ANNEXURE -2

Program Specific Outcomes of various academic Programs fulfilling regional/state/National & Global Needs

Program Name	Program Specific Outcomes	PSO mapping with regional/State/National & Global needs
B.Tech (Applied Petroleum Engineering with Specialization in Upstream	PSO1. To learn various hydrocarbon exploration methods, hydrocarbon source and cap rock characterization techniques, field surveying and mapping the surface and sub-surface features to help finalize a pilot plan for exploration drilling. PSO2. To learn various types of drilling rigs and its components such as power systems, fluid circulation systems, well control systems, well monitoring systems, rotary systems, hoisting, drill string assemblies, cementation, directional drilling, and the economics for finalizing a drilling plan. PSO3. To learn various reservoir-well completions, methods of lifting hydrocarbon and other wellbore fluids to the surface by reservoir energy and/or artificial means, maintain efficient well production, stimulate reservoir, and design surface facilities required for oil and gas separation and preliminary processing and transportation. PSO4. To characterize and model conventional and unconventional hydrocarbon reservoirs to estimate both the reserves and the production potential under natural and improved recovery methods for optimum development of a field	Global Needs in Oil & Energy Sector
B.Tech (Geo Science Engineering)	PSO 1- To learn various geological, geophysical and spatial methods of surface and subsurface investigation of earth	Global needs in Technological development in Earth Sciences

	PSO 2- To learn various exploration methods for hydrocarbon prospecting PSO 3- To integrate geological, geophysical and geospatial data for subsurface modelling using various geostatistical and computational methods.	
B.Tech (Geo Informatics Engineering)	PSO1: Detail understanding of fundamental theoretical and applied aspects of Geo-informatics technologies consist of aero-space remote sensing, Geographic Information System (GIS) and Satellite Navigation System. PSO2: Skill development in processing and analysis of geospatial data following visual and digital image processing, photogrammetric, location based and spatial analysis, and modeling techniques for natural resources, environmental and infrastructure inventory, monitoring and management PSO3: Gaining proficiency in Geological and Geophysical investigation of subsurface resources with special emphasis on hydrocarbon	Global needs in Technological development in Earth Sciences
B.Tech (Mining Engineering)	PSO1. Students will be able to adapt to new situations and the practical problems associated in fields/industries, through engineering skills and the core technical disciplines, analytical procedures, and design practices of the mining engineering profession. PSO2. To function ethically in a variety of professional roles such as Mine Planner, Surveyor, Manager/Assistant Manager, Mineral Processing Engineer, Geotechnical Engineer, Consultant, Technical Representative.	National needs in Oil Sectior.

	PSO3. To demonstrate an understanding of the critical role Mining Engineers play in society with respect to Health, Safety and the Environment in tangible ways to conform to the Regulatory Body/Decision.	
B.Tech (Mechatronics Engineering)	PSO1. Design real-time mechatronic systems, components and processes. PSO2. Apply the knowledge of Mechanical, Electrical, Computer Science and Artificial Intelligence in the design of Engineering products and processes	
B.Tech (Automotive Design Engineering)	PSO1: Design and develop automotive systems using modern tools and Investigate the trouble shooting of automotive systems. PSO2: Evaluate thermal performance of IC engines under different fuel modes	National & Global Needs in Transportation focusing on Automobile Industry
B.Tech (Civil Engineering with specialization in Infrastructure Development)	PSO1:The student should be able to understand soil and foundation engineering Principles PSO2: The students should be able to plan, design and analyze Civil Engineering Infrastructure projects as well as transportation Systems	National & Global needs in Infrastructure Development
B.Tech (Fire & Safety Engineering)	PSO1- Develop analytical skills to solve problems related to fire, safety, occupational health and environment in various industries/organization. PSO2- Design and operation of various firefighting, safety, and environmental monitoring, analysis and control tools	Regional, state and National needs leading to safety Engineering in Real life.

	PSO3- Apply basic fire and safety concepts to design, operation, legal compliance and develop safety culture in various industries.	
B.Tech (Electronics & Communication Engineering)	**PSO1:** Analyze and design analog & digital circuits or systems for a given specification. **PSO2:** Design, develop and test communication systems for real-time applications.	Global needs in Emerging trends in system development of Communication applications in tactical, mobile, satellite networks and data transfers. National needs on IOT and development of Smart Cities.
B.Tech (Power System Engineering)	PSO 1: The ability to analyze, design, implement and maintenance of the electrical & power systems for various industrial application. PSO 2: The ability to apply analytical & experimental techniques for optimization of electrical and Power systems. PSO 3: The ability to understand the operation, maintenance, performance monitoring and design and development of Thermal Power plant	National & Global needs in development of various energy power plants focusing on Energy sector.
B.Tech (Electrical Engineering)	PSO 1: The ability to analyze, design, implement and maintenance of the electrical & power systems for various industrial application. PSO 2: The ability to apply analytical & experimental techniques for optimization of electrical and Power systems. PSO 3: The ability to analyze electrical/electronic(s) systems with the help of analogous & discreet mathematical tools.	

B.Tech (Aerospace Engineering)	**PSO1:** Apply the principles of core engineering fundamentals of Aerodynamics, Propulsion, Structures, Flight Mechanics and space science in Aerospace Engineering. **PSO2:** Have skills to conceive, design, implement and operate aerospace systems	Global needs in Technological development in space engineering, Development of Drones etc.
B.Tech (Aerospace Engineering with Specialization in Avionics)	**PSO1:** Apply the principles of core engineering fundamentals of Aerodynamics, Propulsion, Structures, Flight Mechanics and space science in Aerospace Engineering. **PSO2:** Have skills to conceive design, implement and operate Avionics systems.	
M.Tech (Pipeline Engineering)	PSO1: Apply professional engineering practices, strategies and tactics for designing, construction of oil and gas transmission and distribution pipelines PSO 2: Analyse and provide effective and efficient solutions using acquired knowledge in operation and maintenance of pipelines	Global needs in Oil & Gas Sector
M.Tech (Automation & Robotics Engineering)	PSO1. Provide the solutions to problems faced in the industrial area related to the field of Robotics and Automation Engineering. PSO2. Design and develop robotics systems using modern tools.	Global needs on technological developments in the field of automation.
B.Tech (CSE with specialization in Cyber Security & Forensics)	PSO1. Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques.	Regional, State, National and Global demands in Cyber Crime & their controlling mechanisms.

	PSO2. Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. PSO3. Apply computing knowledge to assess, design and propose cyber security solutions and perform forensic procedures on digital systems and cyber world using tools and technologies in the area of cyber security and cyber forensics	
B.Tech (CSE with specialization in IOT & Smart Cities)	PSO1. Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques. PSO2. Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. PSO3. Design and develop smart city and IoT applications using the principles of IoT and knowledge of cloud architectures and data analytics.	Regional, State, National & Global needs in the development of Smart Cities incorporating in IT developments.
B.Tech (CSE with specialization in Bigdata)	PSO1. Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques. PSO2. Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. PSO3. Design solutions to challenging and ever growing real world data engineering problems and examine	Global needs in the data analytics.

	it to uncover hidden patterns, correlations, insights and make better data driven decisions.	
B.Tech (CSE with specialization in Cloud Computing & Virtualization Technologies)	**PSO1.**Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques. **PSO2:** Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. **PSO3:** Understand and apply Cloud Computing architecture for scalable, secure and dynamically provisioned business oriented environment with optimized performance tuning and data reliability.	National & Global needs in development of Data storage system and its applications leading to Virtual Reality.
MBA(Energy Trading)	1. Students will demonstrate strong conceptual knowledge in energy/commodity trading. 2. Students will demonstrate effective understanding of trading, marketing and risk management of energy derivatives. 3. Students will demonstrate analytical skills in identification and resolution of problems pertaining to energy value chains. 4. Students will exhibit the ability to integrate best practices of energy/commodity trading. 5. Students will have domestic and global perspective towards energy trading. 6. Students will exhibit deployable skills pertinent to the energy-trading sector.	State, National & Global needs on Energy trading leading to Economic Growith.

MBA (Oil & Gas Management)	1. Students will demonstrate strong conceptual knowledge in the functional area of management as well as OG domain. 2. Students will demonstrate effective understanding of relevant functional areas of business and their application in OG. 3. Students will demonstrate analytical skills in identification and resolution of problems pertaining to OG and general management. 4. Students will exhibit the ability to integrate functional areas of management with domain perspective for the purpose of planning, implementation, and control of OG. 5. Students will have global perspective towards business situations in the area of OG.	National & Global needs in Oil & Gas sector.
MBA(Power Management)	1. Students will demonstrate strong conceptual knowledge in fuel management, power generation, transmission, distribution, trading, energy management, financing and regulation, and sustainable development. 2. Students will demonstrate effective understanding of functioning of power sector. 3. Students will demonstrate analytical skills in identification and resolution of issues pertaining to fuel management, power generation, transmission,	State, National & Global needs in Energy Sector.

	distribution, trading, energy management, financing and regulation, and sustainable development. 4. Students will exhibit the ability to integrate technical, economic, social and regulatory frameworks for power sector planning and resource management. 5. Students will exhibit deployable skills pertinent to the power sector.	
MBA(Aviation Management)	1. Students will demonstrate strong conceptual knowledge in Aviation domain. 2. Students will demonstrate effective understanding of relevant domain areas of aviation business. 3. Students will demonstrate analytical skills in identification and resolution of problems pertaining to Aviation and general Management. 4. Students will be able to develop and evaluate alternate managerial decisions and identify optimal solutions in Aviation domain. 5. Students will demonstrate effective application capabilities of their conceptual understanding to the real world business situations in Aviation Industry. 6. Students will exhibit the ability to integrate functional areas of Management with Aviation	National & Global needs in the area of Transportation.

	perspective for the purpose of planning & decision making, implementation and control. 7. Students will have global perspective towards business situations in the area of Aviation sector.	
MBA(Urban Infrastructure & Smart Cities)	1. Students will demonstrate strong conceptual knowledge and execution in soft and hard infrastructure planning, development, management, financing, regulation and governance. 2. Students will demonstrate effective understanding of infrastructure planning and development, utility & energy management, urban transportation including metro rail, e-vehicle with charging and other modes of urban surface transportation, water supply and sewerage, smart city planning and effective financing urban infrastructure. 3. Students will demonstrate analytical skills to understand issues with remedial solutions relating to urban infrastructure. 4. Students will exhibit the ability to integrate planning, construction & development, operation & management, financing, regulation and governance of urban infrastructure projects and facilities. 5. Students will exhibit the ability to integrate technical, economic, social and regulatory frameworks for urban infrastructure sector planning and resource management.	State, National & Global needs in Development of Smart Cities.

	6. Students will exhibit deployable skills pertinent to urban hard and soft infrastructure sector and smart city development and management	