Course Outcomes

Regulation 2017

Course Name	Course Outcomes
SEMESTER I	
Course Name	**Course Outcomes**
HS8151 Communicative English	CO1**:** Read articles of a general kind in magazines and newspapers. CO2: Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English. CO3:Comprehend conversations and short talks delivered in English CO4:Write short Essays of a general kind and personal letters and emails in English CO5: Apply basic grammar principles and be able to synthesize and transform sentences.
MA8151 Engineering Mathematics I	CO1: Apply both the limit definition and rules of differentiation 0020 to different functions. solve maxima and minima of functions CO2:Analyze and solve the partial differentiation for functions of several variables by various methods CO3:Evaluate integrals by using various techniques of integration such as substitution, partial fraction and by parts CO4:Apply integration to compute multiple integrals, Area, Volume in Polar in addition to change of order CO5: Apply various techniques in solving differential equations.
PH8151 Engineering Physics	CO1: Apply knowledge on the basics of properties of matter and its applications. CO 2: Apply knowledge on the concepts of waves and optical devices and their applications in fiber optics. CO 3: Apply knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers. CO4: Discussion advanced physics concepts of quantum theory and its applications in tunneling microscopes. CO5: Apply the basics of crystals, their structures and different crystal growth techniques.

CY8151 Engineering Chemistry	CO1:Design water treatment techniques by analyzing the requirement of boiler feed water and its problems CO2:Analyze the various Industrial applications of Surface Chemistry and Catalysis by understanding the basic concepts CO 3: Develop the applications to single and two component systems by understanding the basic concepts of phase rule and the significance of alloys. CO4:Analyzingthe manufacture of various types of fuels and to interpret its calorific value during combustion CO5: Evaluating the production of electricity from different nonconventional energy sources and to analyze the types of batteries and its efficiency.

GE8152 Engineering Graphics	CO1:Apply The Fundamentals And standards Engineering graphics CO2: Design the basic geometrical constructions and multiple views of objects. CO 3: Apply orthographic projections of lines and plane surfaces. CO4: Construct projections and solids and development of surfaces. CO5: Visualize and to project isometric and perspective sections of simple solids.
GE8151 Problem Solving and Python Programming	CO 1:Adapt and analyze and develop standard algorithm to solve problem CO2:Identify and use the appropriate data types for variable being critically aware of memory CO3:Design And Implement control flow and function concept in python program for solving problem CO4:Apply python data structure list, tuple dictionary for representing complex data problem CO5:Develop and Implement Python File module and function which reacts robust to exceptional input for solving real world problem
GE816 Problem Solving and Python Programming Laboratory	CO1: Develop and debug simple Python Programs. CO2: Implement Python programs with conditionals and loops. CO3:Develop Python programs stepwise by defining functions and calling them CO4:Apply Python lists, tuples, dictionaries for representing compound data CO5: Apply the concepts of Read and write data from/to files Python.
BS8161 Physics & Chemistry Laboratory	CO1: Apply physics principles of optics and thermal physics to evaluate engineering properties of material. CO2: Apply principles of elasticity, optics and thermal properties for engineering applications. CO3:Evaluating quantitative chemical analysis of water quality related Parameters CO4: Knowledge Of Methods To determine the calorific value of fuels, perform flue gas analysis and combustion analysis. Apply The Science of understanding corrosion and its prevention. CO5: Demonstrate a knowledge of superconducting and organic electronic materials.

SEMESTER II	
Course Name	**Course Outcomes**
HS8251 Technical English	CO1: Read technical texts and write area-specific texts effortlessly. CO2: Listen and comprehend lectures and talk about their area of specialization successfully. CO3: Speak appropriately and effectively in varied formal and informal contexts. CO4: Write Reports And Winning Job Applications.

MA8252 Linear Algebra	CO1: Evaluateand test the consistency and solve system of linear equations. CO2: Analyze and Find the basis and dimension of vector space. CO3: Analyze and Obtain the matrix of linear transformation and its eigenvalues and eigenvectors. CO4: Evaluate and Find orthonormal basis of inner product space and find least square approximation. CO 5: Analyze And find eigenvalues of a matrix using numerical techniques and perform matrix decomposition.
AD8251 Data Structure Design	CO1:Apply the Abstract Data types, CO2: Analyze linear data structures, such as lists, queues, and stacks, according to the needs of different applications. CO 3: Analyze efficient tree structures to meet requirements such as searching, indexing, and sorting. CO 4: Analyze model problems as graph problems and implement efficient graph algorithms to solve them.
BE 8255 Basic Electrical, Electronics And Measurement Engineering	CO1: Discuss The Essentials Of Electric Circuits And analysis. CO2:Discuss the basic operation of electric machines and transformers CO3: Apply knowledge on renewable sources and common domestic loads. CO 4: Apply measurement and metering for electric circuits.
GE8291 Environmental science and Engineering	CO1:Analyze the concept of an ecosystem and biodiversity to protect the environment CO2:Design the environmental friendly process in engineering to protect environment from various pollutions CO3:Evaluatethetechniqueswhichrequireoptimumuseofnaturalresources in future CO4: Demonstrate The need for sustainable Development and to create awareness of important acts and laws in respect to the environment. CO5: Estimate the population and economic growth, energy requirement and demand.

AD8252 Digital Principles and Computer Organization	CO 1: Design various combinational digital circuits using logic gates. CO 2: Design sequential circuits and analyze the design procedures. CO 3: Identify the fundamentals of computer systems and analyze the execution of an instruction. CO 4: Analyze different types of control design and identify hazards. CO5: Identify the characteristics of various memory systems and I/O Communication.

GE8261 Engineering Practice Laboratory	CO1: Identify and Construct carpentry components and pipe connections including plumbing works. CO2: Construct structure using welding equipment. CO3:Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings CO4:Apply basic home electrical works and appliances Measure the electrical quantities
AD8261 Data Structures Design Laboratory	CO1: Apply ADTs as Python classes. CO2: Analyze linear data structures, such as lists, queues, and stacks, according to the needs of different applications. CO3:Analyze efficient tree structures to meet requirements such as searching, indexing, and sorting CO 4: Design model problems as graph problems and implement efficient graph algorithms to solve them.
SEMESTER III	
Course Name	**Course Outcomes**
MA8351 Discrete Mathematics	CO1:Applytheconceptsneededtotestthe logic of a program CO2: Design structures on many levels. CO3: Analyze the class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. CO4: Develop The Knowledge Of The Counting principles. CO5: Analyze the concepts and properties of algebraic structures such as groups, rings and fields.
AD8301 Introduction to Operating System	CO1:Apply and Outline the basic services and functionalities of operating systems CO 2: Analyze various scheduling algorithms, and understand the different deadlock, prevention and avoidance schemes CO3: Illustrate the different memory management schemes. CO4:ApplyandOutline the functionality of file systems CO5: Compare and contrast Linux, Windows and mobile operating systems

AD8302 Fundamentals of Data Science	CO1: Apply the skills of data inspecting and cleansing. CO2: Develop and determine the relationship between data dependencies using statistics CO 3: Apply and handle data using primary tools used for data science in Python CO4:Develop and represent the useful information using mathematical skills CO5: Apply the knowledge for data describing and visualization using tools.
CS8392 Object Oriented Programming	CO1:DevelopJavaprogramsusingOOPprinciples CO2:DevelopJavaprogramswiththeconceptsinheritanceandinterfaces CO 3:Design Java applications using exceptions and I/O streams CO4:DevelopJavaapplicationswiththreadsandgenericsclasses CO 5:Develop interactive Java programs using swings

AD8351 Design and Analysis of Algorithm	CO1: Analyze and design algorithms for various computing problems. CO 2: Analyze the time and space complexity of algorithms CO3: Critically analyze the different algorithm design techniques for a given problem CO4:Design and Modify existing algorithms to improve efficiency CO 5: Apply techniques in solving real time problems
AD8311 Data Science Laboratory	CO 1: Develop relevant programming abilities. CO2: Demonstrate knowledge of statistical data analysis techniques. CO 3:Apply and exhibit proficiency to build and assess data-based models CO 4: Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions.
CS8383 Object Oriented Programming Laboratory	CO1: Develop and implement Java programs for simple applications that make use of classes packages and interfaces. CO2: Develop and implement Java Program With Array list, exception handling and multithreading. CO3: Design applications using file Processing, generic programming and event handling. CO4:Applydynamic memory management techniques using pointers, constructors, destructors, etc CO 5: Develop program/ Application using the concept of function overloading, operator overloading, virtual functions and polymorphism.
HS8381 Interpersonal Skills/Listening & Speaking	CO1: Apply Listen and respond appropriately. CO2: Develop and Participate in group discussions. CO3: Apply and make effective presentations. CO4: Apply and participate confidently and appropriately in conversations both formal and informal.

SEMESTER IV	
Course Name	**Course Outcomes**
MA8391 Probability and Statistics	CO1: Apply The fundamental knowledge the concepts of probability and standard distributions which can scribe real life phenomenon. CO2:Apply the basic concepts of one and two dimensional random variables in engineering applications CO3: Apply the concept of random processes in engineering disciplines. CO 4:Analyze various queuing models CO5:Identifyandcharacterizephenomenonwhichevolvewithrespectto time in probabilistic manner
AD8401 Database Design & Management	CO1: Apply and Understand the database development life cycle and apply conceptual modeling. CO2: Apply SQL and programming in SQL to create, manipulate and query the database CO 3: Apply conceptual-to-relational mapping and normalization to design relational databases. CO4: Determine the serializability of any non-serial schedule using concurrency techniques. CO5:Apply the data model and querying in Object-relational and No-SQL Database efficiency.
AD8402 Artificial Intelligence -I	CO1: Apply autonomous agents that make effective decisions in fully informed, partially observable, and adversarial settings CO 2: Apply and Choose appropriate algorithms for solving given AI problems CO3: Design and implement logical reasoning agents CO 4: Design and implement agents that can reason under uncertainty.
AD8403 Data Analytics	CO1: Apply and understand the concept of sampling. CO2: Apply the knowledge to derive hypotheses for given data CO 3: Demonstrate the skills to perform various tests in the given data. CO4: Ability to derive inference using Predictive Analytics. CO5: Apply to perform statistical analytics on a data set
AD8002 Healthcare Analytics	CO1: Apply machine learning and deep learning algorithms for health data analysis CO 2: Apply the data management techniques for healthcare data. CO3: Evaluate the need of healthcare data analysis in e-healthcare, telemedicine and other critical care applications. CO4: Design health data analytics for real time applications. CO5: Design emergency care system using health data analysis.

AD8411 Database Design and Management Laboratory	CO1: Apply the database development life cycle. CO2: Design relational database using conceptual-to-relational mapping, Normalization. CO 3: Apply SQL for creation, manipulation and retrieval of data. CO4: Develop a database application for real-time problems. CO5: Design and query object-relational databases.
AD8412 Data Analytics Laboratory	CO1: Apply various packages in Python. CO2: Demonstrate the understanding of data distribution with various samples. CO 3: Ability to Implement T-Test, Anova and Z-Test on sample data sets. CO4: Apply Mathematical models in real world problems. CO5: Design and Conduct time series analysis and draw conclusions.
AD8413 Artificial Intelligence-I Laboratory	CO1: Apply and implement simple PEAS descriptions for given AI tasks. CO2: Develop programs to implement simulated annealing and genetic algorithms. CO 3: Demonstrate the ability to solve problems using searching and backtracking. CO4: Ability to Implement simple reasoning systems using either backward or forward inference mechanisms. CO5: Apply and implement a suitable technics for a given AI task

HS8461 Advanced Reading and writing	CO 1: Write different types of essays. CO 2: Write winning job applications CO3: Read and evaluate texts critically. CO4: Display critical thinking in various professional contexts. CO 5: Analyze a variety of communication acts.
SEMESTER– V	
Course Name	**Course Outcomes**
AD8501 Optimization Techniques	CO 1: Apply and formulate and solve linear programming problems. CO2: Evaluate Integer Programming Problems, Transportation and Assignment Problems. CO3: Apply and Obtain solution to network problems using CPM and PERT techniques. CO 4: Apply to optimize the function subject to the constraints CO5: Apply to solve problems under Markovian queuing models
CW8691 Computer Networks	CO1:Apply and comprehend the basic layers and its functions in computer networks CO2:Evaluate the performance of a network CO3: Apply and understand the basics of how data flows from one node to another. CO 4: Analyze and Design routing algorithm. CO5: Identify And Use Various Application Layer Protocol.

AD8502 Data Exploration and Visualization	CO1: Apply the basics of Data Exploration. CO 2: Apply and Use Univariate and Multivariate Analysis for Data Exploration. CO3: Apply and explain various Data Visualization methods. CO4: Apply the concept of Data Visualization on various datasets. CO 5: Apply the data visualization techniques using R language.
AD8551 Business Analytics	CO1: Apply real world business problems and models with analytical solutions. CO 2: Identify the business processes for extracting Business Intelligence CO3: Apply predictive analytics for business fore-casting. CO4: Apply analytics for supply chain and logistics management. CO 5: Apply and use analytics for marketing and sales.
AD8552 Machine Learning	CO1:Apply the basics of ML CO 2: Apply and explain various Z Machine Learning methods CO3:Demonstrate various ML techniques using standard packages CO4:Explore knowledge on Machine learning and Data Analytics CO 5: Apply ML to various real time examples.
OCE552 Geographic Information System	CO1: Apply basic idea about the fundamentals of GIS CO 2:Implement and understand the types of data models CO3:Implement and get knowledge about data input and topology CO4: Apply and gain knowledge on data quality and standards CO5: Analyze data management functions and data output.
AD8511 Machine Learning Laboratory	CO1: Apply and understand the implementation procedures for the machine learning algorithms CO 2: Design Java/Python programs for various Learning algorithms CO3: Apply appropriate Machine Learning algorithms to data sets CO 4: Identify and apply Machine Learning algorithms to solve real world problems.
AD8512 Mini Project on Data Science Pipeline	CO1: Install analytical tools and configure a distributed file system. CO2: Developing and executing analytical procedures in various distributed frameworks and databases. CO3: Develop, implement and deploy simple applications on very large datasets. CO 4: Implement simple to complex data modeling in NoSQL databases. CO5: Implement real world applications by using suitable analytical framework and tools.

SEMESTERVI	
Course Name	**Course Outcomes**
AD8601 Artificial Intelligence-II	CO1: Explain the probabilistic reasoning using Bayesian inference. CO2:Apply appropriate Probabilistic reasoning techniques for solving uncertainty problems CO 3: Explain use of game theory for decision making. CO4: Explain and apply probabilistic models for various use cases. CO5: Apply AI techniques for robotics.
AD8602 Data and Information Security	CO1: Apply the fundamentals of security and the significance of number theory in computer security. CO2:DesignandLearn the public key cryptographic standards and authentication scheme CO 3:Apply the security frameworks for real time applications CO4: Apply and understand the security threats and attacks in IoT, Cloud. CO5: Develop appropriate security algorithms understanding the possible threats.
IT8501 Web Technology	CO1: Design simple web pages using markup languages like HTML and XHTML. CO 2: Create dynamic web pages using DHTML and java script that is easy to navigate and use. CO3: Program server side web pages that have to process request from client side web pages. CO4: Design and represent web data using XML and develop web pages using JSP. CO5:Apply and understand various web services and how these web services interact.
CS8791 Cloud Computing	CO1: Articulate the main concepts, key technologies, strengths and limitations of cloud computing. CO 2: Apply and learn the key and enabling technologies that help in the development of the cloud. CO3: Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models. CO4: Explain the core issues of cloud computing such as resource management and security. CO5: Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
IT8511 Web Technology Laboratory	CO1:Design simple web pages using markup languages like HTML and XHTML. CO 2: Create dynamic web pages using DHTML and java script that is easy to navigate and use. CO3: Program server side web pages that have to process requests from client side web pages. CO4: Apply web data using XML and develop web pages using JSP. CO 5: Apply various web services and how these web services interact.

AD8611 Artificial Intelligence-II Laboratory	CO1:Analyzeand solve basic AI based problems CO2: Implement the concept of Bayesian Network. CO3: Apply AI techniques to real-world problems to develop intelligent systems. CO4: Implement HMM for real-world application. CO5:Apply Reinforcement Learning to implement various intelligent systems.
HS8581 Professional Communication	CO1:Make effective presentations CO2: Participate confidently in Group Discussions. CO3: Attend job interviews and be successful in them. CO4: Develop adequate Soft Skills required for the workplace.
AD8612 Social Relevant Project	CO1: Apply tools like SAS, Python, R, Scala CO2: Apply Big Data: Hadoop Ecosystem (Hive, Pig, Sqoop, Flume), Big Data Lakes,No SQL, Apache Spark, Spark MLLib , HPCC, Strom CO3:ApplyBusiness Intelligence : SQL, Microsoft Power BI, SAP BI, Tableau, Oracle Fusion CO 4: Apply Machine Learning and Deep Learning : TensorFlow, Keras, Artificial Neural Networks, Deep NeuralNets, Convolution Neural Networks, Auto encoders

SEMESTER VII	
Course Name	**Course Outcomes**
AD8701 Deep Learning	CO 1: Explain the basics in deep neural networks. CO2: Apply Convolution Neural Network for image processing. CO3: Explain the basics of Artificial Intelligence using deep learning. CO4: Apply deep learning algorithms for data science. CO5: Apply deep learning algorithms for variety applications.
AD8702 Text Analytics	CO1:Design text extraction techniques CO2: Devise clustering techniques for text mining. CO3: Design classification techniques for text mining. CO 4: Apply visualization techniques and perform anomaly & trend detection. CO5: Perform Event operations in Text streams.
AD8703 Basics of Computer Vision	CO1: Explain low level processing of image and transformation techniques applied to images. CO2: Explain the feature extraction, segmentation and object recognition methods. CO3: Apply Histogram transform for detection of geometric shapes like line, ellipse and objects. CO4: Illustrate 3D vision process and motion estimation techniques. CO5: Apply vision techniques to real time applications.

AD8704 Big Data Management	CO1: Describe big data and use cases from selected business domains. CO2: Explain No SQL big data management. CO3: Install, configure, and run Hadoop and HDFS. CO4: Perform map-reduce analytics using Hadoop. CO5: Apply Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data analytics.
AD8705 AI & Robotics	CO1: Explain the types of Robots CO2: Narrate the kinematics of Robots. CO 3: Implement image processing algorithms. CO4: Devise Localization algorithms. CO5: Devise Path planning methods for navigation.
AD8711- eep Learning Laboratory	CO1: Apply deep neural networks for simple problems. CO 2: Apply Convolution Neural Network for image processing. CO3: Apply Recurrent Neural Network and its variants for text analysis. CO4: Apply generative models for data augmentation. CO5: Develop a real world application using suitable deep neural networks.

SEMESTER VIII	
Course Name	**Course Outcomes**
AD8009 Operations Supply Management	CO1:Apply to know about the operations and fundamentals of the supply chain. CO2: Analyze to understand the quality management tools and sampling process. CO3: Develop to understand the design factors and various design options of distribution networks in industries and the role of transportation and warehousing. CO4: Apply to understand the various sourcing decisions in the supply chain. CO5: Develop understanding the supply chain management in IT industries.
AD8016 Information Extraction and Retrieval	CO1: Apply the information extraction techniques for real time applications. CO 2: Design systems based on the concepts of information retrieval. CO3: Apply data specific information extraction and retrieval. CO 4: Create web applications by understanding the information extraction and retrieval techniques. CO5: Apply the concepts of information classification and clustering in wide range of other applications.

AD8811 Project Work	CO 1: Apply Knowledge to make links across different domain and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.. CO2: Apply the skills to communicate effectively and to present ideas clearly and coherently to specific audiences in both the written and oral forms. CO3: Apply collaborative skills through working in a team to achieve common goals. CO 4: Design solution using appropriate methodology to take up challenging real world problems. CO5:Demonstrate And Build the project successfully by hardware requirements, coding,emulator and testing.