RAGHU ENGINEERING COLLEGE

AUTONOMOUS

(Approved by AICTE, New Delhi, Accredited by NBA (CIV,ECE,MECH,CSE), NAAC with 'A⁺' grade & Permanently Affiliated to JNTU-GV, Vizianagaram)

Dakamarri, Bheemunipatnam Mandal, Visakhapatnam Dist. – 531 162 (A.P.)

Ph: +91-8922-248001, 248002 Fax: + 91-8922-248011

E-mail: principal@raghuenggcollege.com website: www.raghuenggcollege.com

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INSTITUTE VISION

Envisioning to be a world class technical institution by synergizing quality education with ethical values.

INSTITUTE MISSION

- To encourage training and research in cutting-edge technologies.
- To develop and strengthen strategic links with the industry.
- To kindle the zeal among the students and promote their quest for academic excellence.
- To encourage extra-curricular activities along with good communication skills.

QUALITY POLICY

RAGHU Engineering College underscores ethical values along with innovative teaching through an interactive, activity-based pedagogy; establishes the best of infrastructural facilities, inculcates engineering temper among the students through the use of the latest Information and Communication Technologies, and strives for an efficient, responsive and transparent administration in all areas.

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Department of Computer Science and Engineering

VISION

To generate competent professionals to become part of the industry and research organizations at the national and international levels.

MISSION

To impart high quality professional training in undergraduate level with emphasis on basic principles of computer science and Engineering and to foster leading edge research in the fast-changing field.

To inculcate professional behavior, strong ethical values, innovative research capabilities and leadership abilities in the young minds so as to work with a commitment.

- M1:To impart high quality professional training at undergraduate level with emphasis on basic principles of computer science and Engineering and to foster leading edge research in the fast-changing field.
- M2:To inculcate innovative research capabilities and leadership abilities in the young minds so as to work with a commitment.
- M3:To inculcate professional behavior, strong ethical values in the young minds so as to work with a commitment.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOs)

PEO 1: To produce graduates with a strong foundation in mathematics, science, engineering fundamentals, laboratory and work-based experiences to formulate and solve engineering problems in computer science engineering domains and shall have proficiency in implementation software tools and languages.

PEO 2: To progressively impart training to the students for success in various engineering positions within the core areas in computer science engineering, computational or adapting to the latest trends by learning themselves.

PEO 3: To produce graduates having the ability to pursue advanced higher studies and research. To have professional and communication skills to function as leaders and members of multidisciplinary teams in engineering and other industries with strong work ethics, organizational skills, teamwork, and understanding of the importance of being a thorough professional.

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MAPPING OF MISSION STATEMENTS WITH PEOs

MS/PEO	PEO 1	PEO 2	PEO 3
MS 1	3	2	2
MS 2	2	3	2
MS 3	2	2	3

1-Slight , **2**- Moderate, **3**- Substatial

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PROGRAM OUTCOMES	
Graduates of Computer Science and Engineering Will:	
PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to solve complex engineering problems.
PO 2	**Problem analysis:** Identity, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and the cultural, societal, and environmental concerns.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods, including design of experiments, analysis, interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** 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 the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams and multidisciplinary settings.
PO 10	**Communication:** 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.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to

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	engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)
PSO 1: Apply the concepts and techniques of the Computer Science & Engineering branch and the Mathematical foundations in the significant domains to address the complex engineering problems.
PSO 2: Employ emerging computer languages, computer networks, database management systems and platforms in developing innovative career prospects as an entrepreneur.
PS0 3: Apply the knowledge of interdisciplinary skills, and domain-specific tools in working system processes to implement and deploy a quality-based software product to meet evolving needs.

Mapping of PEOs with POs and PSOs

PEO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
PEO 1	3	3	3	3	2	2	2	2		2		3	3	2	2
PEO 2	2	3	3	3	2	2	2	2	3	2	3	3	3	3	3
PEO 3	3	2	2	3	2	2	2	3	3	3	3	3	3	3	3

1-Slight **, 2-** Moderate**, 3-** Substatial

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(Common to CSE CSM CSD CSC CSO)							
Programme &Branch	**B.Tech – CSE**	**Sem**	**Category**	**L**	**T**	**P**	**C**
Prerequisites	**Fundamentals of c programming and OOP through C++**	**3**	Professional Core	**0**	**0**	**3**	**1.5**
Preamble	**The main objectives of the course is to make student**						

Course Objectives: The main objectives of the course is to

- Practice object oriented programming in the Java programming language
- Implement Classes, Objects, Methods, Runtime Polymorphism
- Illustrate Inheritance, Exception handling mechanism
- Construct Threads, Event Handling, implement packages, Java FX GUI

List of Experiments :

1	**Exercise - 1 (Basics, Operators, Expressions)** a) Write a Java program to display default value of all primitive data type of Java b) Write a Java program that display the roots of a quadratic equation $ax^2+bx=0$. Calculate the discriminate D and basing on value of D, describe the nature of root. c) Five Bikers Compete in a race such that they drive at a constant speed which may or may not be the same as the other. To qualify the race, the speed of a racer must be more than the average speed of all 5 racers. Take as input the speed of each racer and print back the speed of qualifying racers. d) Write a case study on public static void main(250 words)
2	**Exercise - 2 (Control-flow, Arrays)** a) Write a Java program to search for an element in a given list of elements using binary search mechanism. b) Write a Java program to sort for an element in a given list of elements using bubble sort
3	**Exercise – 3 (Class, Object)** a) Write a Java program to implement class mechanism. – Create a class, methods and invoke them inside main method. b) Write a Java program to swap the pairs of characters of a string. If the string contains an odd number of characters then the last character remains as it is.
4	**Exercise - 4 (Methods)** a) Write a Java program to implement constructor overloading. b) Write a Java program implement method overloading.
5	**Exercise - 5 (Inheritance)**

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	a) Write a Java program to implement Single Inheritance b) Write a Java program to implement multi level Inheritance c) Write a Java program give example for "super" keyword.
6	**Exercise - 6 (Abstract Class, Interface)** a) Write a Java program for abstract class to find areas of different shapes b) Write a Java program to implement Interface. What kind of Inheritance can be achieved
7	**Exercise – 7 (Packages)** a) Write a Java program illustrate class path b) Write a case study on including in class path in your os environment of your package. c) Write a Java program that import and use the defined your package in the previous Problem
8	**Exercise - 8 (Exception)** a) Write a Java program that describes exception handling mechanism b) Write a Java program illustrating Multiple catch clauses
9	**Exercise – 9 (Runtime Polymorphism)** a) Write a Java program that implements Runtime polymorphism b) Write a case study on run time polymorphism, inheritance that implements in above problem
10	**Exercise – 10 (User defined Exception)** a) Write a Java program to illustrating throw b) Write a Java program to illustrating finally c) Write a Java program to handle User Defined Exception
11	**Exercise – 11 (Threads)** a) Write a Java program that creates threads by extending Thread class .First thread display "Good Morning "every 1 sec, the second thread displays "Hello "every 2 seconds and the third display "Welcome" every 3 seconds ,(Repeat the same by implementing Runnable) b) Write a program illustrating isAlive and join ()
12	**Exercise - 12 (Collections)** a) Write a Java program to update an array list element by the given element. b) Write a Java program to find numbers less than 7 in a tree set c) Write a Java program to check whether a map contains key-value mappings (empty) or not.
13	**Exercise - 13 (Java FX)** a) Write a Java program that import and use the user defined packages b) Without writing any code, build a GUI that display text in label and image in an ImageView (use JavaFX)

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c) Build a Tip Calculator app using several JavaFX components and learn how to respond to user interactions with the GUI	
	Total: 30hrs

References/Manuals/Software :

1	**Text Books:** 1) The complete Reference Java, 8th edition, Herbert Schildt, TMH. 2) Programming in JAVA, Sachin Malhotra, SaurabhChoudary, Oxford. 3) Introduction to java programming, 7th edition by Y Daniel Liang, Pearson. 4) JAVA 9 for Programmers, Paul Deitel, Harvey Deitel, 4th Edition, Pearson
2	**Laboratory Manual**
3	**Virtual Labs link** 1) https://www.oracle.com/in/java/ 2) https://openjfx.io/

Preamble	**After completion of the course, students will be able to**

COURSE OUTCOMES: On completion of the course , the student will be able to	**BT Mapped** (Highest Level)
CO 1 Create simple applications using classes, objects and inheritance	Create
CO 2 Apply parallel processing applications using threads	Apply
CO 3 Develop GUI applications using Java FX	Design

Mapping of COs with POs and PSOs

COs/POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO 1	-	2	2	2	1	-	-	-	1	-	-	2	2	1	-
CO 2	-	2	2	2	1	-	-	-	1	-	-	2	2	1	-
CO 3	-	2	3	3	1	-	-	-	1	-	-	2	2	1	-
1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy															

(Signature)   (Signature)

Head of the Department   Principal

(Seal/Stamp)   (Seal/Stamp)