# 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. |
| **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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| **(2346103) Computer Networks** | | | | | | | |
|---|---|---|---|---|---|---|---|
| (Common to CSC CSO) | | | | | | | |
| **Programme &Branch** | **B.Tech& CSE** | **Sem** | **Category** | **L** | **T** | **P** | **Credit** |
| **Prerequisites:** | Data Communications | **4** | Professional Core | **3** | **0** | **0** | **3** |
| Preamble : | The main objectives of the course is to make student | | | | | | |

**COURSE OBJECTIVES:**

The objectives of studying of Computer Networks are as follows

- Understand state-of-the-art in network protocols, architectures, and applications.
- Understand the Process of physical layer.
- Understand the process of data link layer.
- Understand the functionality of Network layer.
- Understand the functionality of Transport layer and application layer

**Course Contents:**

| | | |
|---|---|---|
| **Unit-1** | **Introduction:** Data Communication, Data Flow, type of connections, History of Internet, protocol and standards. Network Topologies WAN, LAN, MAN. Reference models-The OSI Reference Model- the TCP/IP Reference Model - A Comparison of the OSI and TCP/IP Reference Models | Contact Hours: 9 |
| | | |
| **Unit-2** | **Physical Layer:** Digital to Digital Conversion: Line coding, line coding schemes, Block coding, scrambling, analog to digital conversion: PCM and Delta Modulation. Transmission modes: serial & parallel, Digital to Analog Conversion, Digital Modulation and Multiplexing: Frequency Division Multiplexing, Time Division Multiplexing, Code Division Multiplexing, Transmission Media- guided and unguided. | Contact Hours: 9 |
| | | |
| **Unit-3** | **The Data Link Layer-**Framing-Error Control-Flow Control, Error Detection and Correction-Error-Correcting Codes-Error Detecting Codes. Elementary Data Link Protocols- A Utopian Simplex Protocol-A Simplex Stop and Wait Protocol for an Error free channel-A Simplex Stop and Wait Protocol for a Noisy Channel, Sliding Window Protocols-A One Bit Sliding Window Protocol-A Protocol Using Go-Back-N, A Protocol Using Selective Repeat. | Contact Hours: 9 |
| | | |
| **Unit-4** | **Network Layer:** Design Issues-The Network Layer Design Issues – Store and Forward Packet Switching-Services | Contact Hours: 9 |

| | | |
|---|---|---|
| | Provided to the Transport layer- Connection oriented vs Connection less services-Comparison of Virtual Circuit and Datagram Networks, Routing Algorithms-The Optimality principle-Shortest path Algorithm, Distance Vector Routing, Link State Routing.<br>Congestion Control Algorithms- Approaches to Congestion Control-Traffic Aware Routing-Admission Control-Traffic Throttling-Load Shedding. | |
| | | |
| **Unit-5** | **Transport Layer –** The Internet Transport Protocols: UDP, Real Time Transport Protocols, the Internet Transport Protocols: TCP**,** IPv4/IPv6.<br>**Application Layer –**The Domain Name System: The DNS Name Space, Resource Records, Name Servers, Electronic Mail: Architecture and Services, The User Agent, Message Formats, Message Transfer, Final Delivery. | Contact Hours: 9 |
| | | Total Hours: 45 |

| **Text Books:** | |
|---|---|
| 1 | Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010 |
| 2 | Computer Networks: A Top Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education |
| **Reference Books:** | |
| 1 | Larry L. Peterson and Bruce S. Davie, "Computer Networks - A Systems Approach" (5$^{th}$ed), Morgan Kaufmann/ Elsevier, 2011 |
| **Web References :** | |
| 1 | https://www.youtube.com/watch?v=wXsgJPnr1nQ&list=PLLOxZwkBK52BCOXC7wpI_U81W_eklMFE3 |
| 2 | https://www.youtube.com/watch?v=wXsgJPnr1nQ&list=PLLOxZwkBK52BCOXC7wpI_U81W_eklMFE3 |

| **Preamble:** | After completion of the course, students will be able to | |
|---|---|---|
| **COURSE OUTCOMES:** Upon completion of the course, students shall have ability to | | **BT Mapped** (Highest Level) |
| **CO 1** | Conceptualize the data communication models using OSI/ISO and TCP/IP protocol architectures | Remembering |
| **CO 2** | Understand different multiplexing techniques | Understanding |
| **CO 3** | Inferring protocols implemented in data link layer for error and flow control | Apply |
| **CO 4** | expressing the features of routing mechanisms and congestion control algorithms | Analyzing |
| **CO 5** | understand the features of transport and application layer protocols | Analyzing |

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**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 | 1 | 3 | - | - | 1 | 1 | 1 | - | - | - | 2 | 1 | **2** | **1** |
| **CO 2** | 2 | 1 | 3 | | - | 1 | 1 | 1 | | - | | 2 | 1 | **2** | **1** |
| **CO 3** | 2 | 1 | 3 | - | - | 1 | 1 | 1 | - | - | - | 2 | 1 | **2** | **1** |
| **CO 4** | 2 | 1 | 3 | - | - | 1 | 1 | 1 | - | - | - | 2 | 1 | **2** | **1** |
| **CO 5** | 2 | 1 | 3 | - | - | 1 | 1 | 1 | - | - | - | 2 | 1 | **2** | **1** |
| **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)