PO4: Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively.</p> <p>PO5: Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.</p> <p>PO6: Ability to work efficiently in intra-disciplinary and multidisciplinary teams; ability to work individually.</p> <p>PO7: Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.</p> <p>PO8: Recognition of the need for lifelong learning; ability to access information, to follow developments in</p>

	<p>science and technology, and to continue to educate him/herself.</p> <p>PO9: Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.</p> <p>PO10: Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.</p> <p>PO11: Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.</p>
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