



TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

AN AUTONOMOUS INSTITUTION

Accredited by NBA and NAAC with 'A+' Grade.

(Sponsored by TKR Educational Society, Approved by AICTE, Affiliated to JNTU H)
Medhawal, Meerpet, Salepur, Hyderabad, Telangana - 500 087

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MINUTES OF BOS MEETING

The 8th Meeting of the Board of Studies (BoS) of the department of Computer Science and Engineering was held on 23-01-2024 at 10:00 A.M.

MEMBERS OF BOS:

S.No.	Name of the Expert	Designation	Position	Signature
1	Dr Ch B N Lakshmi	Professor, Dept. of CSE, TKRCET	Chairman, BOS	
2	Dr..A. Suresh Rao	Professor, Dean Academics & Vice Principal, TKRCET	HOD-CSE	
3	Dr. K P Supreethi	Professor, Dept. of CSE, JNTUH	JNTUH Nominee	
4	Prof. R.B.V. Subramaanyam,	Professor, Dept. of CSE, NIT Warangal	External Subject Expert-I	
5	Dr. M.A. Hameed,	Professor, Dept. of CSE, OU Hyderabad	External Subject Expert-II	
6	Dr.V. Sree Kumar	Principal Investigator Infosys Pvt. Ltd.	Industry Expert	
7	Dr V Krishna	Professor, Dept. of CSE, TKRCET	Internal Subject Expert-I	
8	Dr KSR Radhika	Professor, Dept. of CSE, TKRCET	Internal Subject Expert-II	
9	Dr. M Narender	Professor, Dept. of CSE, TKRCET	Internal Subject Expert-III	

Agenda Points:

1. To consider and approval of the detailed syllabus of III and IV year courses of the R22
2. Syllabus changes from R20 to R22
3. Approval of Mandatory courses
4. Substituted subjects for Readmitted students
5. Action Taken Report and Approval of DAB and PAC Minutes
6. Identification of Workshops and guest lectures
7. Approval of teaching methods
8. Approval of tools used in teaching and learning process to assess course outcomes
9. Identification of Value Added Courses

Agenda 1. To consider and approval of the detailed syllabus of III and IV year courses of the R22

Resolution: The Board considered and approved the detailed syllabus of the III and IV year B.Tech CSE courses under the R22 Regulation. The syllabus, prepared in line With AICTE model curriculum and industry requirements, is hereby ratified for Implementation from the academic year 2025-26 onwards.

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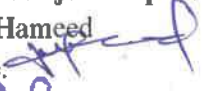
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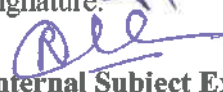
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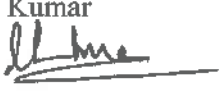
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Discussion:**Semester V**

S.No.	Course Classification	Course Code	Name of the subject	L	T	P	C	I	E	Total
01	HS	D5HSFM	Fundamentals of Management	3	0	0	3	40	60	100
02	PC	D55PC12	Formal Languages and Automata Theory	3	1	0	4	40	60	100
03	PC	D55PC13	Operating Systems	3	0	0	3	40	60	100
04	PC	D55PC14	Data Warehousing and Data Mining	2	0	0	2	40	60	100
05	PE	D55PE1	Professional Elective I	3	0	0	3	40	60	100
06	PE	D55PE2	Professional Elective II	3	0	0	3	40	60	100
07	PC	D55PC15	Operating Systems Lab	0	0	2	1	40	60	100
08	PC	D55PC16	Data Warehousing and Data Mining Lab	0	0	2	1	40	60	100
09	MC	MC002	Environmental Science*	3	0	0	0	0	0	S
Total Credits				20	1	4	20	320	480	800
Mandatory Course: Environmental Science										

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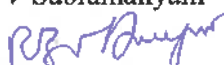
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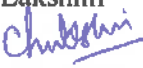
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Semester VI

S.No.	Course Classification	Course Code	Name of the subject	L	T	P	C	I	E	Total
01	PC	D56PC17	DevOps	3	0	0	3	40	60	100
02	PC	D56PC18	Compiler Design	3	0	0	3	40	60	100
03	PC	D56PC19	Machine Learning	3	0	0	3	40	60	100
04	PE	D56PE3	Professional Elective III	3	0	0	3	40	60	100
05	PE	D56PE4	Professional Elective IV	3	0	0	3	40	60	100
06	OE	D56OE1	Open Elective I	3	0	0	3	40	60	100
07	PC	D56PC20	DevOps Lab	0	0	2	1	40	60	100
08	PC	D56PC21	Machine Learning Lab	0	0	2	1	40	60	100
09	MC	MC003	Intellectual Property Rights*	3	0	0	0	0	0	S
Total Credits				21	0	4	20	320	480	800
Mandatory Course: Intellectual Property Rights										

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Semester VII

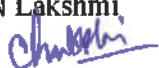
S.No.	Course Classification	Course Code	Name of the subject	L	T	P	C	I	E	Total
01	PC	D57PC22	Deep Learning	3	0	0	3	40	60	100
02	PC	D57PC23	Network Security and Cryptography	3	0	0	3	40	60	100
03	PE	D57PE5	Professional Elective V	3	0	0	3	40	60	100
04	OE	D57OE2	Open Elective II	3	0	0	3	40	60	100
05	PC	D57PC24	Deep Learning Lab	0	0	2	1	40	60	100
06	PW	D57PW1	Project Work Phase I	0	0	14	7	100	-	100
07	MC	MC004	MOOCS/Online Course							
Total Credits				15	0	16	20	240	360	600

Mandatory Course: MOOCs/Online Course:

The student should register for any one of the MOOCs course offered by NPTEL, COURSERA, UDEMY, student should submit the completion certificate to clear this course.

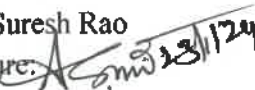
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Semester VIII

S.No.	Course Classification	Course Code	Name of the subject	L	T	P	C	I	E	Total
01	PC	D58PC25	Blockchain Technologies	3	0	0	3	40	60	100
02	PE	D58PE6	Professional Elective VI	3	0	0	3	40	60	100
03	OE	D58OE3	Open Elective III	3	0	0	3	40	60	100
04	OE	D58OE4	Open Elective IV	3	0	0	3	40	60	100
05	PW	D58PW2	Major Project Phase 2	0	0	16	8	40	60	100
			Total Credits	12	0	16	20	200	300	500

2. List of Professional Electives:

Professional Elective – I

1. Advanced Computer Architecture (D55PE1A)
2. Software Testing Methodologies (D55PE1B)
3. Fundamentals of Data Science (D55PE1C)
4. Agile Methodologies (D55PE1D)

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Professional Elective – II

1. Information Retrieval Systems (D55PE2A)
2. Data Wrangling and Visualization (D55PE2B)
3. Artificial Intelligence (D55PE2C)
4. Design Patterns (D55PE2D)

Professional Elective – III

1. Full Stack Development (D56PE3A)
2. Big Data Analytics (D56PE3B)
3. Mobile Ad hoc Networks (D56PE3C)
4. Service Oriented Architecture (D56PE3D)

Professional Elective –IV

1. Internet of Things (D56PE4A)
2. Mobile Computing (D56PE4B)
3. Augmented Reality and Virtual Reality (D56PE4C)
4. Software Project Management (D56PE4D)

Professional Elective –V

1. Robotic Process Automation (D57PE5A)
2. Quantum Computing (D57PE5B)
3. Reinforcement Learning (D57PE5C)
4. Medical Image Processing (D57PE5D)

Professional Elective – VI

1. Web and Social Media Analytics (D58PE6A)
2. Video Analytics (D58PE6B)
3. Natural Language Processing (D58PE6C)
4. Cyber Forensics (D58PE8D)

The detailed syllabus is attached herewith.

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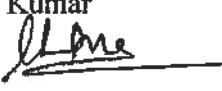
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List of Open Electives:

1. Object Oriented Programming through Java.
2. Python Programming.
3. R Programming.
4. Database Management Systems.
5. Operating Systems.
6. Computer Networks.
7. Artificial Intelligence.
8. IOT
9. Cyber Security
10. Cloud computing.
11. Fundamentals of Information Technology
12. Computer Architecture

Agenda 2: Syllabus changes from R20 to R22:

Resolution:

It was resolved that the syllabus changes from R20 to R22 in the 4th, 5th, 6th, 7th, and 8th semesters be approved and ratified as per the proposed structure.

Discussion:

• The syllabus for the subjects : quantum computing, Machine Learning, Agile software Development, Artificial Intelligence and Block Chain Technology is changed entirely based on BOS members suggestions , stakeholders feedback and industry requirements.

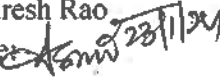
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• In **Software Testing Methodologies** course, syntax testing concept is added which include the following topics: Syntax Testing Why What and How, A Grammar for formats, Test Case Generation, Implementation and Application and Testability Tips, as suggested by BOS members suggestions.

• In **Big Data Analytics** course, few topics are added. They are Data Preparation, Analysis Types, Analysis Modes, Visualizations. Load Leveling with Queues, Load Balancing with Multiple Consumers, Leader Election, Sharding, CAP, Lambda Architecture, Scheduler Agent Supervisor, Pipes & Filters, MapReduce Patterns, as suggested by BOS members.

• In **Internet of Things** course, the following topics are added
Domain Specific IoTs – Home automation, Environment, Agriculture, Health and Lifestyle. IoT Systems – Logical design using Python-Introduction to Python – Python Data types & Data structures, Control flow, Functions, Modules, Packaging, File handling, Data/Time operations, Classes, Exception, Python packages of Interest for IoT as suggested by BOS members.
IoT Physical Devices and Endpoints - Raspberry Pi, Linux on Raspberry Pi, Raspberry Pi Interfaces, Programming Raspberry PI with Python, Other IoT devices. Designing a RESTful web API
Case studies- Home Automation, Environment-weather monitoring-weather reporting- air pollution monitoring, Agriculture as suggested by BOS members.

• In **Design Patterns** course, few topics are added. They are: Discussion of Behavioral Patterns. What to Expect from Design Patterns, A brief History, and the Pattern Community an Invitation, A Parting Thought., as suggested by BOS members.

• In **Deep Learning** course, machine learning concepts are also included to understand the motivation behind deep learning and practical methodology is also added. The topics added are:

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Machine Learning Basics: Learning Algorithms, Capacity, Overfitting and Under fitting , Hyper parameters and Validation Sets, Estimators, Bias and Variance, Maximum Likelihood Estimation, Bayesian Statistics, Supervised Learning Algorithms, Unsupervised Learning Algorithms, Stochastic Gradient Descent, Building a Machine Learning Algorithm.

Practical Methodology: Performance Metrics, Default Baseline Models, Determining Whether to Gather More Data, Selecting Hyper parameters, Debugging Strategies, Example: Multi-Digit Number Recognition, as suggested by BOS members.

• **Computer forensics** course title is changed as **Cyber forensics**. Two units on cyber security principles are added. The contents that are added to computer forensics subject are :

Introduction of Cybercrime: Types, The Internet spawns crime, Worms versus viruses, Computers' roles in crimes, Introduction to digital forensics, Introduction to Incident - Incident Response Methodology – Steps - Activities in Initial Response, Phase after detection of an incident. Initial

Response and forensic duplication, Initial Response & Volatile Data Collection from Windows system -Initial Response & Volatile Data Collection from Unix system – Forensic Duplication: Forensic duplication: Forensic Duplicates as Admissible Evidence, Forensic Duplication Tool Requirements, Creating a Forensic. Duplicate/Qualified Forensic Duplicate of a Hard Drive.

As suggested by BOS members.

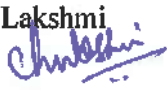
• **Inclusion of New Courses:**

Advanced Computer Architecture , Fundamentals of Data Science , DevOps, DevOps lab, machine learning lab, Intellectual Property Rights, Full Stack Development, Service Oriented Architecture, Augmented Reality and Virtual Reality, Deep Learning Lab, Network Security and Cryptography, Robotics, Reinforcement Learning and Medical Image Processing, Web and Social Media, Video Analytics, Operating Systems Lab course ,Natural Language Processing and Cyber Forensics.

In R22 5th sem (third year 1st sem), introduced the subjects:

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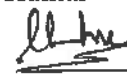
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Operating Systems Lab course, Environmental science, Advanced Computer Architecture and Fundamentals of Data Science which are not present in R20 Regulation.

- **The Operating Systems Lab course** makes students to apply theoretical knowledge gained in lectures with practical, hands-on experience.

It Gives practical exposure to essential concepts and techniques in operating systems design and management and prepares them for careers in software development, system administration, and related fields.

- **Introducing Environmental Science as a mandatory course** for students prepares them to be informed, responsible, and proactive stewards of the environment, capable of addressing the complex environmental challenges such as ecosystems, biodiversity, natural resources, pollution, climate change, and human impacts facing our planet in the 21st century.

Though this course may not directly lead to a career in environmental science, studying environmental science courses can broaden career opportunities and enable graduates to apply their technical skills in roles related to environmental engineering, sustainability, regulatory compliance, research, consulting, and environmental management.

- **Introducing the "Advanced Computer Architecture" course** as professional elective subject, equips students with the knowledge, skills, and insights needed to design, analyze, and optimize parallel and scalable computing systems. This prepares them for careers in industries where high-performance computing and parallel processing are essential, such as research institutions, technology companies, and advanced manufacturing.

- **Introduced Fundamentals of Data Science** as a professional elective subject to provide students, a solid foundation in the fundamental concepts, techniques, and tools used in data science, including statistics, machine learning, data mining, data visualization, and programming principles underlying data analysis and interpretation.

By studying this course students can pursue roles as data analysts or data scientists. They can analyze large datasets, extract insights, build predictive models, and contribute to data-driven

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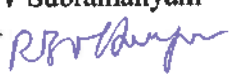
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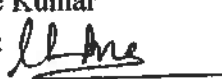
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decision-making processes in industries such as technology, finance, healthcare, marketing, and manufacturing.

In R22 6th sem (third year, 2nd sem) introduced the subjects: DevOps, DevOps lab, machine learning lab, Intellectual Property Rights, Full Stack Development, Service Oriented Architecture, Augmented Reality and Virtual Reality which are not present in R20 regulation.

- By introducing **DevOps**, students learn how to automate repetitive tasks, such as code deployment, testing, and configuration management, leading to improved efficiency and productivity.

DevOps course equips students with the knowledge, skills, and tools they need to succeed in the rapidly evolving field of software engineering and IT operations. It prepares them to adapt to the demands of modern software development environments and prepares them for roles such as DevOps engineer, site reliability engineer (SRE), automation architect, cloud engineer, and more.

- The **DevOps lab** course equips students with practical skills and knowledge in various DevOps tools and practices, preparing them for careers in software development, IT operations, and DevOps engineering.

It helps to bridge the gap between theoretical learning and real-world application, enabling students to become proficient in modern software development methodologies and technologies.

- Introducing a **machine learning lab** course equips students with practical skills, theoretical knowledge, and problem-solving abilities essential for careers in data science, artificial intelligence, and machine learning. It prepares them to tackle complex problems and innovate in various industries that rely on data-driven decision-making.

- Introducing an **Intellectual Property Rights** course as mandatory course students equips them with the knowledge, skills, and ethical awareness needed to navigate the complex landscape of

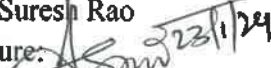
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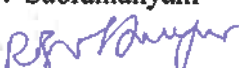
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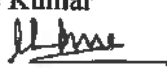
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Intellectual property and innovation in the 21st century. This course empowers students to protect their own intellectual property, respect the intellectual property of others, and contribute to a culture of innovation and responsible research and development.

- Introducing a **Full Stack Development** course as professional elective subject equips students with the skills, knowledge, and practical experience needed to excel in the rapidly evolving field of software development. It prepares them to tackle complex development projects, collaborate effectively in teams, and contribute to the success of organizations in the tech industry.

Companies seek individuals who can work on both the front end and back end of web applications. Introducing Full Stack Development expands career opportunities for students, enabling them to pursue roles such as full stack developer, web developer, software engineer, and more.

- Introducing a **Service Oriented Architecture** course as professional elective subject equips students with the knowledge, skills, and practical experience needed to design, implement, and manage modern distributed systems in various domains. It prepares them for successful careers in the rapidly evolving field of IT architecture and enterprise software development, enabling them to pursue roles such as SOA architect, integration specialist, API developer, and enterprise software engineer.

- **Augmented Reality and Virtual Reality** are cutting-edge technologies have diverse applications across industries such as gaming, entertainment, education, healthcare, architecture, and manufacturing. Introducing a course on Augmented Reality and Virtual Reality as professional elective subject exposes students to the forefront of technological innovation and prepares them for careers in these emerging fields.

In R22 7th sem, (Final year, 1st sem), introduced the subjects: Deep Learning Lab, Network Security and Cryptography, Robotics, Reinforcement Learning and Medical Image Processing, which are not present in R20 regulation.

- Deep learning is a rapidly growing field within artificial intelligence (AI) that has applications in various domains such as computer vision, natural language processing,

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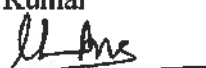
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robotics, and healthcare. Introducing a **Deep Learning Lab** course ensures that students are exposed to cutting-edge technology and industry trends.

Deep Learning Lab courses typically involve hands-on projects where students work with real-world datasets and develop deep learning models using frameworks like Tensor Flow, PyTorch, or Keras. This practical experience allows students to apply theoretical concepts to real-world problems and gain valuable experience in building and training neural networks.

•Introducing **Network security and cryptography** course, provides students with a fundamental understanding of security principles and techniques necessary to secure computer networks, systems, and data. This knowledge is crucial in today's digital age where cyber threats are prevalent. It equips students with the knowledge and skills needed to address cybersecurity challenges and contribute to building secure and resilient IT infrastructures.

Introducing this Network security and cryptography course expands career opportunities for students and prepares them for roles such as cybersecurity analyst, network security engineer, cryptographic specialist, and security consultant.

•**Robotics** has the potential to address various societal challenges, including aging populations, disaster response, environmental monitoring, and infrastructure maintenance. By introducing robotics course, students are equipped to develop innovative solutions to these challenges and make meaningful contributions to society.

Since Robotics is a rapidly evolving field with applications across industries such as manufacturing, healthcare, agriculture, and transportation, introducing robotics course prepares students for emerging trends such as automation, autonomous systems, and human-robot interaction, enhancing their relevance and employability in the job market.

•**Reinforcement learning** is a fundamental concept in artificial intelligence (AI) and machine learning. Reinforcement learning is increasingly becoming relevant in industries such as autonomous vehicles, recommender systems, finance, and healthcare. Introducing Reinforcement learning to students provides them with a solid understanding of key AI principles, algorithms, and techniques, enhancing their overall comprehension of AI

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concepts and prepares them for emerging trends in AI and machine learning, ensuring they are well-equipped to tackle the challenges of tomorrow's technology landscape.

•Introducing the course on **Medical Image Processing** equips students with the knowledge and skills to process, analyze, and interpret medical images effectively. They learn about image enhancement, segmentation, feature extraction, and classification techniques tailored Specifically for medical imaging data. This knowledge is crucial for extracting meaningful information from medical images to aid in diagnosis, treatment planning, and medical research. Graduates with expertise in Medical Image Processing are well-positioned for careers in healthcare institutions, medical device companies, research laboratories, and academia.

In R22 8th sem (Final year,2nd sem), introduced the subjects : Web and Social Media, Video Analytics, Natural Language Processing and Cyber Forensics.

•Introducing the course **Web and Social Media** provides students with a comprehensive understanding of web development technologies, including HTML, CSS, JavaScript, and various web frameworks. Students learn how to design and develop dynamic, interactive websites and web applications, gaining practical skills that are highly relevant in the Technology industry. Graduates with expertise in this course are well-positioned for careers in digital marketing agencies, web development firms, social media management companies, advertising agencies, e-commerce businesses, and start-ups.

•Introducing the course **Video Analytics** equips students a deep understanding of advanced computer vision algorithms and methods used for tasks such as object detection, tracking, recognition, and behavior analysis in videos. Video Analytics involves the application of computer vision techniques to analyze and interpret video data. By studying this course, students can pursue roles such as computer vision engineer, data scientist, research scientist, software developer, or solutions architect in industries such as technology, security, healthcare, retail, and automotive.

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- Students are required to participate in activities, attend sessions, or complete equivalent coursework, and must submit the proof of attendance or a satisfactory participation report to fulfill the requirements.
- No marks or letter grades shall be allotted for these courses; however, successful completion is compulsory for fulfilling the degree requirements.
- For NPTEL/MOOCs courses, students must complete the course(s) from the approved list provided by the department/college and submit the relevant completion certificates.

The Board unanimously approved the inclusion of these courses as mandatory non-credit requirements in the curriculum.

Discussion:

Syllabus for Mandatory Courses:

1. Syllabus for Environmental Sciences

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT – I:

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

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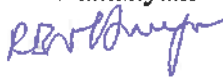
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UNIT – II:

Natural Resources: Classification of Resources: Living and Non-Living resources, Water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT – III:

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem Diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT – IV:

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards.

Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution:

Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, Composition and characteristics of e-Waste and its management. Pollution control technologies:

Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. Global Environmental Issues and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

UNIT – V:

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition.

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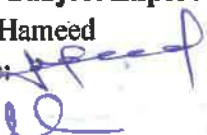
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Overview on Impacts of air, water, biological and Socio economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its Explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

Text Books:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

Reference Books:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international Publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.

2. Syllabus for Intellectual Property Rights:

UNIT – I:

Introduction to Intellectual property:

Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

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UNIT – II:

Trade Marks:

Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III:

Law of copy rights:

Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV:

Trade Secrets:

Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, and protection for submission, trade secrete litigation. Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V:

New development of intellectual property:

new developments in trade mark law; copy right law, patent law, intellectual property audits. International overview on intellectual property, international – trade mark law, copy right law, International patent law, and international development in trade secrets law.

Text Books & References:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.

Agenda 4: Substitute subjects for the Readmitted students:

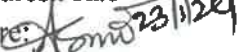
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Resolution:

- It was resolved that the readmitted students from R20 to R22 shall be provided with Substitute subjects as per the approved subject mapping prepared by the Departmental Academic Committee.
- The list of substitute subjects will be circulated to the concerned students and faculty advisors.
- These substitutes shall ensure that students meet the program outcomes and graduation requirements without any academic loss.
- The resolution was unanimously approved by the Board.

Discussion:

Mr. THARAMANI ADARSH bearing hall Ticket No. 21K91A05Q0 is admitted in TKRCET R20 regulations. As per the TKRCET R20 Regulations to promote from I Year II Semester to II Year I Semester student has to secure Minimum 19 Credits out of 38 Credits. Mr. THARAMANI ADARSH bearing hall Ticket No. 21K91A05Q0 secured only 9 credits up to I Year II Semester, as per the TKRCET R20 regulations, he was detained due to lack of credits in the A.Y.2022-23.

Now he got the (21) credits up to Sept-2023 examinations, as per the TKRCET R22 Regulations he is eligible to re-admit in to II year I semester for the Academic Year 2023-24, subject to condition that failed subjects have to be studied by the candidate on their own to meet the course structure requirement (i.e. He has to secure $19+19=38$ credits as per the TKRCET-R20 Regulations) up to

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Prof. R. B.V Subramanyam

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I Year II Semester.

• Studied Courses under TKRCET R20 Regulations are:

Subjects as per TKRCET (Autonomous) R22 Regulation	Course as per TKRCET (Autonomous)R20 Regulation	GRADE		Credits earned
		Secu red	Poin ts	
I YEAR I SEM				
English for skill Enhancement (2)	English (2)	C	5	2
Linear Algebra and Ordinary Differential Equations (4)	Linear Algebra & Graph Theory (3)	B	6	3
Engineering Chemistry (4)	Chemistry (4)			
C Programming for Problem Solving (3)	C Programming for Problem Solving (3)	C	5	3
IT Workshop and Elements of Computer Engineering (1)	IT Workshop (1.5)	B+	7	1.5
Computer Aided Engineering Graphics (3)	Engineering Graphics (3)	C	5	3
English Language and Communication Skills Lab (1)	English Language & Communication Skills Lab (1)	O	10	1
Engineering Chemistry Lab (1)	Chemistry Lab (1.5)	A	8	1.5
C Programming for Problem Solving Lab (1)	C Programming for Problem Solving Lab (1.5)	A+	9	1.5
	Sports	S	0	0

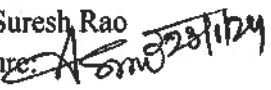
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I YEAR II SEM				
Business Economics and Financial Analysis (3)				
Statistical Methods and Vector Calculus(4)	Ordinary Differential Equations & Vector Calculus (3)			
Applied Physics (4)	Applied Physics (4)			
Basic Electrical Engineering (3)	Basic Electrical Engineering (3)			
Data Structures (3)				
Applied Physics Lab (1)	Applied Physics Lab (1.5)	B+	7	1.5
Basic Electrical and Simulation Lab (1)	Basic Electrical and Simulation Lab (1.5)	B	6	1.5
Data Structures Lab (1)				
	Semi-Conductor Devices & Circuits (3)			
	Semi-Conductor Devices & Circuits Lab (1.5)	C	5	1.5
	Yoga	S		

The candidate has to study the following courses on his own by availing supplementary examinations facility conducted by TKRCET as per R20 regulations, as per the details given below:

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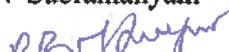
University Nominee

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S.No	Name of the Course	Credits
1	Chemistry(4)	4
2	Ordinary Differential Equations & Vector Calculus (3)	3
3	Applied Physics (4)	4
4	Basic Electrical Engineering (3)	3
5	Semi-Conductor Devices & Circuits (3)	3
	Total Credits	17

The Extra Courses the student has to study from the R22 Regulations are:

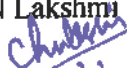
S.No	Name of the Course	Credits
1	Business Economics and Financial Analysis (3)	3
2	Data Structures	3
3	Data Structures	1
4	Elements of Computer Science and Engineering	1
	Total Credits	8

The Substitute Courses the student has to study are:

S.No	Name of the Studied Subject	Name of the Substitute Subject	Credits	Year/Sem	A.Y.
1	Semi-Conductor Devices & Circuits	Network Analysis	3	II/I	2023-24
2	Semi-Conductor Devices & Circuits Lab	Network Analysis Lab	1	II/I	2023-24

Based on the recommendations of BOS Chairman, Mr. THARAMANI ADARSH bearing hall Ticket No. 21K91A05Q0 has to get 38 credits from TKRCET-R20 Regulation (up to I Year II Semester) and 120 credits TKRCET (Autonomous) R22 Regulations (from II Year I Semester to

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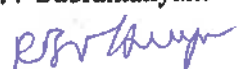
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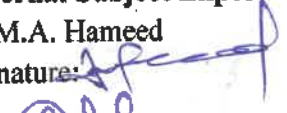
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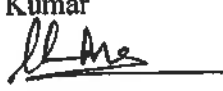
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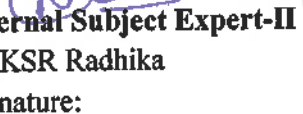
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IV Year II Semester and he has to Register & pass the Table-3 & 4 mentioned courses to get the B.Tech Degree under R22 Regulations.

Agenda 5: Action Taken Report and Approval of DAB and PAC Minutes

Resolution:

The Board reviewed the Action Taken Report (ATR) on the decisions of previous meetings and noted satisfactory progress on all points. The Board also examined the minutes of the Department Advisory Board (DAB) and Program Assessment Committee (PAC) meetings. After thorough discussion, the Board unanimously approved the Action Taken Report and ratified the minutes of the DAB and PAC meetings, acknowledging the efforts made towards continuous improvement in academic processes, curriculum implementation, and quality assurance

Discussion:

The Board of Studies reviewed the Action Taken Report (ATR) on the resolutions from the previous BOS meeting. The ATR highlighted the successful implementation of decisions, including curriculum enhancements, value-added courses, and academic process improvements.

Additionally, the Department Advisory Board (DAB) and Program Assessment Committee (PAC) minutes were presented to the members for discussion. The Board found the recommendations of the DAB, PAC to be aligned with departmental goals and institutional vision.

Agenda 6: Identification of Workshops and guest lectures

Resolution:

The BOS approved the organization of department-level workshops and guest lectures each semester. The department shall prepare a schedule of topics and resource persons in consultation with industry and academic experts.

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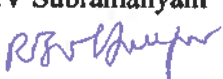
University Nominee

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Discussion:

The BOS members discussed the need for conducting workshops and guest lectures to strengthen students' practical knowledge, industry exposure, and overall professional development.

Emphasis was placed on inviting industry experts, academicians, and researchers to bridge the gap between theoretical concepts and real-world applications. Suggestions were made to include sessions on emerging technologies, programming skills, career development, research trends, and entrepreneurship, ensuring students are well-prepared for placements and higher studies

Agenda 7: Approval of teaching methods

Resolution:

The BOS approved the proposed teaching methods and recommended their systematic implementation to ensure quality education, better student engagement, and improved Program Outcome (PO) attainment.

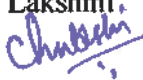
Discussion:

The BOS discussed various innovative teaching and learning methods to enhance student engagement, improve learning outcomes, and align with Outcome-Based Education (OBE) practices. Members emphasized incorporating:

- ICT-enabled teaching tools (smart classrooms, virtual labs, simulation tools).
 - Active learning strategies (flipped classrooms, group discussions, peer learning).
 - Industry-oriented teaching approaches (case studies, mini-projects, real-time problem-solving).
 - Assessment innovations (formative assessments, quizzes, project-based evaluations).
- The committee also highlighted the importance of continuous improvement in pedagogy through faculty development programs.

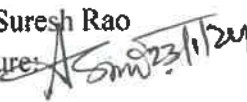
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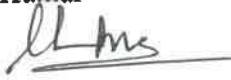
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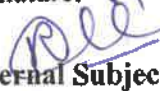
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Agenda 8: Approval of tools used in teaching and learning process to assess course outcomes

Resolution:

The BOS approved the proposed tools for assessing Course Outcomes. Faculty members are encouraged to integrate these tools into their teaching plans and submit outcome attainment reports for each course at the end of every semester.

Discussion:

The BOS deliberated on the importance of systematically using **assessment and evaluation tools** to measure **Course Outcome (CO) attainment** in line with Outcome-Based Education (OBE). The members reviewed various tools and techniques to ensure transparency, fairness, and accuracy in evaluating student performance.

The following assessment tools were discussed:

Direct Assessment Tools:

Internal assessments, quizzes, assignments, lab performance, mini-projects, and semester exams.

Indirect Assessment Tools:

Student feedback, exit surveys, alumni feedback, employer feedback.

The following assessment tools and calculation were discussed:

Direct Assessment Tools:

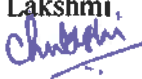
Internal assessments, quizzes, assignments, lab performance, mini-projects, and semester exams.

Indirect Assessment Tools:

Student feedback, exit surveys, alumni feedback, employer feedback.

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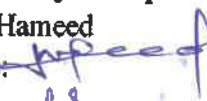
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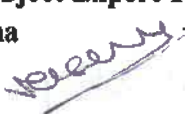
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Direct CO attainment calculation:

Direct attainment of CO = $(0.2 \times \text{mid-term} + 0.1 \times \text{assignment}) \times 0.8 + (0.7 \times \text{semester End Examinations}) \times 0.2$

Indirect CO attainment calculation:

Indirect attainment of CO = Average of Course end Survey given by all the students for all the Course Outcomes of each course.

Overall CO attainment = $0.9 \times \text{Direct attainment of CO} + 0.1 \times \text{Indirect attainment of CO}$.

Continuous Improvement Assessment Methodology:

In view of Change in classification composition of Course structure and change in Academic Regulations of R22, the Continuous Improvement assessment methodology fixes targets across the course outcomes are as follows, Target: Minimum is 40% of marks (ie., minimum pass mark) Course Outcome Attainment is given with 3 levels

R22(23 Batch) (level3 $\geq 60\%$, level2 $\geq 50\%$ and level 1 $< 50\%$).

For the overall Programme the PO attainment target should be as follows: 80% of Programme Articulation Matrix.

Agenda 9: Identification of Value Added Courses

Resolution:

The BOS approved the above-listed Value-Added Courses for offering in the upcoming academic sessions. The department will periodically review and update these courses to keep them aligned with industry trends and technological advancements.

Discussion:

The BOS deliberated on the identification of Value-Added Courses (VACs) to enhance students' technical skills, practical knowledge, and industry-readiness. The courses aim to

Chairman BOS

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HOD-CSE

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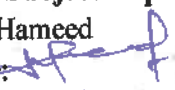
University Nominee

Dr K P Supreethi
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External Subject Expert-I

Prof. R. B.V Subramanyam
Signature: 

External Subject Expert-II

Dr M.A. Hameed
Signature: 

Industry Expert

Dr V. Sree Kumar
Signature: 

Internal Subject Expert-I

Dr V Krishna
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Internal Subject Expert-II

Dr KSR Radhika
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Internal Subject Expert-III

Dr. M Narender
Signature: 

bridge the gap between academic learning and real-world applications, improve employability, and provide hands-on experience in emerging technologies.

The following VACs were identified:

1. **Introduction to Generative AI** – Exposure to AI models capable of generating creative Content.
2. **Django** – Hands-on learning of the Python-based web development framework for building Scalable web applications.
3. **Web Development using PHP** – Practical skills in server-side scripting and dynamic website Development.
4. **Interactive Data Insights: Unlocking Business Potential with Dynamic Power BI Dashboards** – Training in business analytics and interactive data visualization.
5. **Kafka for Real-World Data Streaming** – Skills for managing and processing real-time data Streams in large-scale applications.

Chairman BOS

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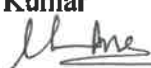
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