

**CURRICULUM
FOR THE ACADEMIC YEAR 2020-2021**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.E. I AND II SEMESTER



**POOJYA DODDAPPA APPA COLLEGE OF ENGINEERING
(An autonomous college under VTU)
KALABURAGI**

About the institution:The Hyderabad Karnataka Education (HKE) society founded by Late Shri Mahadevappa Rampure, a great visionary and educationist. The HKE Society runs 46 educational institutions. Poojya Doddappa Appa College of Engineering, Gulbarga is the first institution established by the society in 1958. The college is celebrating its golden jubilee year, setting new standards in the field of education and achieving greater heights. The college was started with 50% central assistance and 50% state assistance, and a desire to impart quality technical education to this part of Karnataka State. The initial intake was 120 with degree offered in three branches of engineering viz, Civil, Mechanical and Electrical Engineering. Now, it houses 11 undergraduate courses, 10 post Graduate courses and 12 Research centers, established in Civil Engg., Electronics & Communication Engg, Industrial & Production Engg, Mechanical Engg, Electrical Engg., Ceramic Cement Tech., Information Science & Engg., Instrumentation Technology, Automobile Engg., Computer Sc. and Engg., Mathematics and Chemistry All the courses are affiliated to Visveswaraya Technological University, Belgaum. At present the total intake at UG level is 980 and PG level 193.

The college receives grant in aid funds from state government. A number of projects have been approved by MHRD /AICTE, Govt. of India for modernization of laboratories. KSCST, Govt. of Karnataka is providing financial assistance regularly for the student's projects.

The National Board of Accreditation, New Delhi, has accredited the College in the year 2005-08 for 09 UG Courses out of which 08 courses are accredited for three years and 01 course is accredited for five years. And second time accredited for Six Course in the year 2009-2012

Our college is one among the 14 colleges selected under TEQIP, sponsored by World Bank. It has received a grant of Rs 10.454 Crores under this scheme for its development. The institution is selected for TEQIP phase II in year 2011 for four years. Institution is receiving a grant of Rs 12.50 Crores under TEQIP Phase -II scheme for its development and selected for TEQIP-III as mentoring Institute for BIET Jhansi(UP).

Recognizing the excellent facilities, faculty, progressive outlook, high academic standards and record performance, the VTU Belgaum reposed abundant confidence in the capabilities of the College and the College was conferred Autonomous Status from the academic year 2007-08, to update its own programme and curriculum, to devise and conduct examinations, and to evaluate student's performance based on a system of continuous assessment. The academic programmers are designed and updated by a Board of Studies at the department level and Academic Council at the college level. These statutory bodies are constituted as per the guidelines of the VTU Belgaum. A separate examination section headed by a Controller of Examinations conducts the examinations.

At present the college has acquired the Academic autonomous status for both PG and UG courses from the academic year 2007-08 and it is one among the six colleges in the state of Karnataka to have autonomous status for both UG and PG courses.

One of the unique features of our college is, it is the first college in Karnataka State to start the Electronics and Communication Engineering branch way back in the year 1967, to join NIT Surathkal and IISc, Bangalore. Also, it is the only college in the state and one among the three colleges across the country, offering a course in Ceramic and Cement Technology. This is the

outcome of understanding by faculty and management about the basic need of this region, keeping in view of the available raw material and existing Cement Industries.

Bharatiya Vidya Bhavan National Award for an Engineering College having Best Overall Performance for the year 2017 by ISTE (Indian Society for Technical Education). In the year 2000, the college was awarded as Best College of the year by KSCST, Bangalore in the state level students projects exhibition.

The college campus is spread over 71 acres of land on either side of Mumbai-Chennai railway track and has a sprawling complex with gardens and greenery all around.

About the department: The Computer Science and Engineering department was started in the year 1984 with an intake of 40 students for UG. The department has seen phenomenal growth and now the department has increased UG intake to 120 students and offering two Post Graduation programmes : PG (Computer Science and Engineering with an intake of 25 students) and PG(Computer Network and Engineering with an intake of 18 students). The department is offering research program under its recognized research center. The department is having state-of-the-art computing facilities with high speed internet facilities and laboratories. The department library provides useful resources like books and journals. The department has well qualified and experienced teaching faculty. The department has been conducting several faculty development programs and student training programs.

Vision of the institution:

- To be an institute of excellence in technical education and research to serve the needs of the industry and society at local and global levels.

Mission of the institution:

- To provide a high-quality educational experience for students with values and ethics that enables them to become leaders in their chosen professions.
- To create, explore and develop innovations in engineering and science through research and development activities.
- To provide beneficial service to local, state, national and international industries and communities via educational, technical and professional activities.

Department Vision:

- To Become Pioneer in Computer Education and Research and to prepare highly competent IT professionals of International Repute.

Department Mission:

- To impart high quality professional education to become a leader in Computer Science and Engineering.
- To achieve excellence in Research for contributing to the development of the society.
- To inculcate professional and ethical behavior to serve the Industry.

Program Educational Objectives(PEOs) are

PEO1: To prepare graduates with core competencies in mathematical and engineering fundamentals to solve and analyze computer science and engineering problems.

PEO2: To adapt to evolving technologies and tools for serving the Society.

PEO3: To perform as team leader, effective communicator and socially responsible computer professional in multidisciplinary fields following ethical values.

PEO4: To encourage students to pursue higher studies and engage in research and entrepreneurship .

Program Specific Outcomes(PSOs)

PSO1: Acquire competency in hardware and software working principles to analyze and solve computing problems.

PSO2: Design quality software to develop scientific and business applications following Software Engineering practices.

PSO3: Apply cutting edge technologies using modern tools to find novel solutions ethically to existing problems.

PROGRAMOUTCOMES

Engineering Graduates will be able to:

- 1. Engineering Knowledge:** Attainment of PO1 is satisfactory for the current academic year 2016-17. Will be encouraged to participate in workshop/training on applications of mathematics in computer science. Will be provided opportunities to visit industries to get exposure to corporate life to enhance their basic knowledge & to know industry application standards.
- 2. Problem analysis:** Problem solving and analyzing skills gained through first and second year courses helps the students to apply in real time applications. PO2 Target approx Achieved.
- 3. Design and Development of solutions:** Students are encouraged to implement projects of social and environmental concern.
- 4. Conduct investigations of complex problems:** Students are encouraged to attend academic workshops to acquire the knowledge and apply the new tools in terms of conduction of experiments and analysis of results at required level.
- 5. Modern tools usage:** PO5 attainment is Satisfactory. By means of workshops, students will be exposed to software and software testing tools.
- 6. The Engineer and society:** As we have attained PO6. Students are encouraged and guided to take up applications which are relevant to society and environment friendly.
- 7. Environmental and sustainability:** PO7 is achieved. Students are encouraged more to involve in projects and technical practices to meet the standards of global requirements.
- 8. Ethics:** As we have attained satisfactory performance. Even then, students are trained to follow ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work:** We have introduced credit base courses on aptitude training and soft skills.
- 10. Communication:** Extra curriculum and co-curriculum activities are emphasized. Students are encouraged to participate in the soft skills training to enhance various aspects of communication/technical talks by group discussions, presentations and new learning outcome.
- 11. Project management and finance:** We have attained satisfactory performance in PO11. Further, students are motivated and guided to learn management principles and financial matters.
- 12. Life-long learning:** We have attained satisfactory performance. Further, students will be encouraged and motivated to cultivate the habit learning new things through attending Workshops on emerging trends like machine learning, data analysis, IOT etc.

POOJYA DODDAPPA APPA COLLEGE OF ENGINEERING, KALABURAGI
Scheme of Teaching and Examination 2020 – 2021
Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Course Code	Course Title	Teaching Hours/Week			Examination			
		Theory Lecture	Tutorial	Practical/Drawing	SEE Marks	CIE Marks	Total Marks	Credits
19MA11	Engineering Mathematics –I	3	2	--	50	50	100	4
19 PH12/ 22 19CH12/22	Engineering Physics/ Engineering Chemistry	3	2	--	50	50	100	4
19HU13/23	English Communication Skill-I	1	--	--	50	50	100	1
19EE14/24 19CS14/24	Basic Electrical Engineering / C programming for problem Solving	3	2	--	50	50	100	4
19ME16/26 19WS16/26	Engineering Graphics and Design/ Workshop Practice	2	--	2	50	50	100	3
19PHL11/21 19CHL11/21	Engineering Physics Laboratory/ Engineering Chemistry Lab	--	--	3	50	50	100	1
19EEL12/22 19CSL12/22	Basic Electrical Engineering Laboratory/Computer Programming Lab	--	--	2	50	50	100	1
19CV17/27	Civil Engineering				50	50	100	4
	Total Credits	12	6	7	400	400	800	22

SCHEME OF TEACHING FOR I and II SEMESTER-2019-2020

B.E. (COMPUTER SCIENCE AND ENGINEERING)

Code No.	Course	Hours/Week				Maximum Marks			
		Lecture	Tutorial	Practical	Credits	SEE Exam Duration	CIE	SEE	Total
SEMESTER I / II									
THEORY									
19CS14/ 24	C Programming for Problem Solving	4	2	0	4		50	50	100
PRACTICAL									
19CSL12 /22	Computer Programming Lab	0	0	3	1		50	50	100
	Total	4	2	2	5		100	100	200

AUTONOMOUS SYLLABUS FOR B.E I – II SEMESTER 2020-2021

Course Title: C PROGRAMMING FOR PROBLEM SOLVING		
Subject Code : 19CS14/24	Credit :4	CIE: 50
Number of Lecture Hours/Week	4 (Theory) +2 (Tut)	SEE: 50
Total Number of Lecture Hours	52	SEE Hours: 03
Prerequisites:		
Course Objectives: <ul style="list-style-type: none"> • Learn the concepts of C Language. • Develop skills to solve computational problems 		
MODULES		Teaching Hours
Module-I Introduction to Computer, Algorithms, Flowcharts and Operators: Introduction to computer and its parts, Operating System, Computer Network and Internet. Algorithms, flowcharts, Basic Structure of C Program, Executing a 'C' program. C tokens, Data types, Declaration of variables. Expressions, Managing Input/ Output and Operators: Arithmetic operators, relational operators, logical operators, assignment operators, increment/decrement operators, conditional operators, bit wise operators, special operators. Evaluation of expression, precedence of arithmetic operators, type conversions in expression, operator precedence and associativity. Unformatted and Formatted Input and Output. Examples & exercises.		10 Hrs
Module-II Control Statements: Decision Making with if statement, Simple if statement, the if else and nested if statements, the else if ladder, Switch statement, Unconditional control Statements. Decision Making and Looping: While statement, Do-While statement, For statement, jumps in loop. Examples & exercises.		11 Hrs
Module-III Arrays: One dimensional Array, declaration, Initialization, Two dimensional Arrays notations and representations, manipulating with arrays, examples and exercises. Strings: Declaring and Initializing String Variables, Reading Strings from Terminal, Writing strings to Screen, Arithmetic Operations on Characters, String-handling functions, examples and exercises.		10 Hrs
Module-IV Functions and Recursion : Need for User-defined Functions, A multi-function program, Elements of User-defined Functions, Definition of functions, Return value and their types, Function calls, Function declaration, Category of functions, Recursion, examples and exercises. Structures: Initialization. Defining a Structures, Declaration of Structure		10 hrs

variables, Accessing Structure Members, Structure Initialization, Copying and comparing structure variables, operations on individual members, examples & exercises.			
<p align="center">Module-V</p> <p>Pointers: Accessing the address of a variable, Declaring pointer variables, Initializing of pointer variables, accessing a variable through its pointer ,pointer expressions, pointer arrays, pointer and character strings, arrays of pointer, pointer as function arguments, function returning pointer ,pointers to function, pointer and structure. Examples & exercises.</p> <p>File Management: Defining and opening a file, closing file, input output operations on files, error handling during I/O operations. Examples & exercises.</p>			11 Hrs
<p>Question paper pattern: The question paper will have ten questions. There will be 2 questions from each module, covering all the topics from a module. The students will have to answer 5 full questions, selecting one full question from each module.</p>			
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Peter Norton, "Introduction to Computers", Sixth Edition, Tata McGraw Hill, 2005 2. E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill Education Private Limited– V Edition, 2016 			
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. E Balagurusamy, Computing Fundamentals and C Programming, McGraw-Hill Education, Reprint 2nd Edition 2008. 2. Herbert Schildt, "Complete Reference in C",Fourth Edition, Tata McGraw Hill Publication, 2017 3. Yashwant P. Kanetakar, "Let us C", Fifth Edition, BPB Publications, 2016. 4. Brian W Kernighan & Dennis M Ritchie " The C Programming Language", Prentice Hall Publisher, Second Edition, 2004. 5. Behrouz A.Forouzan and Richard F.Gilberg,"Computer Program: A structured programming Approach Using C.", Third edition, Thomson Learning, 2005. 			
<p>Course outcomes: On completion of the course, the student will have the ability to:</p>			
Course Code	CO #	Course Outcome (CO)	Blooms Level
19CS14/24	CO1	Explain the functional units and fundamental constructs of C language	C3
	CO2	Identify and use proper decision /control constructs for solving different type of problems	C4
	CO3	Apply arrays and strings to develop programs for a given problem.	C3
	CO4	Demonstrate the modular programming concepts and illustrate the use of structures	C3
	CO5	Develop efficient programs using pointers and files	C5

Course Title: Computer Programming Lab		
Subject Code : 19CSL12/22	Credit :1	CIE: 50
Number of Practical Hours/Week	3 hours/batch	SEE: 50
		SEE Hours: 03
Prerequisites:		
Course Objectives: <ul style="list-style-type: none"> Develop C programs using appropriate data type, control / decision statement. Learn the usage files and structures to solve real-life applications. 		
List of Programs		
Programming in C Lab: (to publish in syllabus book): <ol style="list-style-type: none"> Write and execute programs in C to demonstrate decision making using if ..., if ... else ... statements. Write and execute programs in C to demonstrate decision making using switch ... case statements. Write and execute programs in C which shows the usage of looping with 'for' statement. Write and execute programs in C which shows the usage of looping with 'while' statement. Write and execute programs in C which shows the usage of looping with 'do ... while' statement. Write and execute programs in C to show the application of one-dimensional arrays. Write and execute programs in C to show the application of two-dimensional arrays. Write and execute programs in C to understand the use of 'strings' data. Write and execute programs in C to learn applications of 'structure' data type to handle heterogeneous data types to represent it as single entity. Write and execute programs in C to demonstrate use of pointers and pointer's arithmetic. Write and execute programs in C to demonstrate the storage and usage of more amounts of data using files. Develop and perform an open-ended experiments choosing from following topics with the help of the knowledge/skills after doing above eleven experiments. <ul style="list-style-type: none"> Electricity bill preparation. Statistical analysis of the performance of a BE 1st Sem class on the basis of marks scored in the subject 'Programming in C' by calculating mean, median, and deviation. Glossary store's Invoice. Marks card preparation. Result Analysis of each subjects Attendance calculation and display student eligible or not eligible to write SEE. 		
Perform course Registration (Menu Driven) and Display students registration		

details.	
<p><u>Programming in C Lab: (For SEE exercises):</u></p> <ol style="list-style-type: none"> Write and execute programs in C to demonstrate decision making using simple if ..., if ... else ... statements. <ul style="list-style-type: none"> Find roots of a quadratic equation Write and execute programs in C to demonstrate decision making using switch ... case statements. <ul style="list-style-type: none"> Display day name based on day number. Simple business calculator Result and marks card Write and execute programs in C which shows the usage of looping with 'for' statement. <ul style="list-style-type: none"> Pascal's triangle (for loop) 'sine' series Write and execute programs in C which shows the usage of looping with 'while' statement. <ul style="list-style-type: none"> Check a weather the given number is palindrome. Write and execute programs in C which shows the usage of looping with 'do ... while' statement. <ul style="list-style-type: none"> Fibonacci series (do... while loop) Print multiplication table of a given number. Write and execute programs in C to show the application of one-dimensional arrays. <ul style="list-style-type: none"> Create an array of integers. Search a given element from array and change the existing number by the given number. Find sum, average, standard deviation and variance of above created integers array. Create a string array, store lower case alphabets in it and then convert each character to upper case alphabet. Sort array in ascending and descending order Write and execute programs in C to show the application of two-dimensional arrays. <ul style="list-style-type: none"> Create a two dimensional integer array (matrix) of order 3x3 and print in matrix form. Find Norm and Trace (sum of elements on the main diagonal) of a square integer matrix of integer Two square matrices addition. Write and execute programs in C to understand the use of 'strings' data. <ul style="list-style-type: none"> Reverse characters in a string Counting words in a line of text Write and execute programs in C to learn applications of 'structure' data type to handle heterogeneous data types to represent it as single entity. <ul style="list-style-type: none"> Write a program to create a structure by name 'STUDENT' with the fields; Name, Rollno, Class and Age. Store n records. Input rollno to search records and display complete data from record. 	

<ul style="list-style-type: none"> Write a program to create a structure called, 'EXPENSES' with the fields; item, quantity, rate and amount. Store n records. Calculate total amount to be paid for a particular item. <p>10. Write and execute programs in C to demonstrate use of pointers and pointer's arithmetic.</p> <ul style="list-style-type: none"> Create an integer array, create integer pointer array. Using integer pointer, fetch values from memory locations with pointer arithmetic. Create an integer array, create integer pointer array. Using integer pointer Find sum and average of numbers. <p>11. Write and execute programs in C to demonstrate the use of files to store more amount of data.</p> <ul style="list-style-type: none"> Write a program to create a file to store 3 book records with fields Title, Author, Price and Pages and display contents of file. Append 3 more book records to above created file and display contents of file. <p>12. Develop and perform an open-ended experiments choosing from following problems:</p> <ul style="list-style-type: none"> Electricity bill preparation. Statistical analysis of the performance of a BE 1st Sem class on the basis of marks scored in the subject 'Programming in C' by calculating mean, median, and deviation. Glossary store's Invoice. Marks card preparation. Result Analysis of each subjects Attendance calculation and display student eligible or not eligible to write SEE. Perform course Registration (Menu Driven) and Display students registration details. 	
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Question paper pattern:

Note:

1. All the programming exercises shall be conducted using C programming language under Linux Operating System.

Course outcomes:

On completion of the course, the student will have the ability to:

Course Code	CO #	Course Outcome (CO)	Blooms Level
19CSL12/22	CO1	Identify and apply appropriate data types and control / decision statement for given problem.	C4
	CO2	Develop C programs to solve computational and real life problems.	C5
	CO3	Implement modular programming and user defined data types.	C4
	CO4	Demonstrate file operations and use of pointer.	C3
	CO5	Develop a well organized journal	C5