

DEPARTMENT OF COMPUTER SCIENCE AND

ENGINEERING

BANGLADESH UNIVERSITY OF BUSINESS AND TECHNOLOGY COURSE OUTLINE

			COCIO							
1	Faculty		Faculty of Engineering & Applied Sciences (FEAS)							
2	Department		Department of Computer Science and Engineering							
3	Program		B.Sc. Engg. in Comput				gg. in CSE)			
4	Course Code		CSE 101 (BNQF Code				<u> </u>			
5	Course Title		Structured Programmin	g La	inguage					
6	Course Type		Core Engineering Course							
7	Pre-requisites		N/A							
8	Credit Hours/V	alue	3.0							
9	Contact Hours		17 weeks × 2 classes pe	er we	eek × 1.25 hour	s per class = 42.5 t	otal hours			
10	Year- Semester		1 - 1							
11	Academic Sessi	on	Fall 2025							
12	Class Schedule	Int	ake – Section (Shift)		Class Day	Class Ho	nire	Venue		
12	Class Schedule	11116	ake – Section (Simt)		Tuesday	11:45 am-01		B3-604		
			56–7 (Day)		Thursday	04:00 pm-05		B1-302		
			RURT	Cam		, Mirpur 2, Dhaka -		B 1-302		
			Bobi	Cum	pus, raphagar	, wiii pui 2, Diiaka	1210			
13	Course Website		Google Classroom Coo	le: y	rzvbwtf Meet I	Link: https://meet.go	ogle.com/hzc	-hsks-nts		
14	Course Teacher's Information	Nam	e (Code): Sourav Kun	du (SKD)	Specialization: Structured Programming, Object Oriented Programming, Software Engineering.				
		Desig	gnation: Lecturer, Depa	rtme	ent of CSE	Email: souravkundu@bubt.edu.bd Cell No. +8801639881090 Room No. B3-408				
15	Counselling		Day		Counse	eling Hours	Venue			
	Hour/Tutorial		Sunday		10:30a	m-11:45am	D	3/408		
			Monday		10:30a	m-11:45am	Б	J/ + U0		
16		the c	Students must carry learning materials like lecture notes, calculator, pen, pencil, eraser etc. in the classroom. Borrowing learning materials in the classroom or exam room from fellow students is prohibited. A student is also advised to keep separate class note of 50 pages for the course during class hours.							
17	Rationale	In the programmed programmed the programmed								

			using C language and start preparing themselves for the competitive programming world.						
18	Objective cou app sui			This course introduces the fundamental concepts of structured programming language. In this course, students will be able to develop logics which will help them to create programs, applications using C programming language. It emphasizes that the students learn to determine uitable logic for solving programming related problems using C language and start preparing hemselves for competitive programming world.					
19	Course Learning Outcomes (CLOs)		CLO programay CLO CLO CLO	con completing this course student will be able to: LO1: Understand the basic programming concepts and terms related to structured ogramming languages. LO2: Explain different conceptual programming problems such as flow control, function and ray etc. LO3: Analyze different problem scenarios to solve them. LO4: Apply different programming syntax and structure to solve different types of basic oblems.					
20	Mappin	g of CO	– P(O Method of Delivery and	l A	ssessment Tool			
	CLOs	PLOs &CF		Bloom's Domain / Level	D	elivery Methods / Activities	Assessment Tools		
	CLO1	PLO1 CF = 2		Cognitive/Understanding	•	Classroom Lecture (PPP &/or WBT*)	<i>Indirect</i> : In class response, course counseling, course end		
	CLO2	PLO1 CF = 3		Cognitive/Understanding	•	Classroom Discussion&	survey		
	CLO3	PLO2 CF = 3		Cognitive/Analyzing	Analysis and design	Direct: Class participation and activity, class test,			
	CLO4	PLO3 CF = 3		Cognitive/Applying			assignment, midterm and final examinations		
	*PPP: Po			resentation & WBL: White	e Board Teaching				
				relation Criteria		Correlation Level	Correlation Factor (CF)		
				than 25%	Almost no correlation Poor (Low)		0		
				than 25% and below50%			1		
				han 50% and below 75% than 75% and up to 100%		Moderate (Medium) Significant (High)	2		
21	Teaching-Learning Strategy			The course's teaching-learning process is designed to achieve its intended learn outcomes. Various classroom tools, such as multimedia projectors with desk computers, whiteboards, and overhead projectors, are used to make the procengaging, effective, and comprehensive. The primary method of teaching through classroom lectures, wherein most of the course content is covered in lecture notes. For the remaining topics, textbooks are utilized, with addition references provided for students to study on their own. Lecture materials are post on Google Classroom web pages and also provided as hard copies in the classroom of the course that students achieve the expected performance and knowledge lectures that students achieve the expected performance and knowledge lectures of individual to the provided to help students with weak areas. Formative assessments of individual students are done through inside and outside classroom discussions, in-class contact and clicker questions, homework, and students' responses. A course-survey is also conducted. Summative assessments are done through conducted.					

participation and performance observation, assignments, class tests, and semester midterm and final examinations.

If a student is absent from a class for any reason, they are advised to do self-study and take tutorials from the class teacher to make up for the missed class. Supplementary examinations are available for students who missed the midterm or final examinations due to valid reasons. These supplementary exams are more challenging than the regular exams.

Course Plan

This course consists of 150.0 min./week of class contact hours and an additional 90 min./week of counseling hours to explain students' design problems, provide reading materials, and assist in understanding lecture materials for preparing examinations, class tests, and assignments.

Week	Selected Topics	Lecture Note, Text Book& Other Ref.	Teaching Learning Strategy	Assessment Strategy	Correspondi ng CLOs
1-2 (Week 1)	Overview of the course, C Introduction: Character Set, C Tokens, Keywords and Identifiers. Data Types, Variables, Constant variables, and Type-casting.		Lecture, Video Presentation		CO1
3-4 (Week 2)	Operators and Expressions: Arithmetic & logical operators, Operators Precedence and Associativity, Type Conversion in Expressions, Conditional Operator, Library Functions, Input and Output Functions			Class Test,	CO1
5-6 (Week 3)	Control Statements: The if-else Statement, if ladder, nested if-else, for loop, while loop, do-while loop		Lecture discussion with White	Assignment , Written Examinatio	CO2
7-8 (Week 4)	Nested loop and nested loop-based problem analysis, Loop example & real-world problem solving		Board and Multimedia, Problem	n	CO3, CO4
9-10 (Week 5)	Break, Continue and GOTO Statement, Comma Operator, Function Prototypes, Function call, Return statement		Solving		CO2
11-12 (Week 6)	Function Call with different Parameter, Passing Arguments to a Function, Recursion: recursive functions, Types of recursions: direct recursion				CO2
13-14 (Week 7)	Case Study & Review class for Mid Term Examination.		Lectures, Questions and answers	Problem Solving & Viva Voce	CO4
	Midterm Examina	tion (25 Septemb	er – 10 October	2024)	
15-16 (Week 8)	Arrays: Declaration and initialization array, traversing array, Passing Arrays to Functions, Operation that can be				CO2, CO3, CO4

	performed on array, Multidimensional			
	Arrays: declaration, initialization and			
	analyzing multidimensional array,			
17-18 (Week 9)	String: Arrays and Strings, gets, puts function, String: ASCII value of different characters, String: finding frequency and counting different characters, binary string	Lecture discussion with White Board and Multimedia,	Class Test, Assignment , Problem Solving Ability and	CO1, CO2
19-20 (Week 10)	String Manipulation: how to copy, compare, reverse string and string catenation using library functions	Problem Solving	Written Examinatio n	CO3
21-22 (Week 11)	Pointers: Fundamentals, Pointer Declarations, Passing Pointers to Functions, Pointers and One- Dimensional Arrays, Pointers and strings, String Operations			CO2
23-24 (Week 12)	Dynamic Memory Allocation (Malloc, Calloc, Realloc), Arrays of Pointers, Structures: Defining a Structure, Processing a Structure, accessing a member, initialize			CO3
25-26 (Week 13)	Declare a file, open, process and close a file, Read data from file: fscanf(), fgets(), fgets(), fread(). File operations & example.			CO2, CO3
27-28 (Week 14)	ACM-ICPC: Judging Systems & UVA problem solving,	Discussion	Problem Solving Ability and	CO3, CO4
29-30 (Week 15)	ACM-ICPC: Judging Systems & UVA problem solving,	and Problem Solving	Written Examinatio	CO3, CO4
31-32 (Week 16)	Brain Storming Week, 24 Nov	/ember-30 November,	2024	
33-34 (Week	Case Study & Review class for Semester Final Examination.	Lectures, Questions and answers	Problem Solving	CO3, CO4

23 i	Text Books 1. Teach Yourself C, 3rd Edition, by Herbert Schildt.							
		2. C Programming Easily Concisely by M.A.H. Newton, M.M. Akbar, M. Kaykobad						
		(Bangla or English version)						
ii	Reference Books	ence Books 1. Programming with C, 2nd Edition, by Byron Gottfried						
		2. Introduction to C Programming, 2nd Edition, by Reema Thareja						
		3. Programming in ANSI C, 8th Edition, by E. Balagurusamy						
		4. Let us c, 16th Edition, by Yashavant Kanetkar						

24	Assessment and marks distribution criteria	Active engagement in class activities, participation in outside classroom discussions, and communication through the Internet and phone are integral parts of this course. Failure to participate in class regularly, take class tests, and/or complete assignments may result in failing the course. To achieve the course-specific expectations, students must actively participate in classroom discussions and complete all sets of work at a satisfactory level, as outlined in the course content. The course-specific expectations for students are achieved if						
		 75% of students in a section attend more that assessment). Their active participation in the classroom the total attendees (determined by for clicker questions, and group discussions) Equal or more than 40% of course out (summative assessment). The level of engagement in the studies, class tests, and assignments, must be more than 30% of students in a section) by a like Google Classroom, email, phone compared to the students are assessed according to examinations, class tests, assignments calculation and course outcome assessments. 	oom discussion mative assessmas). atcomes must be such as regular more than 60% (butside class discourse counseliall, etc. (formation their individuals), and class par	is targeted at up to 80% of nents such as eye contact, e achieved by the students ly preparing class lectures, formative assessment). Scussion (once weak, more ng and using social media tive assessment). lual performance in the ticipation. The final mark				
		Assessment tool	Conducting Number	Mark distribution (%)				
		Class participation and activity	34	05				
		Class test	2	$7.5 \times 2 = 15$				
		Assignments/Report and Presentation	1	5.0 + 5.0 = 10				
		Midterm examination	1	30				
		Final examination	1	40				
		Class participation & activity performance	Total Mark	100				

Class test	2	$7.5 \times 2 = 15$
Assignments/Report and Presentation	1	5.0 + 5.0 = 10
Midterm examination	1	30
Final examination	1	40
	Total Mark	100
CT		

Performance level	Mark distribution (%)
91% - 100%	05
86% - 90%	04
81% - 86%	03
76% - 80%	02
70% - 75%	01
less than 70%	Not allowed to sit for the final examination.

25 Assessment Strategy

Assessment tool	Content, Length and Criteria	Weight (mark)	Due date
Class test 1	Composed of 3 to 5 short questions. Duration of the class test is 40 minutes, and the assigned full mark is 7.5.	7.5	On the 12th lecture
Class test 2	Composed of 3 to 5 short questions. Duration of the class test is 40 minutes, and the assigned full mark is 7.5.	7.5	On the 25th lecture
Assignment	Assignment with a presentation/ Viva Voce will be delivered two	10.0	Presentation will be
with a	weeks after assigning. 5 marks are assigned for the assignment and		conducted on the
*	the other 5 marks are for a presentation/ Viva Voce.		28th lecture
Viva Voce			

Midterm	Midterm Examination is held according to the Academic Calendar	30	After 14 th lecture
Examination	and examination schedule after 7 weeks of classes. All three sets		and following the
	of questions are to be answered by the students in one and half-		examination
	hour exam period. Each question set contains multiple short type		schedule of BUBT.
	questions. The assigned full mark for the 3 sets of questions is 30.		
Final	Final Examination is held after 8 weeks of classes after the	40	After 9 weeks of
Examination	midterm examination. All four sets of questions are to be answered		classes afterward
	by the students in a two-hour exam period. Each question set		the midterm
	contains multiple short type questions. The assigned full mark for		examination and
	the 4 sets of question is 40.		following the
			examination
			schedule of BUBT.

2		CLO		Assessment of CLOs							
		Assessment	A agagger and To al		CI		Moule Allogotion				
	Criteria	riteria	Assessment Tool	CLO1	CLO2	CLO3	CLO4	Mark Allocation			
			Class Participation	5/4	5/4	5/4	5/4	05			
			Class Test	5.0	10.0	0	0	15			
			Assignment& Presentation	0	5.0	5.0	0	10			
			Midterm Exam	10	20	0	0	30			
			Final Exam	05	10	15	10	40			
			Total Mark	21.25	46.25	21.25	11.25	100			

27	Rubrics (Attainment Criteria)	CLOs (Taxonomy domain)	Not attained /Failed (0-39%)	Poor (40%-49%)	Moderate (50%-64%)	Good (65%-79%)	Excellen t (80%- 100%)
		(apply) CLO4 (understand and apply)	was answered with serious deficiencies in understandi ng and explanation. Applicable method was	touching on the applicable method or without explanations. As a result, a few steps of problem-solving procedures or concepts are not	was answered partially correctly by applying the method or concepts asked, but a few important	The question was answered correctly but briefly, and missed some portions of the important explanation by applying the required method or concepts.	The question was answere d correctly with detailed explanati ons using the asking method of solving the problem or concepts with adequate explanati on.

28 Feedback

All kinds of feedback to the students will be produced within a week after the day of holding a class test and midterm examination. No answer script will be shown for the final examination if it is not challenged by a student. Online and email queries will also be responded to within three days by email.

29	Grading Policy	Letter grades and grade points are used to evaluate the performance of a student in the course:					
		Ma	rks Range		Letter Grade	Grade Point	
		80% and ab	ove	A+	: A Plus (Outstanding)	4.00	
		75% to less	than 80%	A	: A regular (Excellent)	3.75	
		70% to less	than 75%	A-	: A minus (Very good)	3.50	
		65% to less	than 70%	B+	: B Plus (Good)	3.25	
		60% to less than 65%		В	: B regular (Average)	3.00	
		55% to less		B-	: B minus (Below average)	2.75	
		50% to less		C+	: C Plus (Poor)	2.50	
		45% to less		C	: C regular (Very poor)	2.25	
		40% to less		D	: Pass marginally	2.00	
		Less than 4	0%	F	: Fail	0.00	
				$\frac{I}{R}$: Incomplete : Retake		
				W	: Withdraw		
		assessments	equal weightage of 7.5. Both regular and surprise CTs can be conducted. ed book CTs, midterm and final examinations are closed book assessments. Mobile phone is prohibited in the examination hall. Students are insisted on carrying simple scientific calculators to solve the complex calculations and a wristwatch to follow time during the exam hours.				
31	Additional Information	https://www.b	taking supplemen lendar Fall2023: oubt.edu.bd/Home/J les: https://www.bu	tary exa	stions; therefore, students are d minations. ails/Academic_Calender d/Home/page_details/Rules_and_Re		

32 Bloom's Taxonomy for Teaching-Learning

Bloom's Taxonomy is a set of three hierarchical models used to classify educational learning objectives into levels of complexity and specific quality. The three taxonomy domains for achieving learning objectives are cognitive, affective, and psychomotor. Cognitive domain is in the primary focus of educating and frequently used to structure curriculum learning objectives and achieve the level of learning. The three domains and their respective levels are illustrated below:

Cognitive [C]	Affective [A]	Psychomotor [P]
(Knowledge-based)	(Emotion-based)	(Action-based)
Remember	Receive	Imitate
Understand	Respond	Manipulate
Apply	Value	Precision
Analyze	Organize	Articulation
Evaluate	Characterize	Naturalization
Create		

Descriptions of Cognitive Domain (Anderson and Krathwohl'supdated Taxonomy in 2001):

The **cognitive domain** involves the development of our mental skills and the acquisition of knowledge.

Category (Level)	Meaning	Keywords
Remember (C1)	Recognizing or recalling knowledge from memory. Remembering is when memory is used to produce or retrieve definitions, facts, or lists, or to recite previously learned information.	
Understand (C2)	Constructing meaning from different types of functions be they written or graphic messages or activities like interpreting, exemplifying, classifying, summarizing, inferring, comparing, or explaining.	conclude, demonstrate, discus
Apply (C3)	Carrying out or using a procedure through executing or implementing. Applying relates to or refers to situations where learned material is used through products like models, presentations, interviews, or simulations.	compute, dramatize
Analyze (C4)	Breaking materials or concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose. Mental actions included in this function are differentiating, organizing, and attributing, as well as being able to distinguish between the components or parts. When one is analyzing, he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or diagrams, or graphic representations.	compare, contrast, debate deconstruct, deduce differentiate, discriminate distinguish, examine, organize outline, relate, research
Evaluate (C5)	Making judgments based on criteria and standards through checking and critiquing. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation.	conclude, decide, evaluate
Create (C6)	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. Creating requires users to put parts together in anew way, or synthesize parts into something new and different creating a new form or product. This process is the most difficult mental function in the new taxonomy.	predict, plan, construct, design propose, devise, and formulate

34 Graduate Attributes (Program Learning Outcomes) of B.Sc. in CSE Program based on Washington Accord

Program Learning Outcomes (PLOs) are brief statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and attitudes that students acquire

throughout the entire course of a program. The students of the B.Sc. in CSE program are expected to achieve the following graduate attributes or program outcomes at the time of graduation:

- **PLO1.** Apply knowledge of mathematics, natural science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PLO2.** Identify, formulate, and analyze complex engineering problems reaching substantiated conclusions using the first principles of mathematics and natural and engineering sciences.
- **PLO3.** Design solutions for complex engineering problems and design systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.
- **PLO4.** Conduct investigations of complex problems using research-based knowledge and research methods that include the design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
- **PLO5.** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering problems, with an understanding of the limitations.
- **PLO6.** 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.
- **PLO7.** Understand and evaluate the sustainability and impact of professional engineering work to solve complex engineering problems in societal and environmental contexts.
- **PLO8.** Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice.
- **PLO9.** Function effectively as individuals and members or leaders of diverse teams and in multidisciplinary settings.
- **PLO10.** Communicate effectively on complex engineering activities with the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and convey and receive clear instructions.
- **PLO11.** Demonstrate knowledge and understanding of engineering and management principles and apply them to their work as team members or leaders or entrepreneurs to manage projects in multidisciplinary environments.
- **PLO12.** Recognize self-awareness to engage in a lifelong learning process to reflect in the broadest context of technological change.

35 Knowledge Profile (K)

- **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 identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.
- **K8:** Engagement with selected knowledge in the research literature of the discipline.

36 Range of Complex Engineering Problem Solving (P)

Complex Engineering Problems have characteristic P1 and several or all of P2 to P7:

P1. Depth of knowledge required: Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8, which allows a fundamentals-based, first principles analytical approach

- **P2.** Range of conflicting requirements: Involve wide-ranging or conflicting technical, engineering and other issues
- **P3. Depth of analysis required**: Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
- **P4.** Familiarity of issues: Involve infrequently encountered issues
- **P5. Extent of applicable codes:** Are outside problems encompassed by standards and codes of practice for professional engineering
- **P6. Extent of stakeholder involvement and conflicting requirements**: Involve diverse groups of stakeholders with widely varying needs
- **P7.** Interdependence: Are high-level problems including many component parts or sub-problems

37 Range of Complex Engineering Activities (A)

Attribute Complex activities means (engineering) activities or projects that have several or all of the following characteristics:

- **A1. Range of resources**: Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies).
- **A2.** Level of interaction: Require resolution of significant problems arising from interactions between wideranging or conflicting technical, engineering, or other issues.
- **A3.** Innovation: Involve creative use of engineering principles and research-based knowledge in novel ways.
- **A4.** Consequences for society and the environment: Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation.
- **A5. Familiarity**: Can extend beyond previous experiences by applying principles-based approaches.

38 Code of Conduct

It is strongly suggested that students keep discipline in the classroom by attending class on time, listening to lectures attentively, and participating in discussions on the subject. To get class participation grades, students MUST attend the classes of the courses s/he registered for. Turn off his or her cell phone before entering a class or participating in class tests and exams. There are activities that are considered academic misconduct. One of them is plagiarism, which signifies the deliberate formal presentation or submission of works, phrases, texts, ideas, illustrations, or diagrams of others as one's own without proper citation. Another one is the use of unauthorized aids (including electronic devices), asking for assistance, or using illegal materials when preparing assignments or in examinations. In addition, copying from others' work, showing your work to others, and asking for answers are also considered academic misconduct. Penalties for involving academic misconduct include one or more of the following: a zero grade on the work produced, a failing grade in the course, suspension for one semester or more, and even expulsion from the university. On the university premises or at a university-sponsored program, students must abide by the Student Code of Conduct and other Rules and Regulations of BUBT. which are available on **BUBT** website at https://www.bubt.edu.bd/Home/page details/Office of the Proctor.

39 Social & Moral Values

Our promises are based on the three cardinal principles:

- i. What we do believe.
- ii. What we do practice.
- iii. What we will promote.

However, students are advised to undertake the following commitments for social and moral developments.

- To be punctual and attentive in classes;
- To prioritize honesty & faith;
- To ensure mutual respect;
- To be always proactive;
- To avoid conspiracy;
- To be cooperative in learning;
- To be sincere in class preparation;
- To avoid unfair means and plagiarism in exams, report writings and assignments;
- To carry out assignments or keep other commitments timely;
- To be motivated for asking question and encourage feedback;
- Not to forget to switch-off the cellphone in a class;
- To follow the dress code and wearing ID card on campus;
- To be decent on all aspects;
- To be loyal and trust-worthy to the teachers and others;
- Help keeping an eco-friendly environment in the campus.

Prepared by: Checked by: Approved by:

Md. Ashraful Islam Assistant Professor Dept. of CSE, BUBT