



Bhoj Reddy Engineering College for Women



Department of Electronics and Communication Engineering



TECHZIG

2020

Volume 2



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VISION

To empower women by providing thorough quality technical education and transform into meritorious, self-disciplined and competent professionals with a keen sense of social responsibility and enable them to reach goals in the area of Electronics and Communication Engineering.



MISSION

The Mission of the Department of Electronics and Communication Engineering is:

- To be the epitome of academic rigour, flexible to accommodate every student and faculty for basic, current and future technologies in Electronics and Communication Engineering.
- Strengthening and providing support in sustaining a healthy society by improving the quality of life through the application of technology.



ABOUT

Bhoj Reddy Engineering College for Women

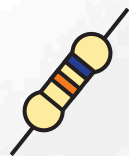
Bhoj Reddy Engineering College for Women is run by Sangam Laxmibai Vidyapeet, a registered voluntary social action group working since 1952 for employment of women and girls through education. The Vidyapeet has 70 years of experience in the field of education. The College was established in 1997.



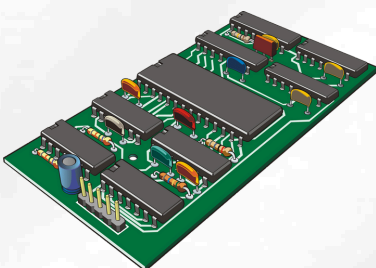
Founders

It is managed by an executive committee consisting of persons with long experience in the field of education. Within a short span of time, it has emerged as one of the premier engineering colleges in the state. The College is offering the following under graduate courses

- Computer Science and Engineering (CSE)
- Computer Science and Engineering (AI & ML)
- Electronics & Communication Engineering (ECE)
- Electrical & Electronics Engineering (EEE)
- Information Technology (IT)



ABOUT ECE



Electronics and Communication Engineering (ECE) is concerned with design, development, test and supervision of manufacturing of electronic equipment. Electronics has changed the entire world with its power of communication and micro-miniaturization of devices like transistors, diodes, resistors. ECE is a swiftly advancing field, with new ideas emerging every other minute. From mobile phones to fiber optics to remote sensing, there are exciting avenues to explore and create even better ideas. With technology becoming all pervasive in everyday life, opportunities for electronics and communications engineers are endless. The Department has well-established labs as per the norms of JNTUH.

Programme Outcomes (POs) of ECE Department

1.Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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 the public health and safety, and the cultural, societal, and environmental considerations.

4.Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

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.

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.

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.

8.Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9.Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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.

11.Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

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.



At the end of the program, the women engineers will be able to.

PEO2: Prioritize their professional development through interpersonal, leadership, and social skills, catering to the needs of society with ethics and integrity.

PSO2: Demonstrate expertise in the use of software and hardware required in real-life applications.



PRINCIPAL's WORDS

Dear Students,

Empowerment of girl students for their versatile progress through education is our cherished motto. BRECW is established to create, nurture, and shape technical professionals and leaders to create an inclusive and sustainable society in national and international perspectives. To achieve this vision, we launched undergraduate engineering degree programmes that nurture many vibrant and promising professionals equipped with skills to face the ever changing social, economical and technical landscape of our country.



Dr J Madhavan
M.E.Ph.D.,MISTE.,Principal

At BRECW, we provide high-end undergraduate education and research opportunities in new frontiers of Engineering and Technology with special focus towards Leadership & Innovation. Students are provided with opportunities for interaction with the experts from the Industry through Guest Lectures, Industrial Visits, Vocational Training (internships), Seminars and Workshops etc. To align with the curricula, we have excellent faculty, state-of-the-art infrastructure and laboratories. Spacious green campus, good library and peaceful atmosphere ensures that learning becomes a wonderful experience.

I firmly believe that our institute is more than just a place to learn. It gives you a chance to grow by equipping with everything you need to achieve excellence. At BRECW we ensure students to get the best start to their future career so that they could become smart and responsible citizens of our glorious country.

I wish all the students a grand success in their career and prosperity in their future life.

HoD's WORDS

Dear Students and Parents,

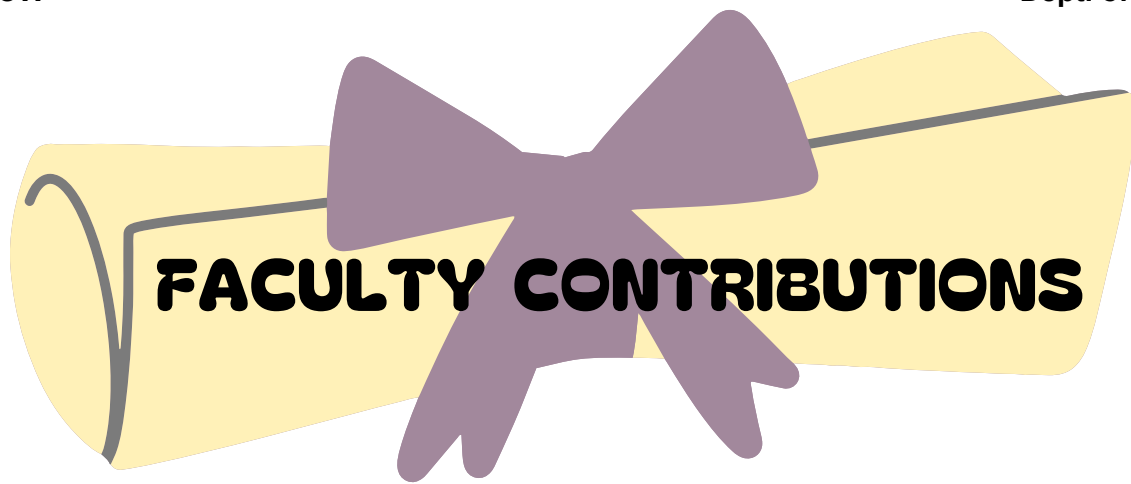
Thank you for showing your interest in Department of Electronics and Communication Engineering.

I welcome you all to the Department of Electronics and Communication Engineering (ECE) at Bhoj Reddy Engineering College for Women. The Department of Electronics and Communication Engineering was established in the year 1997 with B.Tech (ECE) with an intake of 180 girl students. This discipline extends to every aspect of modern society and continues to be the cornerstone of rapid technological advances that improve the quality of life in this millennium.

It also strives to be at the forefront of engineering education to equip our girl students to be engineering leaders in industry, research, and entrepreneurship. I welcome all the aspirants to be a part of ECE family and wish them a bright future ahead! Our department students have been selected by some of the leading software companies of the country. With the available diversity of expertise of the faculty and with the support of the management, we prepare our girl students to work in global multidisciplinary environment.



Dr. N. Shribala
HOD
Associate Professor



List of Workshops/FDP/Refresher Courses attended for year - 2020

S Manjula Associate Professor

- Workshop on "Universal Human Values" from 19 to 23 October 2020
- FDP on "AI & Deep Learning" from 17 to 28 August 2020
- Workshop on "Python Programming" from 3 to 7 August 2020
- Course on "Digital Signal Processing 1: Basic Concepts and Algorithms" on Aug-2020

B Jyothsna Associate Professor

- FDP on "Advanced pedagogy and digital tools in Engineering Education" from 14 to 26 December 2020
- FDP on "Simulation and Modeling of Data Communications & Networks" from 27 to 31 July 2020
- STTP on "Wireless communications-Future IOT" from 20 to 25 July 2020

J Stella Mary Assistant Professor

- STTP on "Arduino based Embedded System Design" from 27 to 31 July 2020
- FDP on "Recent Trends in Nano Electronic Device" from 13 to 17 July 2020
- FDP on "Recent Trends in Nano Electronic Device" from 13 to 17 July 2020

G Srilakshmi Associate Professor

- Workshop on "Inculcating Universal Human Values in Technical Education" from 19 to 23 October 2020
- STTP on "TABLEAU – Data Visualization Tool" from 27 July to 01 Aug 2020
- FDP on "Fragrance of Signal Processing" from 10 to 14 July 2020
- Workshop on "Fundamentals of MATLAB and Programming" from 6 to 11 July, 2020

Kazi Nikhat Parvin Assistant Professor

- FDP on "Lab on Chip" from 26 to 30 December 2020
- FDP on "Insight of Analog And Digital IC Design : Industry and Research Perspective (IADICD - 2020)" from 14 to 19 December 2020
- FDP on "Internet of Things (IoT)" from 23 to 27 November 2020
- STTP on "VLSI Design Using Cadence Tools :Analog CMOS VLSI Design" from 30 November to 05 December 2020

R Radhika Assistant Professor

- STTP on Wireless Communications and Future IOT from 20 - 25 July 2020

Saba Sultana Assistant Professor

- FDP on "Internet of Things" from 14 to 18 September 2020
- STTP on "Renewable Energy Design using MATLAB" from 10 to 14 August 2020
- STTP on "Advances in Wireless Technologies and Tele communication" from 3 to 8 August 2020.

K Srinidhi Reddy Assistant Proferssor

- STTP on "Wireless Communication-Future IOT" from 20 to 25 July 2020
- FDP on "ANSYS OF ELECTRONICS" from 18 to 22 July 2020.
- FDP on "Future Nano Electronic Devices & Circuits" from FDP on 06 to 10 July 2020

S Surekha Assistant Proferssor

- FDP on "Analog and Digital VLSI Design using Modified open Source EDA and In Ohmic Tech Methodologies" from 30 July to 03 August 2020
- FDP on "Simulation and Modeling of Data Communications & Networks" from 27 to 31 July 2020
- FDP on "Ansys of Electronics &Communication" from 18 to 22 July 2020

B Eleena Assistant Proferssor

- STTP on "Advances in Wireless Technologies and Telecommunication" from 17 to 22 August 2020
- STTP on "Advances in Wireless Technologies and Telecommunication" from 17 to 22 August 2020

SVMG Phani Kumar C Assistant Proferssor

- Workshop on "Inculcating Universal Human Values in Technical Education" from 19 to 23 October 2020

ARTICLES



Smart Parking System Using Sensor Detector

Introduction:

Time and cost are two important factors in human life, whether for an individual or a business. As quality of life increases, more and more people are inhabiting cities. Urban life requires centralized public facilities. Shopping complexes are an important point of interest both for a city's inhabitants as well as for visitors. With the emergence of modern shopping complexes which provide a variety of services, more and more people are attracted to visit them. Hence, more shop owners prefer to locate their business in shopping complexes to target more customers and increase revenue

SPS Technical Overview:

Our proposed SPS detection system is based on ultrasonic sensors. For each individual car park, this would require one sensor fixed on the ceiling above each parking space. Ultrasonic sensors work based on echo-location. The sensor transmits a sound, which hits a solid object (car or ground) and is reflected back to the sensor. The time between the sent pulse and the returned echo is used to calculate distance. In a vacant space, the time between transmitted sound and reflection is longer than in an occupied space, hence the sensor can detect when a space is occupied. Figure 4 illustrates how it works.

Conclusion:

The main contribution of this study is to introduce the most significant parking problem — i.e., finding an empty space — and propose a solution. Ultrasonic sensors can be used both for parking space detection and improper parking detection. The proposed architecture for a parking detection system would decrease searching time for vacant spaces and reduce instances of single cars improperly parking across two spaces. Future research might examine car park booking procedures and optimization of sensor usage.



V.Bhavana
III B.Tech ECE-A

Intelligent Safety Helmet

The helmet is the safety gear to prevent head injuries in an uncontrolled environment and saves the lives of many people. This paper presents a smart helmet to ensure safety driving. This proposed idea thus addresses three main objectives: (i) as a means of ensure safety, (ii) to justify the rising modern needs of technological innovations, and (iii) to overcome the helmet inquietudes. The smart helmet allows vehicle ignition only when the helmet is worn as well as checking the sobriety of the driver. This reduces the accidental risk by a major factor. The drivers at remote locations are also ensured safety by making use of GPRS and GSM. By gathering information about the location of the driver by means of the GPRS present in the person's device and by measuring the tilt factor, the tilt of the vehicle can be measured for detecting accidents, and messages can be sent to the contacts listed in the device by means of GSM, In addition, an android app is being developed to help the vehicle driver to locate the vehicle when it is parked in a new location.

Intelligent Safety Helmet for Motorcyclist:

Intelligent Safety Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among Smart helmet – intelligent safety for motorcyclist using Raspberry Pi and open cv: Smart Helmet – Intelligent Safety Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that there is increased number of fatal road accidents over the years.



J Sreethi
III ECE C

Zigbee based intelligent helmet for coal miners safety purpose:

In recent days coal mining has been a very dangerous activity that can result in a number of adverse effects on the environment for example during mining operations methane, a known greenhouse gas, be released into the air.

Furthermore, the extraction of coal often involves significant deforestation and disruption of ecosystems. This disruption can lead to habitat loss for wildlife and disruption of local water systems, impacting both aquatic life and nearby communities that depend on those resources. In addition to methane emissions, coal mining releases other harmful pollutants such as particulate matter, sulfur dioxide, and nitrogen oxides, which contribute to air pollution and have serious health implications for humans and wildlife alike.

Geo Location Guide using RF

Geolocation using radio frequency (RF) signals is a complex yet essential technology that enables precise positioning and tracking of devices in various applications, from navigation and logistics to asset management and emergency response. Here's an overview of how RF-based geolocation works and its practical applications:

Principles of RF-Based Geolocation: RF-based geolocation relies on the principles of triangulation and signal strength analysis to determine the location of a device. Multiple fixed reference points, such as Wi-Fi access points, cellular towers, or GPS satellites, emit RF signals that are received by the device to be located. By measuring the time difference of arrival (TDOA) or signal strength from different reference points, the device's position can be estimated using mathematical algorithms.

Technologies and Methods:

1. Wi-Fi Positioning
2. Cellular Positioning
3. Satellite-Based Systems

Applications:

1. Navigation and Mapping
2. Asset Tracking and Logistics
3. Emergency Response and Public Safety
4. Smart Cities and IoT

Challenges and Considerations:

1. Accuracy: The accuracy of RF-based geolocation can vary depending on factors like signal strength, multipath interference, and environmental conditions.
2. Privacy and Security: Location data privacy concerns arise due to the potential misuse or unauthorized access to geolocation information.
3. Integration and Compatibility: Integrating RF-based geolocation systems with existing infrastructure and ensuring compatibility across different technologies and standards can be challenging.

Future Trends: Advancements in RF signal processing, machine learning algorithms, and the proliferation of IoT devices are driving innovations in RF-based geolocation. Future developments may focus on improving accuracy, reducing power consumption for mobile devices, and expanding applications in emerging fields such as autonomous vehicles and augmented reality.

In summary, RF-based geolocation is a versatile technology with widespread applications in everyday life and industry, leveraging RF signals from various sources to provide accurate positioning and tracking capabilities essential for modern navigation and location-based services.



N Sravya
I ECE-A

Electronic Bomb

An electronic bomb, often referred to as an electromagnetic pulse (EMP) weapon or device, represents a significant and potentially devastating category of weaponry designed to disrupt or destroy electronic systems and infrastructure. Here's an overview of what an electronic bomb entails and its implications:

Definition and Mechanism: An electronic bomb or EMP device generates a burst of electromagnetic energy capable of inducing currents and voltages in electronic circuits and devices. This energy pulse can overload and damage sensitive electronic components, leading to malfunctions or complete failure of critical systems. EMPs can be produced by nuclear detonations at high altitudes or by specialized non-nuclear devices that generate intense electromagnetic fields.

Effects and Impact:

1. Disruption of Electronics
2. Infrastructure Vulnerability
3. Military Applications

Detection and Mitigation:

1. Shielding and Hardening
2. Testing and Preparedness

Ethical and Strategic Considerations: The development and deployment of EMP weapons raise ethical concerns regarding collateral damage to civilian infrastructure and the potential for widespread disruption. International agreements and treaties aim to regulate the use of such weapons to minimize humanitarian impact and maintain global security.



R Sowmya
I ECE B

Future Directions: Research continues into advanced EMP mitigation techniques, including the development of more robust electronics and resilient infrastructure designs. Additionally, the proliferation of EMP-resistant technologies and the integration of EMP protection measures into critical systems are ongoing priorities in defense and national security strategies.

In conclusion, while electronic bombs or EMP devices represent a formidable technological threat, efforts to understand, mitigate, and counteract their effects are crucial for safeguarding electronic infrastructure and maintaining operational resilience in an increasingly interconnected world.

ELECTIVE COURSES

Design and Analysis MOS Circuits

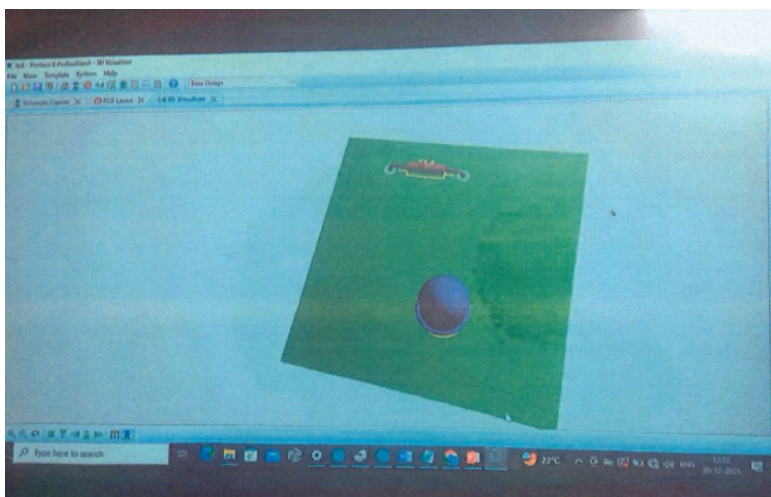
Bhoj Reddy Engineering College for Women, Hyderabad has organized an add on Program on "Design and Analysis of MOS Circuits "from 08/03/2020 to 13/03/2020. Our faculty MS K Srinidhi Reddy, Assistant Professor, ECE department, extended welcome note for program to the participants. The Resource Person Mr. K Bala Krishna, Coign Consults Private Limited took over the session and gives the brief introduction to the Analysis of MOS Circuits.

S.no	Date	Session	Topics
1	08/03/2020	Morning (09:30 to 12:30 PM)	Introduction to MOS Transistors
		Afternoon (01:30 to 04:30 PM)	Construction of Transistors
2	09/03/2020	Morning (09:30 to 12:30 PM)	Operation of MOS Transistors
		Afternoon (01:30 to 04:30 PM)	Design of MOS Circuits
3	10/03/2020	Morning (09:30 to 12:30 PM)	Analog MOS Circuits
		Afternoon (01:30 to 04:30 PM)	Analysis of MOS Circuits
4	11/03/2020	Morning (09:30 to 12:30 PM)	Digital MOS Circuits
		Afternoon (01:30 to 04:30 PM)	Analysis Of Digital MOS Circuits
5	12/03/2020	Morning (09:30 to 12:30 PM)	Analog IC Design
		Afternoon (01:30 to 04:30 PM)	Analysis of IC Circuits
6	13/03/2020	Morning (09:30 to 12:30 PM)	Digital IC Design
		Afternoon (01:30 to 04:30 PM)	Analysis of IC Digital IC Design

Designing and analyzing MOS (Metal-Oxide-Semiconductor) circuits involves understanding the behavior and characteristics of MOSFETs (Metal-Oxide-Semiconductor Field-Effect Transistors) and using them to create functional electronic circuits. Here are the key steps and considerations involved in this process:

- **Understanding MOSFET Operation:** MOSFETs are fundamental building blocks in digital and analog circuits. They operate based on the control of current flow between the source and drain terminals via the gate terminal voltage. Depending on the type (N-channel or P-channel) and configuration (enhancement-mode or depletion-mode), MOSFETs exhibit different behaviors and are suitable for various circuit applications.

- **Circuit Design Basics:** Designing MOS circuits starts with defining the circuit specifications, such as voltage levels, current requirements, frequency of operation, and desired functionality (e.g., amplifier, oscillator, logic gate). Sizing and biasing the MOSFETs correctly are crucial for achieving desired performance characteristics such as gain, bandwidth, and power dissipation.
- **Simulation and Analysis:** Use circuit simulation tools like SPICE (Simulation Program with Integrated Circuit Emphasis) or LTspice to simulate MOS circuits before prototyping. Simulation helps predict circuit behavior under different operating conditions and allows for iterative design refinements without physical prototyping costs. Analyze parameters such as voltage waveforms, current flows, frequency response, and transient response to verify circuit performance.
- **Layout and Fabrication:** Once the circuit design is validated through simulation, create the physical layout considering factors like parasitic capacitances, resistances, and interconnect lengths that can affect circuit performance. Layout tools such as Cadence Virtuoso or Mentor Graphics are commonly used in industry for this purpose.
- **Testing and Verification:** After fabrication, conduct testing and verification to ensure the circuit meets design specifications and performance requirements. Use measurement equipment such as oscilloscopes, spectrum analyzers, and network analyzers to validate parameters like voltage gain, bandwidth, noise characteristics, and power efficiency.
- **Optimization and Iteration:** Iteratively optimize the circuit design based on testing results and real-world performance feedback. Address any issues discovered during testing, such as stability problems, signal integrity issues, or thermal management concerns, through design modifications and improvements.
- **Documentation and Compliance:** Document the final circuit design, including schematics, layout files, simulation results, and test reports. Ensure compliance with relevant industry standards and specifications, particularly in fields like telecommunications, automotive electronics, and consumer electronics where reliability and regulatory compliance are critical.



Designing and analyzing MOS circuits requires a blend of theoretical knowledge, practical skills in circuit design and simulation, and attention to detail in layout and testing phases. Continuous learning and staying updated with advancements in semiconductor technology are essential for developing efficient and reliable MOS circuits for diverse electronic applications.



Placements



Company Name	Drive Date	On/Off	Type Of	Salary in Lakhs	Students Attended	Selected
		Campus	Company			
AMAZON	09-01-2020	On Campus	BPO	2.8	267	7
RYTHMOS	21-01-2020	On Campus	Software	3	353	3
QUEST GLOBAL	23-01-2020	On Campus	Product Based	3.2	418	9
HCL TECHNOLOGIES	24-01-2020	On Campus	Software	3.4	369	28
CBRE	25-01-2020	On Campus	Software	2.8	212	11
FACTSET	27-01-2020	On Campus	Product Based	4.5	374	3
MAKERSHIVE	28-01-2020	On Campus	Software	2.4	294	3
GBOXZ	29-01-2020	On Campus	Software	4	316	25
TECHFORCE	01-02-2020	On Campus	Software	2.4	242	4
YAMMI TECH	04-02-2020	On Campus	Software	2.4	213	4
RIKTAM TECHNOLOGIES	06-02-2020	On Campus	Software	3	246	9
MAINTEC	12-02-2020	On Campus	Software	3.2	188	6
CRYSTAL TECH	14-02-2020	On Campus	Software	2.8	147	4

Transforming education into achievement

Placement for B.Tech students is a crucial milestone marking the culmination of their academic journey and the beginning of their professional careers. It entails a rigorous process where students are assessed by prospective employers through interviews, tests, and presentations to match their skills with industry requirements. The process not only gauges technical knowledge but also evaluates soft skills such as communication, problem-solving, and teamwork. Successful placement hinges on preparation, including honing resume writing, interview techniques, and networking. For students, securing a placement represents not just a job opportunity but validation of their education and a pathway to contribute meaningfully to their chosen field.



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