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

RAGHU ENGINEERING COLLEGE (AUTONOMOUS)

VISAKHAPATNAM

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

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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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(2305105) DATA BASE MANAGEMENT SYSTEMS

(Common to CSE, CSM, CSD)

Programme &Branch	B.Tech & CSE	Sem	Category	L	T	P	Credit
Prerequisites:	Discrete Structures, Data structures	4	Professional Core	3	0	0	3

Preamble	**The main objectives of the course is to make student**

Course Objectives:

The main objectives of the course is to

- Understand the relational databases using E-R models
- Be able to write SQL commands to perform different operations on relational database.
- Understand the relational database design principles.
- Familiar with the basic issues of transaction processing and concurrency control.
- Familiar with database storage structures and access techniques.

Course Contents:

Unit-1	**Introduction to databases and E-R Model:** What is Database and DBMS? Why Database? Three-Schema Architecture (Levels of abstraction) and Data Independence, Database Architecture. **E-R Model:** Conceptual Data Models for Database Design, Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types. **Extended E-R Model:** Specialization and Generalization, Aggregation	Contact Hours: 9
Unit-2	**Relational Algebra and Relational Data Model:** **Relational Algebra Operations:** SELECTION and PROJECTION, Relational Algebra Operations from Set Theory, the CARTESIAN PRODUCT (CROSS PRODUCT) Operation, **Binary Relational Operations:** JOIN and DIVISION. Relational Calculus - Tuple Relational Calculus. **Relational Data Model:** Basic SQL SQL:Data Types, Specifying Constraints in SQL, DDL, DML and Basic Retrieval Queries in SQL-SELECT, NULL values, Nested queries, Correlated sub queries, Set operations, Aggregate functions, Group by and HAVING clauses.	Contact Hours: 9

Unit-3	Relational Database Design: Functional Dependencies and key concepts, Further Topics in Functional Dependencies: Types of functional dependencies, Inference Rules and Minimal Cover, Normal Forms Based on Functional dependencies: 1NF, 2NF, 3NF and BCNF, Properties of Relational Decompositions-lossless join decomposition and dependency preserving	Contact Hours: 9
Unit-4	**Transaction Processing:** Introduction to Transaction Processing, Transaction state diagram, Desirable Properties of Transactions. **Characterizing Schedules Based on Serializability:** Serial, Non serial, and Conflict-Serializable Schedules, Testing for Serializability of a Schedule, View Equivalence and View Serializability, violations based on isolation levels in transactions **Concurrency Control Techniques:** Two-Phase Locking Techniques for Concurrency Control	Contact Hours: 9
Unit-5	Hashing Techniques and Indexing Structures for Files and Physical Database Design: Types of Single-Level Ordered Indexes, Multilevel Indexes, Dynamic Multilevel Indexes Using B-Trees and B+-Trees	Contact Hours: 9
		Total Hours: 45

Text Books:	
1	Fundamentals of Database System by R. Elmasari& S.B. Navathe, 7th Edition, Pearson Education
2	Database System Concepts by A. Silberschatz, H.F. Korth& S. Sudarshan, 6th Edition, Tata McGraw-Hill Edition
Reference Books:	
1	Database Management Systems by R. RamaKrishna& J. Gehrke, 3rd Edition, Tata McGraw Hill Edition.
2	Database System Concepts by P. Rob & C. M. Coronel, Indian Edition, 2011, Cengage Learning
Web References :	
1	https://www.youtube.com/watch?v=6Iu45VZGQDk&list=PLBlnK6fEyqRi_CUQ-FXxgzKQ1dwr_ZJWZ
2	https://www.youtube.com/watch?v=T7AxM7Vqvaw&list=PLdo5W4Nhv31b33kF46f9aFjoJPOkdlsRc

Preamble	**After completion of the course, students will be able to**
COURSE OUTCOMES:	**BT Mapped**

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Upon completion of the course, students shall have ability to		(Highest Level)
CO 1	Draw Entity-Relationship diagrams to represent simple database application scenarios	Design
CO 2	Write SQL queries for a given context or for an application in the relational database.	Apply
CO 3	Apply normalization techniques.	Apply
CO 4	Describe transaction processing and concurrency control concepts.	Analysis
CO 5	Apply the Indexing Techniques on database.	Apply

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	PS01	PS02	PSO 3
CO 1	2	2	1	1	-	-	-	-	-	-	-	1	-	2	-
CO 2	2	1	1	1	-	-	-	-	-	-	-	1	-	2	-
CO 3	2	2	1	1	-	-	-	-	-	-	-	1	-	2	-
CO 4	2	1	1	1	-	-	-	-	-	-	-	1	-	2	-
CO 5	1	1	1	1	-	-	-	-	-	-	-	1	-	2	-
1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy															

ASSESSMENT PATERN – THEORY							
TEST	**Remembering (K1)%**	**Understanding (K2)%**	**Applying (K3)%**	**Analyzing (K4)%**	**Evaluating (K5)%**	**Creating (K6)%**	**Total%**
MID-1	**25**	**30**	**30**	**15**			**100**
MID-2	**25**	**30**	**30**	**15**			**100**
SEE	**30**	**35**	**25**	**5**			**100**
***± 3% may be varied**							

(Signature)
Head of the Department
(Seal/Stamp)

(Signature)
Principal
(Seal/Stamp)