University of Asia Pacific (UAP)
Department of Computer Science and Engineering (CSE)

Course Outline

Program:	Computer Science and Engineering (CSE)
Course Title:	Structured Programming Lab
Course Code:	CSE 104
Semester:	Spring-2025
Level:	1st Year 2nd Semester
Credit Hour:	1.5
Name & Designation of Teacher:.	**Nuzhat Tabassum Progga**, Lecturer **Asma Mariam**, Lecturer **Noor Mairukh Khan Arnob**, Lecturer
Office/Room:	7th Floor
Class Hours:	**Section A1:** Wednesday (11.00 - 1.50 PM) **Section A2:** Monday (2.00 - 4.50 PM) **Section B1:** Sunday (2.00 - 4.50 PM) **Section B2:** Wednesday (11.00 - 1.50 PM) **Section C1:** Wednesday (8.00 - 10.50 AM**)** **Section C2:** Wednesday (2.00 - 4.50 PM**)** **Section D1:** Sunday (11.00 - 1.50 PM) **Section D2:** Wednesday (11.00 - 1.50 PM)
Consultation Hours:	**Lab Hour**
e-mail:	progga@uap-bd.edu asma@uap-bd.edu arnob@uap-bd.edu
Mobile:	Available in the faculty page of the departmental website
Rationale:	This course will cover the main aspects of structured programming in C. This knowledge is very important to build up the programming and project management.
Pre-requisite (if any)**:**	None
Course Synopsis:	**Structured Programming: introduction** and **flow control, Function:** argument and parameter of a function return type**.**

Recursive Function, Arrays: introduction to array, declaration and definition of an array, types of array, multidimensional array, **Character Strings**: String manipulation, Dynamic memory allocation. **Recursive functions:** Defining and working procedure, base condition. **Structures:** Concepts, Accessing members, Arrays of structures. **Pointers**: Fundamentals, declarations, Pointers and structures/arrays, Arrays of Pointers. **File Operations**: opening and closing a file, Operation on a file, Binary I/O, Random access.

Course Objectives:

The objectives of this course are to

1. Provide opportunities to develop basic programming skills with respect to structured programming methodology.
2. Describe programming approaches that avoid common coding errors.
3. Explain how to solve a problem using Object Oriented Programming features in C++.

Course Outcomes (CO) and their mapping with Program outcomes (PO) and Teaching-Learning Assessment methods:

CO No.	CO Statements: Upon successful completion of the course, students should be able to:	Corresponding POs (Appendix-1)	Bloom's taxonomy domain/level (Appendix-2)	Delivery methods and activities	Assessment Tools
CO1	**Solve** problems using Structured Programming approaches.	b	1/Apply	PPT Lecture, Problem Solving	Problem Solving, Viva, Final Exam
CO2	**Develop** solutions for real life problems using Structured Programming approach.	c	1/Apply	PPT Lecture, Problem Solving	Problem Solving , Assignment

Weighting COs with Assessment methods:

Assessment Type	% weight	CO1	CO2
Final Exam (Coding Performance)	50%	40	10
Mid Semester (Coding Performance)	30%	20	10

Continuous Assessment	20%	20	
Total	**100%**	**80**	**20**

Course Content Outline and mapping with COs

Weeks	Topics / Content	Course Outcome	Delivery methods and activities	Reading Materials
1	Structured Programming introduction and flow control	CO1	PPT Lecture, Practice sessions	Slides, Books, reference links
2-3	Flow control: flow control, Nested Loop **Class performance/ Assignment**	CO1	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
4-5	**Arrays:** introduction to the array, declaration and definition of an array, types of array, multidimensional array, programs using array, matrix multiplication using the array. **Class performance/ Assignment**	CO1	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
6-7	**Function**: argument and parameter of a function return types, inline declaration, and forward declaration of a function. **Class performance/ Assignment**	CO1	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
8	**Character Strings**: Variable length character strings, String manipulation **Class performance/ Assignment**	CO1, CO2	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
9	**Pointers:** Fundamentals, declarations, Pointers and structures/arrays, Operations on Pointers, Pointers to function, Pointer and memory address, Arrays of Pointers	CO1, CO2	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links

Weeks	Topics / Content	Course Outcome	Delivery methods and activities	Reading Materials
	Structures: Concepts, Accessing members, Arrays of structures **Class performance**			
10	**Recursive functions**: Defining and working procedure, base condition. **Class performance**	CO1, CO2	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
11-12	**File Operations:** opening and closing a file, Operation on a file, Binary I/O, Random access. + **mini project** **Class performance** **(if possible)**	CO1, CO2	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
13	**Dynamic memory allocation, Bitwise operators and macros**	CO1, CO2	PPT Lecture, Problem Solving, Practice sessions	Slides, Books, reference links
14	**Final Exam + Viva**			

Minimum attendance: 70% class attendance is mandatory for a student in order to appear at the final examination.

Textbook: Programming in ANSI C (4th Edition) – E. Balagurusamy

Recommended References: Teach yourself C (3rd Edition) - Herbert Schildt

Grading System: As per the approved grading scale of University of Asia Pacific (Appendix-3).

Special Instructions: **Late attendance:** Students who will enter the class after the attendance call will be marked as absent.

Assignment: **Unfinished** work should be submitted as assignment. **Additional** assignments may be given as needed. Copied home work will be graded as zero. Late submission will result a 50% deduction in score.

Student's responsibilities: Students must come to the class prepared for the course material covered in the previous class (es).
They must submit their assignments on time.

Prepared by	Checked by	Approved by

(Course Teacher)	(Chairman, PSAC committee)	(Head of the Department)
Nuzhat Tabassum Progga Asma Mariam		

Appendix-1:

Washington Accord Program Outcomes (PO) for engineering programs:

(a) Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in K1 to K4 respectively to the solution of complex engineering problems.

(b) Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (K1 to K4)

(c) Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (K5)

(d) Conduct investigations of complex problems using research-based knowledge (K8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

(e) Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering activities with an understanding of their limitations.

(f) Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (K7)

(g) Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (K7)

(h) Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (K7)

(i) Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

(j) Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(k) Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

(l) Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

In addition to incorporating the above-listed POs (graduate attributes), the educational institution may include additional outcomes in its learning programs. An engineering program that aims to attain the above mentioned POs must ensure that its curriculum encompasses all the attributes of the Knowledge Profile (K1 – K8) as presented in Table 4.1 and as included in the PO statements. The ranges of Complex Problem Solving (P1 – P7) and Complex Engineering Activities (A1 – A5) are given in Tables 4.2 and 4.3, respectively.

Knowledge Profile

K1 A systematic, theory-based understanding of the natural sciences applicable to the discipline

K2 Conceptually based mathematics, numerical analysis, statistics and formal aspects of computer and information science to support analysis and modeling applicable to the discipline

K3 A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline

K4 Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline

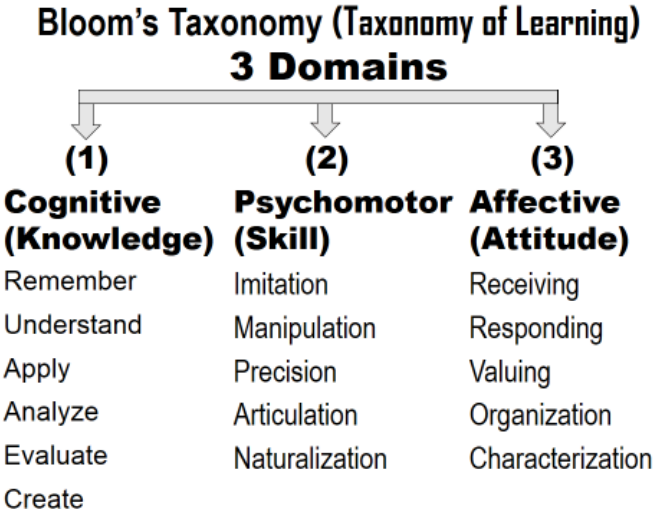
K5 Knowledge that supports engineering design in a practice area

K6 Knowledge of engineering practice (technology) in the practice areas in the engineering discipline

K7 Comprehension of the role of engineering in society and of the identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity in economic, social, cultural, environmental and sustainability terms

K8 Engagement with selected knowledge in the research literature of the discipline

Appendix-2



Appendix-3
UAP Grading Policy:

Numeric Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00