GAU, Faculty of Engineering

Course Unit Title	Structured Programming Languages
Course Unit Code	CEN302
Type of Course Unit	Compulsory, Computer Engineering Students
Level of Course Unit	3rd Year BSc
National Credits	4
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	3
Semester when the course unit is delivered	6
Mode of Delivery	Face to Face, Laboratory Experiments
Language of Instruction	English
Prerequisities and co-requisities	ENG102 - Computer Programming I
Recommended Optional Programme Components	Basic bacground computer programming

Objectives of the Course:

- To improve the understanding of the principles of the programming languages.
- To overview different programming paradigms like Logic, Functional and Object Oriented languages.
- To teach the differences and similarities between different types of languages
- To teach the concepts and principles of different type of programming languages. Topics include syntax, semantics, names, types, memory management
- To teach basics of JAVA language during laboratory sessions as a platform of teaching students how to learn a new language and put it to practice

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	List the key features of major programming language paradigms	1
2	Specify the syntax of programming languages using context free grammars	1
3	Draw a parse tree and/or list productions for a sentence in a language, given its grammar	1
4	Demonstrate that a specific grammar is ambiguous	1
5	Differentiate between static and dynamic scope and ability to analyze variables' scope(s)	1
6	Ability to learn a new programming language by investigating that language's syntax, semantics and type system.	1,5

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	Ability to design and conduct experiments as well as to analyze and interpret data	1
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	1
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	Ability to express their ideas and findings, in written and oral form	1
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	3
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3
10	To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions.	3
11	Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1	Chapter 1	Introduction	
2		Basics of Structured. Prog. Lang.	
3		Basics of Structured. Prog. Lang.	
4	Chapter 2	Syntax in Programming Languages	
5		Parsing	
6		Ambiguity	
7			Midterm
8	Chapter 3	Names and Type System	
9		Names and Scope	
10		Data Types	
11	Chapter 4	Semantic in Programming Languages	
12		Evaluation Trees	2nd Midterm Exam
13		Evaluation Trees	
14	Chapter 5	Functions and Memory Space	
15			Final

Recommended Sources

Textbook:
A.B.Tucker, R.E.Noonan, "Programming Languages:Principles and Paradigms", McGraw Hill, 2nd Edition, 2007.

Supplementary Material (s):
R.W.Sebesta, "Concepts of Programming Languages", Addison Wesley, 8th Edition, 2008.

Assessment

Attendance	10%	Less than 25% class attendance results in NG grade.
Laboratory	10%	Less than 25% laboratory attendance results in NG grade.
Midterm Exam	20%	Written Exam
2nd Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	3	45
Labs and Tutorials	10	2	20
Assignments	-	-	-
Project/Presentation/Report Writing	5	4	20
E-learning Activities	-	-	-
Quizzes	-	-	-
Midterm Examination	2	15	30
Final Examination	1	15	15
Self Study	14	3	42
Total Workload			172
Total Workload/30 (h)			5.66
ECTS Credit of the Course			6