

B.Tech Civil Engineering

REVISED CURRICULUM FOR BATCH 2015-2019

I SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	LLL111	Basic English	3	0	0	3	-	1.04
2	MAT111	Matrices & Multivariable Calculus	3	1	0	4	-	1.04
3	PHY111	Modern Physics	3	0	0	3	-	1.04
4	PHY151	Physics-I Lab	0	0	2	1	-	1.04
5	CHY111	General Chemistry	3	0	0	3	-	1.04
6	CHY151	Engineering Chemistry-I Lab	0	0	2	1	-	1.04
7	JAP101	Japanese	2	0	0	2	-	1.04
8	EEE101	Basics of Electrical and Electronics Engineering	3	0	0	3	-	1.04
9	EEE151	Basics of Electrical and Electronics Engineering Lab	0	0	2	1	-	1.04
10	EVS102	Environmental science & Energy	3	0	0	3	-	1.04
11	MEE151	Engineering Graphics	0	0	4	2	-	1.04
Total credits						26		


II SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	LLL121	English Proficiency	0	0	4	2	LLL111	1.04
2	MAT121	Ordinary Differential Equations and Integral Transform	3	1	0	4	MAT111	1.04
3	PHY121	Condensed Matter Physics	3	0	0	3	PHY111	1.04
4	PHY141	Physics Lab-II	0	0	2	1	-	1.04
5	CHY122	Nano Science and Nano Technology	3	0	0	3	CHY111	1.04
6	CHY141	Chemistry Lab-II	0	0	2	1	-	1.04
7	HUM201	Psychology & Sociology	2	0	0	2	-	1.04
8	CSE101	Computer Programming and Problem Solving	3	0	0	3	-	1.04
9	CSE151	Computer Programming and Problem Solving Laboratory	0	0	2	1	-	1.04
10	LLL101	Universal Human Values and Ethics	3	0	0	3	-	1.04
11	MEE152	Workshop Practice	0	0	2	1	-	1.04
Total credits						24		

III SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	MAT211	Partial Differential Equations and Complex Analysis	3	1	0	4	MAT 121	1.04
2	LLL213	English Proficiency and Aptitude Building-II	0	0	4	2	LLL121	1.04
3	CLE211	Engineering Mechanics	3	0	0	3	-	1.04
4	CLE212	Engineering Geology	2	0	0	2	-	1.04
5	CLE213	Surveying	2	0	0	2	-	1.04
6	CLE214	Fluid Mechanics	3	0	0	3	-	1.04




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5	CHY111	General Chemistry	3	0	0	3	-	1.04
6	CHY151	Engineering Chemistry-I Lab	0	0	2	1	-	1.04
7	JAP101	Japanese	2	0	0	2	-	1.04
8	EEE101	Basics of Electrical and Electronics Engineering	3	0	0	3	-	1.04
9	EEE151	Basics of Electrical and Electronics Engineering Lab	0	0	2	1	-	1.04
10	EVS102	Environmental science & Energy	3	0	0	3	-	1.04
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Total credits						24		

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3	CLE211	Engineering Mechanics	3	0	0	3	-	1.04
4	CLE212	Engineering Geology	2	0	0	2	-	1.04
5	CLE213	Surveying	2	0	0	2	-	1.04
6	CLE214	Fluid Mechanics	3	0	0	3	-	1.04



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7	CLE218	Soil Mechanics	3	0	0	3	-	1.04
8	CLE252	Engineering Geology Lab	0	0	2	1	CLE212	1.04
9	CLE253	Surveying Practices	0	0	2	1	CLE213	1.04
10	CLE254	Fluid Mechanics Lab	0	0	2	1	CLE214	1.04
11	CLE255	Soil Mechanics Lab	0	0	2	1	CLE218	1.04
Total credits						23		

IV SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	LLL222	English Proficiency and Aptitude Building-III	0	0	4	2	LLL211	1.04
2	MAT221	Numerical Methods	3	0	0	3	MAT211	1.04
3	CLE221	Building Materials and Technology	2	0	0	2	CLE212	1.04
4	CLE223	Strength of Materials	3	0	0	3	CLE211	1.04
5	CLE225	Highway Engineering	3	0	0	3	-	1.04
6	CLE226	Water Resources Engineering	2	0	0	2	CLE 214	1.04
7	CLE227	Principles and Design of Water Supply and Treatment Systems	3	0	0	3	CHY111	1.04
8	CLE228	Geotechnical Engineering	3	0	0	3	CLE218	1.04
9	MAT241	Numerical Methods lab	0	0	2	1	MAT221	1.04
10	CLE243	Strength of Materials Laboratory	0	0	2	1	CLE223	1.04
11	CLE245	Highway Materials Testing Laboratory	0	0	2	1	CLE225	1.04
12	CLE246	Water Analysis Laboratory	0	0	2	1	CLE227	1.04
13	CLE247	Civil CAD	0	0	2	1		1.04
Total credits						26		




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V SEMESTER

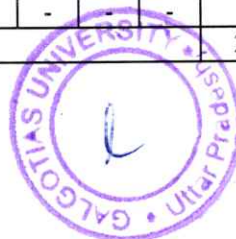
Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	LLL311	English Proficiency & Aptitude Building-IV	0	0	4	2	LLL221	1.04
2	MAT311	Probability and Statistics	3	0	0	3	-	1.04
3	CLE311	Concrete Technology	2	0	0	2	-	1.04
4	CLE312	Structural Analysis	3	0	0	3	CLE223	1.04
5	CLE316	Transportation Engineering	2	0	0	2	CLE225	1.04
6	CLE 318	Principles and Design of Waste Water Treatment & Disposal Systems	3	0	0	3	CLE227	1.04
7	MGT302	Industrial Economics & Management	3	0	0	3	-	1.04
8	CLE351	Concrete Testing Laboratory	0	0	2	1	CLE311	1.04
9	CLE352	Waste Analysis Lab	0	0	2	1	CLE318	1.04
10	CLE354	Survey Camp	0	0	0	1	CLE213	1.04
11	CLE355	Structural Analysis Laboratory	0	0	2	1	CLE312	1.04
Total credits						22		

VI SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	LLL 322	Campus to Corporate	0	0	4	2	LLL311	1.04
2	CLE321	Quantity Surveying and Estimating	2	0	0	2	-	1.04
3	CLE322	Advanced Structural Analysis	3	0	0	3	CLE312	1.04
4	CLE323	Reinforced Concrete Structures	3	0	0	3	CLE311, CLE312	1.04
5	CLE325	Hydraulics and Hydraulics Machines	3	0	0	3	CLE214	1.04
6		Elective I	3	0	0	3	-	1.04
7		Elective II	3	0	0	3	-	1.04
8	CLE342	Hydraulics and Hydraulic Machines Laboratory	0	0	2	1	CLE325	1.04
9	ITS318P	IT Skills in C & C++ Programming	0	0	2	1		1.04
10	ITS319P	IT Skills in Databases	0	0	2	1		1.04
11	CLE345	CAD Lab-I	0	0	2	1		1.04
Total credits						23		

VII SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	CLE412	Construction Planning and Management	3	0	0	3	-	1.04
2	CLE413	Design of Steel Structures	3	0	0	3	CLE312, CLE322	1.04
3		Elective III	3	0	0	3	-	1.04
4		Elective IV	3	0	0	3	-	1.04
5		Elective V	3	0	0	3	-	1.04
6	CLE455	Industrial Internship	-	-	-	1	-	1.04
7	CLE498	Project Work (Part I)	-	-	-	5	-	1.04
Total credits						21		



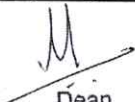

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VIII SEMESTER

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	CLE500	Project Work (Part II)	-	-	-	15	-	1.04
Total credits						15		

List of Elective Courses

Sl. No.	Course Code	Course Title	L	T	P	C	Course Prerequisite	Version
1	CLE371	Socio-Economic Studies & EIA	3	0	0	3	-	1.04
2	CLE372	Ground Improvement Techniques	3	0	0	3	CLE228	1.04
3	CLE373	Pollution Control and Monitoring	3	0	0	3	EVS102	1.04
4	CLE374	Natural Disaster Mitigation and Management	3	0	0	3	-	1.04
5	CLE375	Engineering Hydrology	3	0	0	3	-	1.04
6	CLE376	Renewable Sources of Energy & Hydro power Engineering	3	0	0	3	-	1.04
7	CLE377	Transport Planning and Management	3	0	0	3	CLE316	1.04
8	CLE378	Traffic Engineering	3	0	0	3	CLE316	1.04
9	CLE379	Open Channel Hydraulics	3	0	0	3	CLE214	1.04
10	CLE381	Architecture and Town Planning	3	0	0	3	-	1.04
11	CLE382	Advanced Surveying	3	0	0	3	CLE213	1.04
12	CLE383	Economics and Project Finance for Civil Engineers	3	0	0	3	-	1.04
13	CLE384	Highway Pavement Design	3	0	0	3	CLE225	1.04
14	CLE385	Earthquake Engineering	3	0	0	3	-	1.04
15	CLE386	Structures on Expansive Soils	3	0	0	3	CLE218	1.04
16	CLE401	Industrial Wastes Treatment and Disposal	3	0	0	3	CLE318	1.04
17	CLE402	Air and Noise Pollution	3	0	0	3	-	1.04
18	CLE403	Ground Water Engineering	3	0	0	3	CLE226	1.04
19	CLE404	River Engineering	3	0	0	3	CLE226	1.04
20	CLE405	Open Channel Flow	3	0	0	3	CLE214	1.04
21	CLE406	Mass Transport Management	3	0	0	3	CLE316	1.04
22	CLE407	Operation and Management of Irrigation & Drainage Systems	3	0	0	3	CLE226	1.04
23	CLE408	Water Resources Systems Engineering	3	0	0	3	CLE226	1.04
24	CLE409	Soil Dynamics and Machine Foundation	3	0	0	3	CLE228	1.04
25	CLE461	Advance Hydraulic Structures Design	3	0	2	3	CLE325	1.04
26	CLE462	Tunnel Engineering	3	0	0	3	CLE212	1.04
27	CLE463	Applications of Matrix Methods in Structural Analysis	3	0	0	3	CLE322	1.04
28	CLE465	Dynamics of Structures	3	0	0	3	CLE322	1.04
29	CLE466	Advanced Concrete Design	3	0	0	3	CLE323	1.04
30	CLE467	Pre Stressed Concrete Structures	3	0	0	3	CLE323	1.04
31	CLE468	Bridge Engineering	3	0	0	3	CLE323	1.04


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ITS318P	IT skills in C and C++	L	T	P	C
		0	0	2	1
Prerequisite					
co-requisites					

Course Objectives

The objective of this course is to:

1. To familiarize the trainee with basic concepts of computer programming and developer tools.
2. To present the syntax and semantics of the "C and C++" language as well as data types offered by the language.
3. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform.

Course Outcomes

At the end of this course students will be able:

1. Understand the 'C' and 'C++' Programming environment. Learn to solve the bigger problems step by step.
2. Understand when and how to take decisions, to compare and iterate, to simplify the problems.
3. Recognize the working and architecture of 'C' and 'C++'
4. To present the syntax and semantics of 'C' and 'C++' as well as platform and OOPS concept offered by the language.
5. Students should be able to implement syntax and logics for development according to user account, implement algorithmic solutions in a programming language.
6. To allow the student to write their own programs using standard language infrastructure regardless of the hardware or software platform

Catalog Description

The course fully covers the basics of programming in the "C and C++" programming language and demonstrates fundamental programming techniques, customs and vocabulary including the most common library functions and the usage of the pre-processor.

1. E. Balagurusamy (2008), Computing Fundamentals And C Programming, Tata McGraw-Hill.
2. Brian W. Kernighan and Dennis M. Ritchie, The C programming Language, Prentice-Hall in 1988
3. Infosys Foundation program, Volume 1




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Course Content

Before learning C Programming, you must have the basic knowledge of Computer Fundamental.

Part I: C programming

10 hours

Introduction to C(Data types and Variables):

2 hours

Basic Data Type, Derived Data Type, Enumeration Data Type, Void Data Type

Control Statement:

2 hours

The IF...ELSE Statement, IF.....ELSE ladder, Nesting of IF ELSE Statements, The Switching Statements, The do-while Statement, The while statements, FOR Statements

Arrays:

2 hours

What and Why? One Dimensions Arrays, Two Dimensions Arrays, Multi Dimensions Arrays, Dynamic Arrays

Functions:

2 hours

Function Basics, Advantage of Function, Recursion, Variable Storage Classes, Variable arguments Function

FILE structure

2 hours

Introduction to File Management, Opening/Closing a File, Input/output operations on Files, Error Handling During I/O Operations, Command Line Arguments

Part II: C++ programming

20 hours

Introduction:

2 hours

What is C++? Why C++? C and C++, Exception Handling, Object Oriented Programming, Standard Template Library

Types and declarations:

2 hours

Types, Booleans, Integer Types, Floating-Point Types, Sizes, Void, Enumerations, Declarations

Pointers, Arrays and Structures:

2 hours

Pointers, Arrays, Pointers into Arrays, Constants, References, Pointers to void, Structures

Expressions and Statements:

2 hours

A Deck Calculator, Operator Summary, Statement Summary, Comments and Indentation

Functions:

2 hours

Function Declarations, Argument Passing, Value Return, Overloaded Function Names, Default Arguments, Pointer to Function Macros

Namespaces and Exceptions:

2 hours

Namespaces, Exceptions

Source Files and Programs:

2 hours

Separate Compilation, Linkage, Using Header Files, Programs

Classes:

2 hours

Classes, Access Control, Constructors, Member functions, Static members, Destructors, Memory allocation, Member initialization

Operator overloading:

2 hours

Introduction, Operator Functions, A Complete Number Type, Conversion Operators, Friends, Large Objects, Essential Operators, Subscripting, Functions Calls, Dereferencing, Increment and Decrement, A String Class

Derived class:

2 hours

Introduction, Derived Classes, Abstract Classes, Design of Class Hierarchies, Class Hierarchies and Abstract Classes

Total: 30 hours



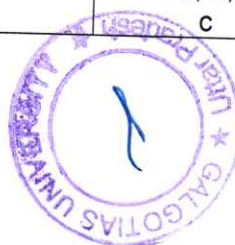
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Mode of Evaluation: Online Examinations, Quizzes, Assignments.

Laboratory evaluation scheme		
Component s	End Term Internal Exam Practical (IEP) (50)	End Term External Exam Practical EEP (50)
Marks Distribution	Continuous Assessment (30) [Evaluated throughout the semester] + Viva Voice (10) + Lab Question (10)	50 Marks Evaluated by External Examiner
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between Cos and Pos			
Sl. No.	Course Outcomes (COs)	Program Outcomes Addressed ABET	Program Outcomes Addressed NBA
1	Understand the 'C' and 'C++' Programming environment. Learn to solve the bigger problems step by step.	a, e	PO1, PO2, PSO3
2	Understand when and how to take decisions, to compare and iterate, to simplify the problems.	a, e, c	PO1, PO2, PO3, PSO1, PSO3
3	Recognize the working and architecture of 'C' and 'C++'	a, c	PO1, PO3
4	To present the syntax and semantics of 'C' and 'C++' as well as platform and OOPS concept offered by the language.	e	PO2, PSO1, PSO3
5	Students should be able to implement syntax and logics for development according to user account, implement algorithmic solutions in a programming language.	c, d	PO3, PO9
6	To allow the student to write their own programs using standard language infrastructure regardless of the hardware or software platform	a, e, c	PO1, PO2, PO3, PSO1, PSO3



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Course Name: IT skills in C and C++			Program Outcome			
Course Code: ITS318						
	ABET	NBA				
CO1	3	a	PO1	Engineering Knowledge		
CO2	2	e	PO2	Problem analysis		
CO3	1	c	PO3	Design / development of solutions		
CO4	2		PO4	Conduct investigations of complex problems		
CO5	1	k	PO5	Modern tool usage		
CO6	1		PO6	The engineer and society		
		h	PO7	Environment and sustainability		
		f	PO8	Ethics		
	1	d	PO9	Individual or team work		
		g	PO10	Communication		
			PO11	Project management		
		b		Design and conduct experiments		
		j		Knowledge and contemporary issues		
	1		PSO 1	Ability to design real world applications using high performance computing systems, computer networks and mobile computing		
	2		PSO 2	Ability to apply contemporary technologies and tools associated with IOT, Big		
	1		PSO 3	Ability to integrate the concepts of theoretical computer science, data structure, algorithms and programming in to projects		
	3		PSO 4	Ability to develop intelligent software systems by integrating the knowledge of system sciences and intelligent systems.		




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Syllabus Description

ITS319P	IT SKILLS IN DATABASE	L	T	P	C
		0	0	2	1
Prerequisite	Basic Computer skills				
co-requisites					
Course Coordinator	Mr.S.Karthikeyan				

Course Objectives

The objective of this course is to:

1. To know the basic syntax SQL queries.
2. To store and manipulate the data in database by SQL.
3. To perform aggregation and joins in database.
4. To define the database schema and retrieving data from multiple tables.

Course Outcomes

At the end of the course student will be able to:

- 1 Understand the basics of Relational Databases
- 2 Write SQL code based on ANSI/ISO standards to build and maintain database structures
- 3 Update database content with SQL and transaction handling
- 4 Retrieve data from single or multiple tables
- 5 Process and manipulate data with row and aggregate functions in Multiple Relational Database.




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Unit 1 Introduction to SQL & Using DDL Statements to Create and Manage Tables. 6 hrs

Introduction to SQL - Basics of the RDBMS- Relational databases- SQL sessions-Types of SQL commands-Using DDL Statements to create and Manage Tables- the SQL statement CREATE TABLE- List the data types: character, numeric, date, large objects (LOBs-SQL-Constraints- Creating CONSTRAINTS in the CREATE TABLE statement-The types of CONSTRAINTS-ALTER TABLE and DROP TABLE commands- Creating a table from an existing table.

Unit 2 Manipulating Data Using DML: 6 hrs.

Overview of data manipulation- default column list- enumerated column list- Update rows in a table- Delete rows from a table, Retrieving Data Using the SQL Select Statement: Restricting and Sorting Data- capabilities of SQL SELECT statements-Limit the rows that are retrieved by a query: The WHERE clause- Boolean logic-Sort the rows that are retrieved by a query.

Unit 3 Using Single-Row Functions to Customize Output & Reporting Aggregated Data 6 hrs

Using Single-Row Functions to Customize Output- types of functions that are available in SQL: number functions, date functions, and other functions- Use character, number, and date functions in SELECT statements. Nesting functions- the use of conversion functions: conversion functions, automatic data type conversions reporting Aggregated Data: Using the Group Functions. Identify the available group functions. Describe the use of group functions: COUNT, SUM, MIN/MAX, AVG- GROUP BY clause: multiple columns, ORDER BY revisited, nesting functions. Include or exclude grouped rows by using the HAVING clause

Unit 4 Displaying Data from Multiple Tables & Retrieving Data Using Sub queries 6 hrs.

Displaying Data from Multiple Tables - Table using equijoins and non-equijoins. Using table aliases. Types of joins-Retrieving Data Using Sub queries: Using the Set Operators. Define subqueries- List the types of sub queries-Solve problems with correlated sub queries-Describe set operators- Use a set operator to combine multiple queries into a single query: UNION, UNION ALL, INTERSECT, EXCEPT (MINUS)

Unit 5 Database Design, Normalization and Views Creation. 6 hrs

Views- Create and use simple and complex views, Create and maintain indexes: implicit index creation, single column, composite, unique, Formatting SQL statements: the format of SQL statements for readability, the order of tables in the FROM clause the placement of the most restrictive conditions in the WHERE clause, the placement of join conditions in the WHERE clause. Database models-A relational database design- Business process modeling- Types of database design-Relationships-Normalization.




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