NEHRU INSTITUTE OF ENGINEERING AND TECHNOLOGY

T. M. Palayam, Coimbatore-641 105

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Accredited by NAAC, Recognized by UGC with Section 2(f) and 12(B)

NBA Accredited UG Courses: AERO,CSE,MECH

2.6.1- ***Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.***

2.6.1 PROGRAMME AND COURSE OUTCOMES FOR ALL PROGRAMMES OFFERED BY THE INSTITUTION ARE STATED AND DISPLAYED ON WEBSITE AND COMMUNICATED TO TEACHERS AND STUDENTS.

The institute has formulated well-defined Vision and Mission statements and in correlation with this, each department formulated its own vision and mission statements that have been approved by the department Advisory Committee (DAC). The department formulates the Programme Educational Objectives (PEOs), Program Specific Outcomes (PSOs) for each programme outcomes (POs) and course outcomes (COs) for all the courses in the curriculum. In the Department Advisory Committee (DAC), all outcomes are analyzed and approved. The approved Statements are published in the Institute Website and communicated to Various Stakeholder.

The respective subject faculty expatiate the course outcomes to the learners. The objectives and outcomes of each topic are expatiated to the learners for the betterment and to get the confidence to take up the university Examination.

Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) Formulation.

The Graduate Attributes (GA) of Engineering Program defined by Washington accord is adopted without alteration as Program Outcomes (POs). Articulation of PSOs and identification of the knowledge/Skill/Attitude Level were done through sequence of meetings based on the suggestions from stakeholders.

Course Outcomes (COs) Formulations:

Articulation of COs based on revised bloom's taxonomy and identification of the Knowledge/ Skill/Attitude Level were framed by course handling faculty with the suggestion of course coordinator. COs are mapped with POs / PSOs by course handling faculty with the suggestions of the course coordinator. Verification of compliance for attaining the POs/PSOs is done in the Department meeting for all courses.

Teachers are aware of Programme outcomes and course outcomes by attending different programs arranged by the institution. Faculties are oriented by many workshops and seminars on Outcome Based Education (OBE). Faculty members have attended many programs related to Outcome-based Education.

If there is any non-compliance, then DAC identifies the slightly Supported POs/PSOs. Based on the recommendations of DAC, additional COs and activities to support POs/PSOs are framed. Content beyond the syllabi/Virtual Lab Experiments/Co-Curricular Activities for better

compliances were approved by DAC. Recommendations of DAC for better compliances were implemented by the course handling faculty in Teaching-Learning Process.

The mechanism for dissemination:

The process for publication and dissemination of the stated vision, Mission of the Institute/ Department, POs/PSOs/PEOs/COs of the programme are carried out by the listed mechanism:

- Website: Vision, Mission, POs, PSOs, PEOs and COs are published on the college website.
- Posted Location: Banner is exhibited in the main floor of the concerned department. They are also prominently displayed on the Department Notice Board.
- Catalogues of the Department: The Catalogues are disseminated to all the stack holders of the program through faculty meetings, Parents meetings, News Letter, Alumni meetings, and Conferences.
- Curricular Books and Department Publications: Vision and Mission are published in the Practical Observation, Record Note, Handbook, Faculty Log book, Department Magazine and Newsletter.

VISION

Our vision is to mould the youngsters to acquire sound knowledge in technical and scientific fields to face the future challenges by continuous upgradation of all resources and processes for the benefit of humanity as envisaged by our great leader Pandit Jawaharlal Nehru.

MISSION

- To build a strong centre of learning and research in engineering and technology.
- To facilitate the youth to learn and imbibe discipline, culture and spirituality.
- To produce quality engineers, dedicated scientists and leaders.
- To encourage entrepreneurship.
- To face the challenging needs of the global industries.

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Programme Outcomes

Programme Outcomes

Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: 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.

PO3: 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.

PO4: 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.

PO5: 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.

PO6: 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.

PO7: 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.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: 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.

PO11: 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.

PO12: 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.

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Vision, Mission, PEO and PSO of Department

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B.E. AERONAUTICAL ENGINEERING

VISION

Producing competent and exemplary Aeronautical Engineers to meet the needs of global industries

MISSION

- To impart quality education in cutting edge technologies, in state of art laboratories with intellectual and ethical principles.
- To propel the young students to face the challenges of global industries through their sound technical knowledge
- To build formidable skills in aeronautical engineering and turn the students into entrepreneurs and global leaders.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The graduates of Aeronautical Engineering Programme will be able

PEO1: To employ comprehensive knowledge in Aeronautical Engineering and analytical skills to work towards solving complex problems so as to excel in the professional career.

PEO2: To design, analyze and produce cutting edge engineering solutions by employing modern techniques and adhering to moral values for sustainable development.

PEO3: To assume global careers and leadership responsibilities through consistent learning with idealistic managerial practices**.**

PROGRAMME SPECIFIC OUTCOMES (PSO)

The students of Aeronautical Engineering Programme will be able

PSO1: To gather data using modern tools and apply design techniques to develop solutions for challenges in the domain of Aerodynamics, Propulsion, Aircraft Structures and Aircraft Maintenance with Professional ethics.

PSO2: To function as engineering solution providers or entrepreneurs, who are able to manage, innovate, communicate, train and lead a team for continuous improvement

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B.E. COMPUTER SCIENCE AND ENGINEERING

VISION

To produce highly competent and innovative computer professionals to meet the global demands.

MISSION

- To impart quality education by creative teaching learning process.
- To be technically competent, ethical and socially responsible throughout the professional career.
- To inculcate leadership qualities and entrepreneurship culture to meet the global standards.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The graduates of Computer Science and Engineering Programme will be able to

PEO1: Acquire and Apply knowledge in Computer Science, Mathematics, Science and inter-disciplinary engineering principles in order to excel in computer professional career

PEO2: Analyze real life problems adapting to new Computing Technologies for professional excellence and ethical attitude, in order to provide economically feasible engineering solutions.

PEO3: Carry out complex engineering problems with best practices exhibiting communication skills, team work and interpersonal skills to enable continued computer professional development through life-long learning.

PROGRAMME SPECIFIC OUTCOMES (PSO)

The students of Computer Science and Engineering Programme will be able attain

PSO1: Professional Skills: Acquaint in-depth knowledge on the basic and advanced computer science domains like Data Sciences, Cryptography, Cloud and Distributed Computing, Neural Networks and Artificial Intelligence.

PSO2: Entrepreneurship and Successful Career: Apply the standard practices to have successful career path in the field of information and communication technology and entrepreneurship.

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NBA Accredited Department: AERONAUTICAL, CSE, MECHANICAL

B.E. ELECTRONICS AND COMMUNICATION ENGINEERING

VISION

To become a centre of excellence in electronics and communication engineering by imparting quality technical education imbibed with human values and professional ethics, facilitating research activities and cater to the growing industrial demands and societal needs

MISSION

- To educate and empower the students with state of art knowledge and latest trends in electronics and communication engineering to meet the growing real world challenges
- To inculcate professional ethics and moral values among the students
- To impart industrial and managerial skills to promote self-employment and adapt to appropriate technology to meet the challenges arising out of global demand

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of the Electronics and Communication Engineering Program should be able to:

PEO1: Establish a strong foundation in the fundamentals of mathematics, science and engineering necessary to formulate, analyze and solve engineering problems and prepare themselves for post graduate studies and/or for a successful career

PEO2: Define and analyze real life engineering problems in the field of electronics and communication engineering and find sound, feasible and acceptable solutions beneficial to the society

PEO3: Work effectively in a group with good communication skill, managerial skill, professionalism and ethical attitude, possessing expertise to write reports and express clearly in a multidisciplinary environment through continuous learning.

PROGRAMME SPECIFIC OUTCOMES (PSO)

A graduate of the Electronics and Communication Engineering Program will demonstrate:

PSO1: Apply the fundamental knowledge of mathematics, engineering science to identify, formulate, research and solve electronics and communication engineering problems in the areas of antenna design, embedded systems, image processing, VLSI design and communication systems

PSO2: Design analog and digital electronic circuits by using modern engineering and computing tools and develop a system component to meet specific needs by considering public health, safety, societal and environmental issues

PSO3: Apply ethical issues, social environmental impact and managerial skills to serve the

society and communicate the engineering activities effectively to engineering community

B. E. ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To produce exemplary competent Electrical and Electronics graduates with high moral values to face the challenges of industry / society.

MISSION

- To establish a strong Centre of Excellence for learning and research in Electrical and Electronics Engineering.
- To impart high quality education using innovative methods of teaching-learning process.
- To create globally recognized professionals in the field of Electrical and Electronics Engineering
- To encourage entrepreneurship in the area of energy engineering by providing proper guidance

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Program Educational objectives of Electrical and Electronics Engineering Program are

PEO1: Perform well in a professional career and use various soft computing tools to design and develop the various engineering solutions in the field of electrical and electronics engineering

PEO2: Design and analyze engineering products, practice codes of professional ethics and create awareness regarding moral responsibilities in dealing with environmental social issues.

PEO3: Converse fluently and precisely in a language well understood by others to convey their ideas and views regarding various issues that arise during their career as professionals and make them realize the importance and benefits of team work.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: Design electrical and electronics systems and devices for specific needs of society and industries, considering electrical safety, social and environmental issues.

PSO2: Understand and apply the technologies like PLC, PMC, process controllers, transducers and HMI in the analysis, design, development and installation of power system and applications.

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B.E. MECHANICAL ENGINEERING

VISION

To mould the Mechanical Engineering aspirants Into Employable Engineers and Successful Entrepreneurs

MISSION

- To be centre of excellence in Mechanical Engineering in providing Quality Education.
- To upgrade infrastructure and faculty competency for Continuous Development.
- To inculcate a work culture that yields Socio-Economical Engineers and Intellectuals.
- To instill leadership qualities to pursue a Professional Career and Entrepreneurship.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: To excel in career applying knowledge in mathematics, science and engineering fundamentals essential to create, solve and analyze Mechanical Engineering related problems

PEO2: To design, analyze and implement cost-effective solutions to engineering problems encountered in the field that are beneficial to the society

PEO3: To establish careers in industry and entrepreneurship by exhibiting professionalism that meets the needs of national and multinational companies with adequate technical learning and communication skills

PROGRAMME SPECIFIC OUTCOMES (PSO)

Upon graduation the student should be able to

PSO1: Identify, Formulate and Solve engineering problems in core streams of Mechanical Engineering ie., design, thermal, manufacturing and industrial engineering

PSO2: Apply modern tools to interpret data, design and develop solutions to complex Mechanical Engineering issues employing ethical principles and professional engineering practices.

PSO3: Function as an engineering solution provider or entrepreneur, who is able to manage, innovate, communicate, train and lead a team for continuous improvement.

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B.E. MECHATRONICS ENGINEERING

VISION

Our Vision is to strive the students to foster rigorous academic emphasis with rich diversity of skills for the ability and passion to work sensibly and ethically for the betterment of humankind.

MISSION

- To prepare excellent Mechatronics Engineers with leading edge technology.
- To achieve blending of knowledge attainment and application.
- To impart value-based training and inculcate socially committed professionalism.
- To develop the future engineers with invaluable entrepreneurial skill.
- To build a strong integrated team of Mechatronics professionals.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: Application of mathematical modeling, scientific and automation concepts to formulate problems in Mechatronics systems and provide solutions employing modern tools.

PEO2: Professional practice driven by value based education committed to ethical principles, environmental concerns and social issues with continuous learning.

PEO3: Ability to work in a team as a member/leader possessing technical and organizational capabilities to manage/initiate an enterprise.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: To understand the concepts of engineering fundamentals, design and problem analysis to arrive at multiple solutions for the complex problems using classical methods and modern IT tools

PSO2: To provide an opportunity to identify the responsibilities of social engineering practices by knowing the ethical and environmental values for the sustainable development

PSO3: To persist with life-long learning and effective communication to lead a team to promote managerial skills and entrepreneurship in multidisciplinary environment

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B.Tech. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

VISION

To emerge as a Centre of Excellence in Artificial Intelligence and Data Science Technologies and Tools to produce Industry Ready Artificial Intelligence Engineers and Data Scientists to serve the nation and to meet the Industry Challenges

MISSION

- To impart quality education by creative students-centric teaching learning processes
- To groom students technologically superior and ethically stronger and responsible throughout the professional career
- To equip students with interdisciplinary skill sets and leadership qualities to cater the needs of the industries and society

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of the Artificial Intelligence and Data Science Programme should be able to

PEO1: Apply fundamentals of Artificial Intelligence and Data Science Techniques to analyse, design, and implement Models using modern engineering tools

PEO2: Demonstrate their technical skills and competency to solve Real Time Problems for better Solutions through Artificial Intelligence and Data Science Techniques

PEO3: Engage in lifelong learning to excel in their profession with social and Professional awareness and responsibility ethically

PROGRAMME SPECIFIC OUTCOMES (PSO)

The students of Artificial Intelligence and Data Science Programme will be able to

PSO1: Ability to design, implement and apply Artificial Intelligence and Data Science computational Tools s to provide better Solution

PSO2: Ability to analysis Artificial Intelligence Techniques and Data Analytics models for innovative career, research activities and consultancy services

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NBA Accredited Department: AERONAUTICAL, CSE, MECHANICAL

B.Tech. COMPUTER SCIENCE AND BUSINESS SYSTEMS

VISION

To produce highly competent and innovative Computing and Business Systems professionals with managerial skills, social values to serve the nation and to meet the Industry Challenges

MISSION

- To impart technical knowledge through innovative students-centric teaching learning processes and research
- To groom students technologically superior and ethically stronger and responsible throughout the professional career to compete globally
- To produce competent engineers with professional ethics, spirit of innovation and managerial skills to cater the needs of the industries and society

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A Graduate of the Computer Science and Business Systems Program should be able to

PEO1: Apply fundamentals of Computer Science and Business Systems Techniques to analyse, design, and implement Models using modern engineering tools

PEO2: Demonstrate their technical skills and competency to solve Real Time Problems for better Solutions through Computer Science and Business Systems Techniques and Tools

PEO3: Engage in lifelong learning to excel in their profession with ethics and inter-personal skills to develop leadership qualities

PROGRAMME SPECIFIC OUTCOMES (PSO)

A graduate of the Computer Science and Business Systems Program will have the

PSO1: Ability to design, implement, apply and test Software Systems for the Industries needs to provide better Solution for Business and real word problems

PSO2: Ability to analysis Computer Science and Business Systems models for better innovative research activities and consultancy services

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M.E. AERONAUTICAL ENGINEERING

VISION

Producing competent and exemplary Aeronautical Engineers to meet the needs of global industries.

MISSION

- To impart quality education in cutting edge technologies, in state of art laboratories with intellectual and ethical principles.
- To propel the young students to face the challenges of global industries through their sound technical knowledge
- To build formidable skills in aeronautical engineering and turn the students into entrepreneurs and global leaders.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: : Successful moulding of graduate into Aeronautical Engineering Professional: Graduates of the programme will acquire adequate knowledge both in practical and theoretical domains in the field of Aeronautical Engineering through rigorous post graduate education.

PEO2: Successful Career Development: Graduates of the programme will have successful technical and managerial career in Aeronautical Engineering industries and the allied management.

PEO3: Contribution to Aeronautical Engineering Field: Graduates of the programme will have innovative ideas and potential to contribute for the development and current needs of the Aviation industries.

PEO4: Sustainable interest for Lifelong learning: Graduates of the programme will have sustained interest to learn and adapt new Technology developments to meet the changing industrial scenarios.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: To gather data using modern tools and design techniques to develop solutions for Aeronautical Engineering challenges with professional ethics.

PSO2: To function as engineering solution providers or entrepreneurs, who are able to manage, innovate, communicate, train and lead a team for continuous improvement

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M.E. COMMUNICATION SYSTEMS

VISION

To become a centre of excellence in electronics and communication engineering by imparting quality technical education imbibed with human values and professional ethics, facilitating research activities and cater to the growing industrial demands and societal needs.

MISSION

- To educate and empower the students with state of art knowledge and latest trends in electronics and communication engineering to meet the growing real world challenges.
- To inculcate professional ethics and moral values among the students.
- To impart industrial and managerial skills to promote self-employment and adapt to appropriate technology to meet the challenges arising out of global demand.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: To provide students with strong fundamental concepts and also advanced techniques and tools to build various communication systems.

PEO2: To enable graduates to attain successful professional careers by applying their engineering skills in communication system design to meet out the challenges in industries and academia.

PEO3: To engage graduates in lifelong learning, adapt emerging technology and pursue research for the development of innovative products.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: To inculcate the ability in graduates to design and analyze the subsystems such as RF, Signal Processing, Modern communication systems and networks.

PSO2: To enhance problem solving skills in communication systems design using latest hardware and software tools.

PSO3: To apply communication engineering principles and practices for developing products for scientific and business applications.

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MASTER OF BUSINESS ADMINISTRATION (MBA)

VISION

To mould true leaders through creative management techniques by enhancing student skills and adaptability to match with corporate culture and inculcating ethical values.

MISSION

- To provide practical training, improve analytical power, reasoning abilities and technical dexterity.
- To facilitate students to understand their responsibility for the development of the society with the individual improvement.
- To increase employability of the students by variety of skill excellence techniques.
- To adopt the industrial culture in campus by involving corporate delegates interaction most frequently.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1: To possess professional and communication skills with ethical attitude to function as members of multi-disciplinary teams in industries and to assume leadership role in addressing the managerial issues.

PEO 2: To access, analyze and plan, so as to apply acquired knowledge in basic, managerial sciences and mathematics in solving managerial problems with economic, environmental and social contexts to acquire professional expertise in industry and research.

PEO 3: To acquire necessary domain knowledge to pursue successful career in management, capability to set up their own enterprise and involve in research and development in order to fulfill the needs of the society.

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Course Outcomes

Regulation 2017

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DEPARTMENT OF AERONAUTICAL ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF AERONAUTICAL ENGINEERING

Courses and Course Outcomes - Regulation 2017

Course Name:Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name:HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name: Engineering Mathematics –I
Regulation: 2017 **Semester: I**

Course Code/Course Name:MA8151/Engineering Mathematics –I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	use to analyse Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's), Trigonometric substitutions and Improper integrals.

C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solvingthe Homogeneous and simultaneous differential equation.

Course Name:Engineering Physics
Regulation: 2017 **Semester: I**

Course Code/Course Name: PH8151/ Engineering Physics	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name: Engineering Chemistry
Regulation: 2017 **Semester: I**

Course Code/Course Name: CY8151/ Engineering Chemistry	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources

Course Name:Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8151/Problem Solving and PythonProgramming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions
C105.4	Represent compound data using Python lists, tuples, and dictionaries.
C105.5	Read and write data from/to files in Python Programs

Course Name:Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	To understand and draw different types of projections, curves and scales.
C106.2	Can do orthographic projection of lines and plane surfaces.
C106.3	To design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Able to prepare isometric and perspective sections of simple solids.
C106.5	To create real-time drawings that support different machine drawing technique apply to different engineering Field.

Course Name:Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8161/Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name: Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: BS8161/ Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysisof water quality related parameters..
C108.5	Students will be able to think innovatively and also improve the creative skills that are essential for engineering.

Course Name:Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name: HS8251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly

Course Name:Engineering Mathematics – II
Regulation: 2017 **Semester: II**

Course Code/Course Name: MA8251/Engineering Mathematics – II	
CO No.	**Course Outcomes**
C110.1	To understand the concepts of eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledgeof Gradient, divergence and curl of a vector point function and related identities,the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping
C110.4	To understand the techniques of complex integration
C110.5	To interpretLaplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name:Materials Science
Regulation: 2017 **Semester: II**

Course Code/Course Name: PH8251/ **Materials Science**	
CO No.	**Course Outcomes**
C111.1	To gain the knowledge on the various phase diagrams and their applications.
C111.2	To acquire knowledge on Fe-Fe3C phase diagram,various microstructures and alloys.
C111.3	To get knowledge on mechanical properties of materials and their measurement.
C111.4	To gain knowledge on magnetic, dielectric and superconducting properties of materials.
C111.5	To understand the basics of ceramics, composites and nanomaterials.

Course Name:Basic Electrical, Electronics and Instrumentation Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8253/ Basic Electrical, Electronics and Instrumentation Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the basics in electric circuits
C112.2	Understand single and three phase circuit
C112.3	Understand electric circuits and working principles of electrical machines
C112.4	Understand the concepts of various electronic devices.
C112.5	Choose appropriate instruments for electrical measurement for a specific application

Course Name:Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8291/ Environmental Science and Engineering	
CO No.	**Course Outcomes**
C113.1	To understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C113.2	To understand about pollution on the environment.
C113.3	To study the various natural resources.
C113.4	To understand the impact of social issues on the environment.
C113.5	To study about human population on the environment.

Course Name:Engineering Mechanics
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8292/Engineering Mechanics	
CO No.	**Course Outcomes**
C114.1	Can illustrate the vectorial and scalar representation of forces and moments
C114.2	Able to analyse the rigid body in equilibrium
C114.3	Can evaluate the properties of surfaces and solids
C114.4	Able tocalculate dynamic forces exerted in rigid body
C114.5	Able todetermine the friction and the effects by the laws of friction

Course Name: Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C115.2	Can carry out the basic machining operations and Make the models using sheet metal works.
C115.3	ToIllustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings.
C115.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C115.5	To Elaborate on the components, gates, soldering practices.

Course Name:Basic Electrical, Electronics and Instrumentation Engineering Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8261/Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
CO No.	**Course Outcomes**
C116.1	Ability to determine the speed characteristic of different electrical machines
C116.2	Ability to verify circuit laws and theorem.
C116.3	Abilityto design simple circuits involving diodes.
C116.4	Abilityto design simple circuits involving transistors
C116.5	Ability to use operational amplifiers

Course Name:Transforms and Partial Differential Equations
Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8353 /Transforms And Partial Differential Equations	
CO No.	**Course Outcomes**
C301.1	Understand how to solve the given standard partial differential equations.
C301.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
C301.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C301.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
C301.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Name:Manufacturing Technology
Regulation: 2017 **Semester: III**

Course Code/Course Name: ME8392/Manufacturing Technology	
CO No.	**Course Outcomes**
C302.1	Ability to use different manufacturing process and use this in industry for component production
C302.2	Ability to use this in industry for component production
C302.3	Knowledge on moulding fabrication
C302.4	Knowledge on heat treatment
C302.5	Knowledge on production processes

Course Name:Aero Engineering Thermodynamics
Regulation: 2017 **Semester: III**

Course Code/Course Name:AE8301/Aero Engineering Thermodynamics	
CO No.	**Course Outcomes**
C303.1	Able to relate laws of thermodynamics to jet engine components.
C303.2	Understands principle operation of piston engine and jet engines.
C303.3	Able to identify efficient cycle of air and jet engines.
C303.4	Capable to illustrate condition of working medium.
C303.5	Eligible to recognize and calculate heat transfer in complex systems involving several heat transfer in complex systems involving several heat transfer mechanisms.

Course Name:Fluid Mechanics and Machinery
Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8394/Fluid Mechanics And Machinery	
CO No.	**Course Outcomes**
C304.1	Apply mathematical knowledge to predict the properties and characteristics of a fluid.
C304.2	Can analyze and calculate major and minor losses associated with pipe flow in piping networks.
C304.3	Can mathematically predict the nature of physical quantities.
C304.4	Can critically analyze the performance of pumps.
C304.5	Can critically analyze the performance of turbines.

Course Name:Strength of Materials for Mechanical Engineers

Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8395/ Strength Of Materials For Mechanical Engineers	
CO No.	**Course Outcomes**
C305.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C305.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
C305.3	Apply basic equation of simple torsion in designing of shafts and helical spring.
C305.4	Calculate the slope and deflection in beams using different methods.
C305.5	Analyze and design thin and thick shells for the applied internal and external pressures.

Course Name:Elements of Aeronautical Engineering
Regulation: 2017 **Semester: III**

Course Code/Course Name:AE8302/ Elements Of Aeronautical Engineering	
CO No.	**Course Outcomes**
C306.1	Learn the history of aircraft & developments over theyears
C306.2	Identify the basic types & classifications of components and controlsystems
C306.3	Understand the basic concepts of flight & Physical properties ofAtmosphere
C306.4	An ability to differentiate the types of fuselage andconstructions
C306.5	Understand the Different types of Engines and principles ofRocket

Course Name:Strength of Materials Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8381/ Strength Of Materials Laboratory	
CO No.	**Course Outcomes**
C307.1	Ability to perform different destructive testing
C307.2	Ability to characteristic materials
C307.3	Ability to perform the material testing
C307.4	Ability to understand materials Characteristics
C307.5	Ability to understand the mechanical behavior of material

Course Name:Fluid Mechanics and Machinery Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8381/Fluid Mechanics And Machinery Laboratory	
CO No.	**Course Outcomes**
C307.1	Ability to use the measurement equipments for flow measurement
C307.2	Ability to do performance trust on different fluid machinery
C307.3	Ability to perform the flow testing
C307.4	Ability to understand fluid Characteristics
C307.5	Ability to understand the flow behavior over any given shape

Course Name:Thermodynamics Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:AE8311/Thermodynamics Laboratory	
CO No.	**Course Outcomes**
C308.1	Ability to perform test on diesel/petrol engine
C308.2	Ability to explain the characteristics of the diesel/Petrol engine
C308.3	Ability to determine the properties of the fuels.
C308.4	Ability to understand engine performance
C308.5	Ability to perform COP testing

Course Name:Interpersonal Skills/Listening and Speaking
Regulation: 2017 **Semester: III**

Course Code/Course Name:HS8381/Interpersonal Skills/Listening and Speaking	
CO No.	**Course Outcomes**
C309.1	Listen and respond appropriately.
C309.2	Participate in group discussions
C309.3	Make effective presentations
C309.4	Participate confidently and appropriately in conversations both formal and informal

Course Name:Numerical Methods
Regulation: 2017 **Semester: IV**

Course Code/Course Name:MA8491/ Numerical Methods	
CO No.	**Course Outcomes**
C401.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.
C401.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
C401.3	Apply the numerical techniques of differentiation and integration for engineering problems.
C401.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
C401.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

Course Name:Aerodynamics – I

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE8401/ Aerodynamics – I	
CO No.	**Course Outcomes**
C402.1	An ability to apply airfoil theory to predict airfoil performance.
C402.2	Analyze and optimize wing performance.
C402.3	Knowledge of incompressible flow.
C402.4	Knowledge of subsonic wing theory.
C402.5	An exposure to Boundary layer theory.

Course Name:Aircraft Systems and Instruments

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE8402/ Aircraft Systems And Instruments	
CO No.	**Course Outcomes**
C403.1	Compare the features of various flight control systems
C403.2	Describe the principle and working of different aircraft systems
C403.3	Analyze the performance of various aircraft engine systems
C403.4	Acquire and interpret data from various aircraft instruments
C403.5	Identify the various cockpit controls

Course Name:Mechanics of Machines

Regulation: 2017 **Semester: IV**

Course Code/Course Name: PR8451/ Mechanics Of Machines	
CO No.	**Course Outcomes**
C404.1	Understand the principles in the formation of mechanisms and their kinematics.
C404.2	Understand the construction features of Gears and Gear Trains.
C404.3	Understand the effect of friction in different machine elements.
C404.4	Understand the importance of balancing.
C404.5	Understand the importance of Governors and Gyroscopic effects and understand the importance of vibration.

Course Name:Aircraft Structures – I

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE8403/ Aircraft Structures – I	
CO No.	**Course Outcomes**
C405.1	Ability to perform linear static analysis of determinate and indeterminate aircraft structural components.
C405.2	Calculate the reactions of structures using strain energy concept.
C405.3	Create a structure to carry the given load.
C405.4	Calculate the response of statically indeterminate structures under various loading conditions
C405.5	Ability to design the component using different theories of failure. Examine the structural failures using failure theories.

Course Name:Propulsion – I

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE8404/ Propulsion – I	
CO No.	**Course Outcomes**
C406.1	To be able to apply control volume and momentum equation to estimate the forces produced by aircraft propulsion systems.
C406.2	To be able to describe the principal figures of merit for aircraft engine.
C406.3	To be able to describe the principal design parameters and constraints that set the performance of gas turbine engines.
C406.4	To apply ideal and actual cycle analysis to a gas turbine engine to relate thrust and fuel burn to component performance parameters.
C406.5	Understanding the workings of multistage compressor or turbine, and to be able to use velocity triangles and the Euler Turbine Equation to estimate the performance of a compressor or turbine stage.

Course Name:Computer Aided Machine Drawing

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE8381/ Computer Aided Machine Drawing	
CO No.	**Course Outcomes**
C407.1	Ability to follow the drawing standards
C407.2	Ability to follow Fits and Tolerances
C407.3	Ability to Re-create part drawings, sectional views and assembly drawings as per standards
C407.4	Ability to Re-create sectional views and assembly drawings as per standards
C407.5	Ability to assembly drawings as per standards

Course Name:Aerodynamics Laboratory

Regulation: 2017 **Semester: IV**

Course Code/Course Name: AE6412/Aerodynamics Laboratory	
CO No.	**Course Outcomes**
C408.1	Ability to perform Flow testing on given shape
C408.2	Ability to use the fundamental dynamic principle in aircraft application
C408.3	Understand pressure distribution on any shape
C408.4	Understand the losses due to stream lines
C408.5	Perform flow visualization techniques

Course Name:Flight Dynamics

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8501/ Flight Dynamics	
CO No.	**Course Outcomes**
C501.1	Calculate the forces and moments that are acting on an aircraft and variation of thrust, power, SFC with velocity and altitude.
C501.2	Calculate the performance of an airplane for non-accelerating flight conditions
C501.3	Estimate Longitudinal static stability and trim requirements for an aircraft
C501.4	Compute lateral and directional stability requirements for an aircraft.
C501.5	Calculate the dynamic longitudinal stability, lateral and directional dynamic stability.

Course Name:Aircraft Structures – II

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8502/ Aircraft Structures – II	
CO No.	**Course Outcomes**
C502.1	Analyze the response of structures due to unsymmetrical bending.
C502.2	Demonstrate the structural behaviour of components encountered in aircrafts.
C502.3	Analyze bending, shear and torsion of open and closed thin-walled sections.
C502.4	Analyze stresses and deflections of flat plates.
C502.5	Identify various types of structural components and their loading pattern.

Course Name:Aerodynamics-II

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8503/ Aerodynamics-II	
CO No.	**Course Outcomes**
C503.1	Knowledge of Compressible Flow.
C503.2	Understanding characteristics of fluid flows.
C503.3	Knowledge gained in shock phenomenon and fluid waves.
C503.4	Understanding fluid flow characteristics over wings airfoils and airplanes.
C503.5	Usage of wind tunnels for evaluating flow behaviours.

Course Name:Propulsion-II

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8504/ Propulsion-II	
CO No.	**Course Outcomes**
C504.1	Understand the Hypersonic propulsion systems.
C504.2	Gain knowledge in rocket propulsion systems.
C504.3	Know the principle and applications of solid propulsion systems.
C504.4	Familiarize students with the principle and applications of liquid propulsion systems.
C504.5	Know the application of nuclear propulsion in rocketry systems and Advanced Propulsion Technologies for Space travel.

Course Name:Control Engineering

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8505/ Control Engineering	
CO No.	**Course Outcomes**
C505.1	The Students should be able To understand the use of transfer function models for analysis Physical systems and introduce the control system components.
C505.2	To analyze and design open loop and closed loop in control system.
C505.3	To analyze frequency response of the system in control system.
C505.4	To analyze time response of the system in control system.
C505.5	To understand about sampled data systems.

Course Name:Fibre Reinforced Plastics

Regulation: 2017 **Semester: V**

Course Code/Course Name: OPT551/Fibre Reinforced Plastics	
CO No.	**Course Outcomes**
C506.1	Select various materials for designing composite structures.
C506.2	Apply knowledge of fracture mechanics of composites during designing of composite structures.
C506.3	Analyze critically the damping capacity of composite materials

C506.4	Correlate various manufacturing/fabricating techniques for composite structures based on design

Course Name:Aircraft Structures Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8511/Aircraft Structures Laboratory - II	
CO No.	**Course Outcomes**
C507.1	Ability to perform Bending
C507.2	Ability to perform Torsion
C507.3	Ability to perform Shear
C507.4	Ability to perform Vibration test on metabolic
C507.5	Ability to fabricate composite laminates

Course Name:Propulsion Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name: AE8512/Propulsion Laboratory	
CO No.	**Course Outcomes**
C508.1	Ability to understand details of piston
C508.2	Ability to understand details of gas turbine engine
C508.3	Ability to perform various testing on ducts
C508.4	Ability to perform various testing on propellants
C508.5	Ability to perform various testing on jet engine components

Course Name:Professional Communication

Regulation: 2017 **Semester: V**

Course Code/Course Name: HS8581/Professional Communication	
CO No.	**Course Outcomes**
C509.1	Make effective presentations

C509.2	Participate confidently in Group Discussions.
C509.3	Attend job interviews and be successful in them.
C509.4	Develop adequate Soft Skills required for the workplace
C509.5	Ability to attend interviews successfully

Course Name:Finite Element Methods

Regulation: 2017 **Semester: VI**

Course Code/Course Name: AE8601/ Finite Element Methods	
CO No.	**Course Outcomes**
C601.1	Write flow chart of finite element steps and understand the convergence of the problem.
C601.2	Solve stiffness matrix for bar, beam and frame problems using suitable boundary condition.
C601.3	Understand that how plane stress and plane strain conditions are used to solve 2d structures.
C601.4	Create modeling of 2d and 3d structures using iso-parametric elements.
C601.5	Apply the concepts of finite element methods to solve fluid flow and heat transfer problems.

Course Name:Experimental Aerodynamics

Regulation: 2017 **Semester: VI**

Course Code/Course Name: AE8602/Experimental Aerodynamics	
CO No.	**Course Outcomes**
C602.1	Apply the Wind tunnel boundary corrections and Scale effects
C602.2	Knowledge on measurement techniques in aerodynamic flow.
C602.3	Acquiring basics of wind tunnel measurement systems
C602.4	Specific instruments for flow parameter measurement like pressure, velocity.
C602.5	Use measurement techniques involved in Aerodynamic testing.

Course Name:Composite Materials and Structures

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8603/Composite Materials And Structures	
CO No.	**Course Outcomes**
C603.1	Understand the mechanics of fiber and matrix materials used in composite materials.
C603.2	Analyze the structural properties of composite materials.
C603.3	Analyze the laminated composites for various loading cases.
C603.4	Knowledge gained in manufacture of composites.
C603.5	Understand the design concept and analysis of sandwich construction.

Course Name:Aircraft Design

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8604 /Aircraft Design	
CO No.	**Course Outcomes**
C604.1	Get the knowledge of aircraft basics and understand the stages involved in aircraft design
C604.2	Initiate the preliminary design of an aircraft starting from data collection to satisfy mission specifications and understand the procedure involved in weight estimation
C604.3	Understand the procedure involved in selection and location of powerplant
C604.4	To get familiarized with the design of wing, fuselage and tail plane
C604.5	Initiate the design of landing gear and component or process to meet requirements the aircraft systems

Course Name:Experimental Stress Analysis

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8605/Experimental Stress Analysis	
CO No.	**Course Outcomes**
C605.1	Experimentally evaluate the location and size of defect in solid and composite materials by using various Non-destructive Testing methods.
C605.2	Knowledge of stress and strain measurements in loaded components.
C605.3	Acquiring information's the usage of strain gauges and photo elastic techniques of measurement

C605.4	Formulate and solve general three dimensional problems of stress-strain analysis especially fundamental problems of elasticity.
C605.5	Analyze the strain gauge data under various loading condition by using gauge rosette method.

Course Name:Aircraft General Engineering and Maintenance

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE6002/ Aircraft General Engineering And Maintenance	
CO No.	**Course Outcomes**
C606.1	An understanding of various ground support systems for aircraft operations.
C606.2	Capability to carry out ground servicing of critical aircraft systems.
C606.3	An understanding of shop safety and environment cleanliness in an aircraft materials shop.
C606.4	An understanding the types of inspection and safety measures to be taken during aircraft maintenance.
C606.5	Identifying and usage of aircraft tools and fasteners used in service and types of equipments with special maintenance.

Course Name:Aero Engine and Airframe Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8611/Aero Engine and Airframe Laboratory	
CO No.	**Course Outcomes**
C607.1	Ability to maintain aero engines
C607.2	Ability to repair aero engines
C607.3	Ability to repair fabric material
C607.4	Ability to repair riveted material
C607.5	Knowledge on welding

Course Name:Computer Aided Simulation Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8612/Computer Aided Simulation Laboratory	
CO No.	**Course Outcomes**
C608.1	Ability to perform different simulation and analysis software to simulate flow behavior
C608.2	Ability to perform structural analysis
C608.3	Knowledge on component design
C608.4	Knowledge on component meshing
C608.5	Knowledge on flow and structure analysis

Course Name:Aircraft Design Project – I

Regulation: 2017 **Semester: VI**

Course Code/Course Name:AE8613/Aircraft Design Project – I	
CO No.	**Course Outcomes**
C609.1	Ability to design an aircraft
C609.2	Ability to demonstrate the performance of the design.
C609.3	Ability to perform design calculation
C609.4	Ability to perform computational analysis
C609.5	Knowledge on aircraft design

Course Name: Total quality Management

Regulation: 2017 **Semester: VII**

Course Code/Course Name:GE8077/Total quality management	
CO No.	**Course Outcomes**
C701.1	This course introduce basic of quality and theoretical concept of total quality managements in a business
C701.2	To have a clear idea about principles, tool and techniques and various quality systems
C701.3	Aware about quality for various manufacturing process.
C701.4	To get knowledge about internal quality audit need.
C701.5	To update on the various quality followed in current days.

Course Name: AVIONICS

Regulation: 2017 **Semester: VII**

Course Code/Course Name: AE8751/Avionics	
CO No.	**Course Outcomes**
C702.1	Demonstrate the working of simple digital circuits using logic gates
C702.2	Create assembly language programs with microprocessor for simple applications
C702.3	Demonstrate the integration of avionic systems with data buses
C702.4	Explain the working of aircraft communication and navigation systems.
C702.5	Discuss the autopilot systems in aircraft

Course Name:COMPUTATIONAL FLUID DYNAMICS

Regulation: 2017 **Semester: VII**

Course Code/Course Name:ME 8093/COMPUTATIONAL FLUID DYNAMICS	
CO No.	**Course Outcomes**
C703.1	Derive the governing equations and boundary conditions for Fluid dynamics.
C703.2	Analyze Finite difference and Finite volume methods for Diffusion.
C703.3	Analyze Finite volume method for Convective diffusion.
C703.4	Analyze the flow field problems using different algorithms.
C703.5	Explain the Turbulence models and Mesh generation techniques.

Course Name:TESTING OF MATERIALS

Regulation: 2017 **Semester: VII**

Course Code/Course Name:OML751/TESTING OF MATERIALS	
CO No.	**Course Outcomes**
C704.1	Understand the importance of material testing
C704.2	Understand the importance of mechanical testing
C704.3	Understand the importance of non-destructive testing
C704.4	Understand the importance of material characterization
C704.5	Understand the importance of different testing methods

Course Name:VIBRATION AND ELEMENTS OF AEROELASTICITY

Regulation: 2017 **Semester: VII**

Course Code/Course Name:AE8008 / VIBRATION AND ELEMENTS OF AEROELASTICITY	
CO No.	**Course Outcomes**
C705.1	Understanding of single and multi-degree vibrating systems
C705.2	Ability to use numerical techniques for vibration problems
C705.3	Differentiate types of vibrations according to dampness and particle motion.
C705.4	Solve Rayleigh and Holzer method to find natural frequency of an object.
C705.5	Knowledge acquired in aero elasticity and fluttering and Understand the formation of Aileron reversal, flutter and wing divergence.

Course Name:AIRFRAME MAINTENANCE AND REPAIR

Regulation: 2017 **Semester: VII**

Course Code/Course Name:AE8009/AIRFRAME MAINTENANCE AND REPAIR	
CO No.	**Course Outcomes**
C706.1	Identify and apply the principles of function and safe operation to aircraft as per FAA and Understand general airframe structural repairs, the structural repair manual and structural control programme.
C706.2	Understand the nature of airframe structural component inspection, corrosion repair and non-destructive inspection
C706.3	Understand aircraft component disassembly, reassembly and troubleshooting
C706.4	Know about aircraft adhesives, sealants, bonding techniques, repair procedures and the types and detection of defects in aircraft composite materials
C706.5	Identify, install, inspect, fabricate and repair aircraft sheet metal and synthetic, material structures.

Course Name:WIND TUNNEL TECHNIQUES

Regulation: 2017 **Semester: VIII**

Course Code/Course Name:AE8012 / WIND TUNNEL TECHNIQUES	
CO No.	**Course Outcomes**
C801.1	Analyze the effects of non-dimensional numbers, geometric, kinematic and dynamic similarities on a model in a flow field.
C801.2	Understand the types and functions of subsonic and supersonic wind tunnels.
C801.3	Apply the theoretical methods used to calibrate the subsonic and supersonic wind tunnels.
C801.4	Utilize the various types of conventional measurement system.
C801.5	Understand the operation methods of special purpose wind tunnels.

Course Name:COMPUTER INTEGRATED MANUFACTURING

Regulation: 2017 **Semester: VIII**

Course Code/Course Name:PR8491/COMPUTER INTEGRATED MANUFACTURING	
CO No.	**Course Outcomes**
C802.1	Describe about the classical production system, the components of CIM and Explain the concept of Computer Aided Process Planning (CAPP) and Material Requirements Planning (MRP)
C802.2	Illustrate the cellular manufacturing using Rank order, Clustering and Hollier method
C802.3	Explain Flexible Manufacturing system and applications of Automated Guided Vehicles in the implementation of CIM.
C802.4	Describe the configurations of Industrial Robots, and their part programming.
C802.5	Understand the use of computers in various Manufacturing support systems.

Course Name:PROJECT WORK

Regulation: 2017 **q** **Semester: VIII**

Course Code/Course Name:AE8811/PROJECT WORK	
CO No.	**Course Outcomes**
C803.1	Apply the basic knowledge in science and engineering and take up challenging practical problems for finding solution by formulation of proper methodology.
C803.2	Create design solutions and solve a specific problem right from its identification and literature review till the successful solution using modern tools.
C803.3	Understand the impact of project results in environmental and societal context with the consideration of ethical values.
C803.4	Work as an individual or as a member on project teams and communicate the results effectively by compiling project reports and presentations.
C803.5	Understand and apply engineering management principles in multi-disciplinary environments for future scope of the work.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Courses and Course Outcomes
Regulation 2017

Course Name:Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name:HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name:Engineering Mathematics- I
Regulation: 2017 **Semester: I**

Course Code/Course Name:MA8151/ Engineering Mathematics- I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	Use to analyze Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's) Trigonometric substitutions and Improper integrals.
C102.4	To understand the concepts of Double and Triple integrals.

C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name:Engineering Physics
Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151/ Engineering Physics	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications.
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fiber optics.
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name:Engineering Chemistry
Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/ Engineering Chemistry	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources.

Course Name:Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8151/ Problem Solving and PythonProgramming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions.
C105.4	Represent compound data using Python lists, tuple, and dictionaries.
C105.5	Read and write data from/to files in Python Programs.

Course Name:Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	To understand and draw different types of projections, curves and scales.
C106.2	Can do orthographic projection of lines and plane surfaces.
C106.3	To design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Able to prepare isometric and perspective sections of simple solids.
C106.5	To create real-time drawings that support different machine drawing technique apply to different engineering Field.

Course Name:Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8161 / Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuple, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name:Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:BS8161 / Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysis of water quality related parameters..
C108.5	Students will be able to think innovatively and also improve the creative skills that are essential for engineering.

Course Name:Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name:HS8251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly.

Course Name:Engineering Mathematics - II
Regulation: 2017 **Semester: II**

Course Code/Course Name:MA8251/ Engineering Mathematics - II	
CO No.	**Course Outcomes**
C110.1	To understand the concepts of eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledge of Gradient, divergence and curl of a vector point function and related identities,the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping
C110.4	To understand the techniques of complex integration
C110.5	To interpret Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name:Physics for Information Science
Regulation: 2017 **Semester: II**

Course Code/Course Name:PH8252/ Physics for Information Science	
CO No.	**Course Outcomes**
C111.1	To gain knowledge on classical and quantum electron theories, and energy band structures.
C111.2	To acquire knowledge on basics of semiconductor physics and its applications in various devices.
C111.3	To get knowledge on magnetic properties of materials and their applications in data storage.
C111.4	To adequate the necessary understanding on the functioning of optical materials for optoelectronics.
C111.5	To Understand the basics of quantum structures and their applications in carbon electronics.

Course Name:Basic Electrical, Electronics and Measurement Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8255 / Basic Electrical, Electronics and Measurement Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the fundamentals of electronic circuit constructions.
C112.2	Discuss the essentials of electric circuits and analysis.
C112.3	Discuss the basic operation of electric machines and transformers
C112.4	Introduction of renewable sources and common domestic loads.
C112.5	Understand the different energy sources, protective devices and their field applications.

Course Name:Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8291 / Environmental Science and Engineering	
CO No.	**Course Outcomes**
C113.1	To understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C113.2	To understand about pollution on the environment.
C113.3	To study the various natural resources.
C113.4	To understand the impact of social issues on the environment.
C113.5	To study about human population on the environment.

Course Name:Programming in C
Regulation: 2017 **Semester: II**

Course Code/Course Name:CS8251 / Programming in C	
CO No.	**Course Outcomes**
C114.1	Understand the simple applications in C using basic constructs
C114.2	Understand the Design and implement the applications using arrays and strings
C114.3	Remember and implement applications in C using functions and pointers
C114.4	Remember and Develop applications in C using structures
C114.5	Apply the applications using sequential and random access file processing

Course Name:Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C115.2	Can carry out the basic machining operations and Make the models using sheet metal works.

C115.3	To Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
C115.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C115.5	To Elaborate on the components, gates, soldering practices.

Course Name: C Programming Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:CS8261/ C Programming Laboratory	
CO No.	**Course Outcomes**
C116.1	Understand the C programs for simple applications making use of basic constructs.
C116.2	Understand the C programs for simple applications making use of arrays and strings.
C116.3	Remember the C programs that involves functions, recursion.
C116.4	Remember the C programs that involves pointers, and structures.
C116.5	Apply the logics for developing the applications using sequential and random access file processing.

Course Name:Discrete Mathematics
Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8351/ Discrete Mathematics	
CO No.	**Course Outcomes**
C201.1	Understand and apply the knowledge of the concepts needed to test the logic of a program.
C201.2	Have an understanding in identifying structures on many levels.
C201.3	Analyzation of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
C201.4	Analyzation of the counting principles.
C201.5	Apply the concepts and properties of algebraic structures such as groups, rings and fields.

Course Name: Digital Principles and System Design
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8351/ Digital Principles and System Design	
CO No.	**Course Outcomes**
C202.1	Understand the Boolean functions using KMap.
C202.2	Design and Analyze Combinational Circuits.
C202.3	Design and Analyze Sequential Circuits.
C202.4	Implement designs using Programmable Logic Devices.
C202.5	Create HDL code for combinational and Sequential Circuits.

Course Name: Data Structures
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8391/ Data Structures	
CO No.	**Course Outcomes**
C203.1	Apply functions to implement linear and non linear data structure operations.
C203.2	Analyze linear/non linear data structure operations for solving a given problem.
C203.3	Identity the appropriate data structure for given problem.
C203.4	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.
C203.5	Understand the applications of data structures.

Course Name:Object Oriented Programming
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8392/ Object Oriented Programming	
CO No.	**Course Outcomes**
C204.1	Develop Java programs using OOP principles
C204.2	Develop Java programs with the concepts inheritance and interfaces

C204.3	Build Java applications using exceptions and I/O streams
C204.4	Develop Java applications with threads and generics classes
C204.5	Develop interactive Java programs using swings

Course Name:Communication Engineering
Regulation: 2017 **Semester: III**

Course Code/Course Name:EC8395/ Communication Engineering	
CO No.	**Course Outcomes**
C205.1	Analyze appreciate the significance and role of this course in the present contemporary world
C205.2	Apply analog and digital communication techniques.
C205.3	Remember the data and pulse communication techniques.
C205.4	Analyze Source and Error control coding.
C205.5	Analyze and appreciate the significance and role of this course in the present contemporary world

Course Name:Data Structures Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8381/ Data Structures Laboratory	
CO No.	**Course Outcomes**
C206.1	Apply functions to implement linear and non linear data structure operations.
C206.2	Analyze linear/non linear data structure operations for solving a given problem.
C206.3	Identity the appropriate data structure for given problem.
C206.4	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.
C206.5	Understand the applications of data structures.

Course Name:Object Oriented Programming Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8383/ Object Oriented Programming Laboratory	
CO No.	**Course Outcomes**
C207.1	Experiment and expose the Object Oriented Programming concepts
C207.2	Implement the concept of exception handling mechanism.
C207.3	Create and implement a java based multi-threaded application.
C207.4	Create and develop event-driven programming using java programming
C207.5	Build software development skills using java programming for real-world applications

Course Name: Digital Systems Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8382/ Digital Systems Laboratory	
CO No.	**Course Outcomes**
C208.1	Implement simplified combinational circuits using basic logic gates.
C208.2	Implement combinational circuits using MSI devices.
C208.3	Implement sequential circuits like Shift Registers.
C208.4	Implement sequential circuits like Counters.
C208.5	Simulate combinational and sequential circuits using HDL.

Course Name:Interpersonal Skills/Listening & Speaking
Regulation: 2017 **Semester: III**

Course Code/Course Name:HS8381/ Interpersonal Skills/Listening &Speaking	
CO No.	**Course Outcomes**
C209.1	Analyze and respond appropriately.
C209.2	Analyze the students Participation in the group discussions
C209.3	Examine the effective presentations
C209.4	Evaluate the Participants confidence and appropriate in conversations both formal and informal

C209.5	Analyze and respond to formal and informal talk

Course Name: Probability and Queueing Theory
Regulation: 2017 **Semester: IV**

Course Code/Course Name:MA8402/ Probability and Queueing Theory	
CO No.	**Course Outcomes**
C210.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
C210.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
C210.3	Apply the concept of random processes in engineering disciplines.
C210.4	Acquire skills in analyzing queueing models.
C210.5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

Course Name: Computer Architecture
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8491/ Computer Architecture	
CO No.	**Course Outcomes**
C211.1	Understand the basics structure of computers, operations and instructions.
C211.2	Design arithmetic and logic unit.
C211.3	Generalize pipelined execution and design control unit.
C211.4	Apply parallel processing architectures.
C211.5	Analyze various memory systems and I/O communication.

Course Name:Database Management Systems
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8492/ Database Management Systems	
CO No.	**Course Outcomes**
C212.1	Analyze the various data models relational databases
C212.2	Analyze the ER model to Relational model to perform database design and organize the data using Normalization
C212.3	Apply concurrency control & recovery mechanism for database problems.
C212.4	Analyze the various indexing strategies in different database systems
C212.5	Understand how advanced databases differ from traditional databases.

Course Name:Design and Analysis of Algorithms
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8451/ Design and Analysis ofAlgorithms	
CO No.	**Course Outcomes**
C213.1	Design algorithms for various computing problems.
C213.2	Analyze the time and space complexity of algorithms.
C213.3	Critically analyze the different algorithm design techniques for a given problem.
C213.4	Apply the existing algorithms to improve efficiency.
C213.5	Understand the limitations of algorithms.

Course Name:Operating Systems
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8493/ Operating Systems	
CO No.	**Course Outcomes**
C214.1	Understand the various Scheduling Algorithms.
C214.2	Analyze the various challenges in Multi Threading models.
C214.3	Create and design deadlock, prevention and avoidance algorithms

C214.4	Compare and contrast various memory management schemes
C214.5	Apply administrative tasks on Linux Servers

Course Name:Software Engineering
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8494/ Software Engineering	
CO No.	**Course Outcomes**
C215.1	Analyze the key activities in managing a software project.
C215.2	Understand the different process models.
C215.3	Understand the requirements engineering and Analysis Modeling.
C215.4	Apply systematic procedure for software design and deployment.
C215.5	Analyze the various testing and maintenance.

Course Name Database Management Systems Laboratory
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8481/ Database Management Systems Laboratory	
CO No.	**Course Outcomes**
C216.1	Apply the data definitions and manipulation commands
C216.2	Design applications to test Nested and Join Queries
C216.3	Implement simple applications that use Views
C216.4	Implement applications that require a Front-end Tool
C216.5	Critically analyze the use of Tables, Views, Functions and Procedures

Course Name:Operating Systems Laboratory
Regulation: 2017 **Semester: IV**

Course Code/Course Name:CS8461/ Operating Systems Laboratory	
CO No.	**Course Outcomes**
C217.1	Analyze the performance of various CPU Scheduling Algorithms
C217.2	Implement Deadlock avoidance and Detection Algorithms

C217.3	Implement Semaphores
C217.4	Analyze the performance of the various Page Replacement Algorithms
C217.5	Implement File Organization and File Allocation Strategies

Course Name: Advanced Reading and Writing
Regulation: 2017 **Semester: IV**

Course Code/Course Name:HS8461/ Advanced Reading and Writing	
CO No.	**Course Outcomes**
C218.1	Analyze the different types of essays.
C218.2	Apply the winning job applications.
C218.3	Read and evaluate texts critically.
C218.4	Understand the critical thinking in various professional contexts.
C218.5	Perform critical reading.

Course Name: Algebra and Number Theory
Regulation: 2017 **Semester: V**

Course Code/Course Name:MA8551/ Algebra and Number Theory	
CO No.	**Course Outcomes**
C301.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
C301.2	Apply the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C301.3	Analyze the accuracy and efficiency of advanced algebraic techniques.
C301.4	Analyze by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C301.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

Course Name: Computer Networks
Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8591/ Computer Networks	
CO No.	**Course Outcomes**
C302.1	Demonstrate the layers and its functionality of Computer Networks
C302.2	Evaluate the performance of a network.
C302.3	Analyze various routing algorithms
C302.4	Analyze various protocol requirements for network communication
C302.5	Demonstrate the working of various application layer protocols.

Course Name: Microprocessors and Microcontrollers
Regulation: 2017 **Semester: V**

Course Code/Course Name:EC8691/ Microprocessors and Microcontrollers	
CO No.	Course Outcomes
C303.1	Understand and execute programs based on 8086 microprocessor.
C303.2	Design Memory Interfacing circuits.
C303.3	Design and interface I/O circuits.
C303.4	Design and implement 8051 microcontroller based systems.
C303.5	Understand interfacing.

Course Name: Theory of Computation
Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8501/ Theory of Computation	
CO No.	**Course Outcomes**
C304.1	Understand and design a computational model Finite state machine, and the different types of FA and equivalence between them.
C304.2	Understand the computational grammars and Languages accepted by computational models.
C304.3	Apply a computational model pushdown automaton, and understand the different types of PDA and equivalence between PDA & CFG.
C304.4	Design a computational model Turing machine, and understand its types and problems related to Turing machine.

C304.5	Analyze and explain decidability and undecidability of various problems.

Course Name: Object Oriented Analysis and Design
Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8592/ Object Oriented Analysis and Design	
CO No.	**Course Outcomes**
C305.1	Express software design with UML diagrams
C305.2	Design software applications using OO concepts.
C305.3	Identify various scenarios based on software requirements
C305.4	Transform UML based software design into pattern based design using design patterns
C305.5	Understand the various testing methodologies for OO software

Course Name:Air Pollution and Control Engineering
Regulation: 2017 **Semester: V**

Course Code/Course Name:OCE551/Air Pollution and Control Engineering	
CO No.	Course Outcomes
C306.1	Understand the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management.
C306.2	Identify, formulate and solve air and noise pollution problems.
C306.3	Design stacks and particulate air pollution control devices to meet applicable standards.
C306.4	Able to select control equipments.
C306.5	Able to ensure quality, control and preventive measures.

Course Name: Microprocessors and Microcontrollers Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name:EC8681/ Microprocessors and Microcontrollers Laboratory	
CO No.	**Course Outcomes**
C307.1	Write ALP Program for fixed and Floating Point and Arithmetic operations.
C307.2	Analyze the Interface different I/Os with processor.
C307.3	Apply waveforms using Microprocessors.
C307.4	Evaluate the Programs in 8051.

C307.5	Analyze the difference between simulator and Emulator.

Course Name:Object Oriented Analysis and Design Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8582/ Object Oriented Analysis and Design Laboratory	
CO No.	**Course Outcomes**
C308.1	OO analysis and design for a given problem specification.
C308.2	To analyze and map basic software requirements in UML mapping.
C308.3	To analyze the software quality and identify various scenarios based on software requirements.
C308.4	Transform the rationale behind applying specific design patterns.
C308.5	Evaluate the compliance of the software with the SRS.

Course Name: Networks Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8581/ Networks Laboratory	
CO No.	**Course Outcomes**
C309.1	Implement various protocols using TCP and UDP.
C309.2	Analyze the performance of different transport layer protocols.
C309.3	Use simulation tools to analyze the performance of various network protocols.
C309.4	Analyze various routing algorithms.
C309.5	Implement error correction codes.

Course Name: Internet Programming
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8651/ Internet Programming	
CO No.	**Course Outcomes**
C310.1	Construct a basic website using HTML and Cascading Style Sheets.
C310.2	Create the dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
C310.3	Develop server side programs using Servlets and JSP.
C310.4	Construct simple web pages in PHP and to represent data in XML format.
C310.5	Apply the AJAX and web services to develop interactive web applications

Course Name: Artificial Intelligence
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8691/ Artificial Intelligence	
CO No.	**Course Outcomes**
C311.1	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
C311.2	Apply and represent a problem using first order and predicate logic
C311.3	Demonstrate various applications of AI techniques in intelligent agents, and machine learning models.
C311.4	Design software agents to solve a problem
C311.5	Design applications for NLP that use Artificial Intelligence

Course Name:Mobile Computing
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8601/ Mobile Computing	
CO No.	**Course Outcomes**
C312.1	Demonstrate the layers and its functionality of Computer Networks
C312.2	Evaluate the performance of a network.
C312.3	Analyze various routing algorithms
C312.4	Analyze various protocol requirements for network communication
C312.5	Demonstrate the working of various application layer protocols.

Course Name: Compiler Design
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8602/ Compiler Design	
CO No.	**Course Outcomes**
C313.1	Analyze the different phases of compiler.
C313.2	Design a lexical analyzer for a sample language.
C313.3	Apply different parsing algorithms to develop the parsers for a given grammar.
C313.4	Understand syntax-directed translation and run-time environment.

C313.5	Apply code optimization techniques and a simple code generator.

Course Name:Distributed Systems
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8603/ Distributed Systems	
CO No.	**Course Outcomes**
C314.1	Analyze the issues of distributed systems.
C314.2	Apply the various synchronization issues and global state for distributed systems.
C314.3	Apply the Mutual Exclusion and Deadlock detection algorithms in distributed systems.
C314.4	Apply the agreement protocols and fault tolerance mechanisms in distributed systems.
C314.5	Analyze the features of peer-to-peer and distributed shared memory systems.

Course Name: Data Warehousing and Data Mining
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8075/Data Warehousing and Data Mining	
CO No.	**Course Outcomes**
C315.1	Design a Data warehouse system and perform business analysis with OLAP tools.
C315.2	Apply suitable pre-processing and visualization techniques for data analysis
C315.3	Apply frequent pattern and association rule mining techniques for data analysis
C315.4	Apply appropriate classification and clustering techniques for data analysis
C315.5	Understand clustering and learning algorithms.

Course Name:Internet Programming Laboratory
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8661/ Internet Programming Laboratory	
CO No.	**Course Outcomes**
C316.1	Create Web pages using HTML/XML and style sheets.
C316.2	Analyze the dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
C316.3	Apply the dynamic web pages using server side scripting.
C316.4	Evaluate the PHP programming to develop web applications.
C316.5	Createweb applications using AJAX and web services.

Course Name: Mobile Application Development Laboratory
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8662/ Mobile Application Development Laboratory	
CO No.	**Course Outcomes**
C317.1	Apply the components and structure of mobile application development frameworks for Android and Windows OS based mobiles.
C317.2	Apply how to work with various mobile application development frameworks.
C317.3	Analyze the basic and important design concepts and issues of development of mobile applications.
C317.4	Understand the capabilities and limitations of mobile devices.
C317.5	Create the real time mobile application

Course Name: Mini Project
Regulation: 2017 **Semester: VI**

Course Code/Course Name:CS8611/ Mini Project	
CO No.	**Course Outcomes**
C318.1	Analyze the challenges in the practical problems.

C318.2	Evaluate the solutions by formulating proper methodology.
C318.3	Analyze various skills and perform well in teams.
C318.4	Apply the well in team Works.
C318.5	Evaluate the communication skillin facing reviews and contribute societal development.

Course Name: Principles of Management
Regulation: 2017 **Semester: VII**

Course Code/Course Name:MG8591 Principles of Management	
CO No.	**Course Outcomes**
C401.1	Describe the basic of management and its types, skills, management roles, types of business organization and current trends in business
C401.2	Explain the nature and purpose of planning, types, objectives of planning and decision process
C401.3	Compare the different organization structures, authorities and responsibilities, human resource management and training and development
C401.4	Estimate the individual and group behavior, motivation, job satisfaction types and theories of leadership, communication and IT
C401.5	Apply the knowledge using the various system and process of controlling, budgetary and non-budgetary control techniques, use of computer and IT in management control, reporting

Course Name: Cryptography and Network Security
Regulation: 2017 **Semester: VII**

Course Code/Course Name:CS8792/ Cryptography and Network Security	
CO No.	**Course Outcomes**
C402.1	Apply the Network Security Architecture its threads and vulnerability
C402.2	Apply the cryptographic operations of symmetric cryptographic algorithms
C402.3	Apply the cryptographic operations of public key cryptography
C402.4	Analyze the Authentication schemes to simulate different applications
C402.5	Evaluate Security Standards for Security Practices

Course Name: Cloud Computing
Regulation: 2017 **Semester: VII**

Course Code/Course Name:CS8791/ Cloud Computing	
CO No.	**Course Outcomes**
C403.1	Analyze the concept of cloud computing.
C403.2	Apply the evolution of cloud from the existing technologies.
C403.3	Apply the knowledge on the various issues in cloud computing.
C403.4	Evaluate the familiarities with the lead players in cloud.
C403.5	Apply the emergence of cloud as the next generation computing paradigm.

Course Name: System Engineering
Regulation: 2017 **Semester: VII**

Course Code/Course Name:OME753 / System Engineering	
CO No.	**Course Outcomes**
C404.1	Analyze the system engineering concepts
C404.2	Apply the Design Techniques
C404.3	Analyze the alternatives in Modeling
C404.4	Analyze the Models of manufacturing system for optimum
C404.5	Analyze the sources of effective functioning

Course Name: Software Project Management
Regulation: 2017 **Semester: VII**

Course Code/Course Name:IT8075 / Software Project Management	
CO No.	**Course Outcomes**
C405.1	Understand Project Management Principles, Software Development Life Cycle activities and Analyze Software Project Planning (Analysis)
C405.2	Analyze Software Process Models and Software Effort Estimation Techniques (Analysis)
C405.3	Analyze Precedence Network Models and Identify the strategies for minimizing major Risks (Analysis)
C405.4	Understand various Management Framework and analyze earned value analysis (Analysis)
C405.5	Learn Staff Selection Process and analyze various Issues Related to People Management (Analysis)

Course Name: Human Computer Interaction
Regulation: 2017 **Semester: VII**

Course Code/Course Name:CS8079/ Human Computer Interaction	
CO No.	**Course Outcomes**
C406.1	Analyze the foundations of Human Computer Interaction
C406.2	Design the various software process
C406.3	Design technologies for individuals and persons with disabilities
C406.4	Apply theconcept of mobile HCI.
C406.5	Analyze the guidelines for user interface

Course Name: Cloud Computing Laboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name:CS8711 Cloud Computing Laboratory	
CO No.	**Course Outcomes**
C407.1	Develop the web applications in cloud
C407.2	Design the and Deploy the Environment for the Cloud Based Application.
C407.3	Design and development process involved in creating a cloud based application
C407.4	Apply the process of Private Cloud.
C407.5	Analyze and use the parallel programming using Hadoop

Course Name: Security Laboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name:IT8761/ Security Laboratory	
CO No.	**Course Outcomes**
C408.1	Analyze the different cipher techniques
C408.2	Analyze the Encryption and Decryption.
C408.3	Apply the algorithms DES, RSA,MD5,SHA-1
C408.4	Evaluate the Digital Signature Standard
C408.5	Apply the network security tools and vulnerability assessment tools

Course Name: Cyber Forensics
Regulation: 2017 **Semester: VIII**

Course Code/Course Name:CS8074/Cyber Forensics	
CO No.	**Course Outcomes**
C409.1	Analyze the Security Issues of Network Layer and Transport Layer
C409.2	Evaluate the security issues of the Application Layer.
C409.3	Apply the Computer the Forensics methods
C409.4	Analyze the Familiarity of Forensic Tools
C409.5	Analyze and Validate Forensics Data

Course Name: Information Retrieval Techniques
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: CS8080/ Information Retrieval Techniques	
CO No.	**Course Outcomes**
C410.1	Analyze the basics of Information Retrieval.
C410.2	Apply the machine learning techniques for text classification
C410.3	Apply the machine learning techniques for clustering
C410.4	Analyze the various search engine system operations
C410.5	Evaluate the different techniques of recommender system

Course Name: Project Work
Regulation: 2017 **Semester: VIII**

Course Code/Course Name:CS8811/ Project Work	
CO No.	**Course Outcomes**
C411.1	Create the ability to solve a specific problem
C411.2	Analyze and identify the problem through the Literature review.
C411.3	Interview the students in preparing project reports
C411.4	Influence the face reviews.
C411.5	Motivate and Encourage the students for viva voce examination

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Courses and Course Outcomes - Regulation 2017

Course Name: Communicative English

Regulation: 2017 **Semester: I**

Course Code/Course Name: HS8151 /Communicative English	
CO. No	**Course Outcome**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name: Engineering Mathematics – I

Regulation: 2017 **Semester: I**

Course Code/Course Name: MA8151 /Engineering Mathematics – I	
CO. No	**Course Outcome**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	Use to analyze Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's), Trigonometric substitutions and Improper integrals.
C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name: Engineering Physics

Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151 /Engineering Physics	
CO. No	**Course Outcome**
C103.1	To acquire the knowledge on the basics of properties of matter and its applications.
C103.2	To obtain the knowledge about concepts of waves and optical devices and their applications in fiber optics.
C103.3	To gain the knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C103.4	To get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	To understands the basics of crystals, their structures and different crystal growth techniques.

Course Name: Engineering Chemistry

Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/Engineering Chemistry	
CO. No	**Course Outcome**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources.

Course Name: Problem Solving and Python Programming

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8151 /Problem Solving and Python Programming	
CO. No	**Course Outcome**
C105.1	Develop algorithmic solutions to simple computational problems**.**
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions.
C105.4	Represent compound data using Python lists, tuples, and dictionaries.
C105.5	Read and write data from/to files in Python Programs.

Course Name: Engineering Graphics

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8152 /Engineering Graphics	
CO. No	**Course Outcome**
C106.1	To familiarize with the fundamentals and standards of Engineering graphics perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.2	To perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	To project orthographic projections of lines and plane surfaces.
C106.4	To draw projections and solids and development of surfaces.
C106.5	To visualize and to project isometric and perspective sections of simple solids.

Course Name: Problem Solving and Python Programming Laboratory

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8161/Problem Solving and Python Programming Laboratory	
CO.No	**Course Outcome**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name: Physics and Chemistry Laboratory

Regulation: 2017 **Semester: I**

Course Code/Course Name:BS8161 /Physics and Chemistry Laboratory	
CO. No	**Course Outcome**
C108.1	The hands on exercises undergone by the students will help them to apply Physics principles of elasticity to evaluate engineering properties of materials.
C108.2	The students can able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	The Students can able to analyze the velocity and compressibility of the given liquid using Ultrasonic interferometer.
C108.4	Students will be able to acquire hands on knowledge in the quantitative chemical analysis of water related specifications.
C108.5	Students will be able to understand different types of instruments for analyzing quality parameters.

Course Name: Technical English

Regulation: 2017 **Semester: II**

Course Code/Course Name:HS8251 /Technical English	
CO. No	**Course Outcome**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly.

Course Name: Engineering Mathematics – II

Regulation: 2017 **Semester: II**

Course Code/Course Name:MA8251 /Engineering Mathematics – II	
CO. No	**Course Outcome**
C110.1	To understand the concepts of Eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledge of Gradient, divergence and curl of a vector point function and related identities, the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping.
C110.4	To understand the techniques of complex integration.
C110.5	To interpret Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name: Physics for Electronics Engineering

Regulation: 2017 **Semester: II**

Course Code/Course Name:PH8253 /Physics for Electronics Engineering	
CO. No	**Course Outcome**
C111.1	To gain knowledge on classical and quantum electron theories and energy band structures.
C111.2	To acquire knowledge on basics of semiconductor physics and its applications in various devices.
C111.3	To get knowledge on magnetic and dielectric properties of materials.
C111.4	To adequate the necessary understanding on the functioning of optical materials for optoelectronics.
C111.5	To understand the basics of quantum structures and their applications in spintronics and carbon electronics.

Course Name: Basic Electrical and Instrumentation Engineering

Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8254/ Basic Electrical and Instrumentation Engineering	
CO. No	**Course Outcome**
C112.1	Able to Understand the concept of three phase power circuits and measurement.
C112.2	Able to Understand the concepts in electrical transformers & is types.
C112.3	Able to Understand the concepts in electrical generators and its performance.
C112.4	Able to Understand the concepts in electrical motors and its applications.
C112.5	Able to Choose appropriate measuring instruments for given application.

Course Name: Circuit Analysis

Regulation: 2017 **Semester: II**

Course Code/Course Name:EC8251/Circuit Analysis	
CO. No	**Course Outcome**
C113.1	Develop the capacity to analyze electrical circuits.
C113.2	Apply the circuit theorems in real time.
C113.3	Design and understand Resonance & Coupled circuits
C113.4	Understand the Transient response of AC and DC circuits.
C113.5	Design and understand and evaluate the AC and DC circuits.

Course Name: Electronic Devices

Regulation: 2017 **Semester: II**

Course Code/Course Name:EC8252/Electronic Devices	
CO. No	**Course Outcome**
C114.1	Understand the basic concepts of construction, theory and operations of PN junction diode.
C114.2	Understand the basic concepts of construction, theory and operations of Bipolar Junction Transistors.
C114.3	Understand the basic concepts of construction, theory and operations of Field Effect Transistors
C114.4	Study concepts of special semiconductor devices.
C114.5	Know about theory and operations of power control devices, LED, LCD, and other Opto-electronic devices.

Course Name: Circuit and Devices Laboratory

Regulation: 2017 **Semester: II**

Course Code/Course Name:EC8261/Circuit and Devices Laboratory	
CO. No	**Course Outcome**
C115.1	Analyze the characteristics of basic electronic devices.
C115.2	Design RL and RC circuits.
C115.3	Verify Thevinin& Norton theorem.
C115.4	Verify KVL & KCL.
C115.5	Verify Superposition Theorem.

Course Name: Engineering Practices Laboratory

Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/Engineering Practices Laboratory	
CO. No	**Course Outcome**
C116.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C116.2	Can carry out the basic machining operations and Make the models using sheet metal works.
C116.3	ToIllustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings.
C116.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C116.5	To Elaborate on the components, gates, soldering practices.

Course Name: Linear Algebra and Partial Differential Equations
Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8352/ LinearAlgebra and Partial Differential Equations	
CO No.	**Course Outcomes**
CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.
CO3	Demonstrate their mastery by solving non - trivial problems related to the concepts and by proving simple theorems about the statements proven by the text.
CO4	Able to solve various types of partial differential equations .
CO5	Able to solve engineering problems using Fourier series.

Course Name: Fundamentals of Data Structures In C
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8393/ **Fundamentals of Data Structures In C**	
CO No.	**Course Outcomes**
CO1	Understand the basic concept of C programming.
CO2	Understand and apply linear data structure for any given data set.
CO3	Understand and apply non-linear data structure for any given data set.
CO4	Modify or suggest new data structure for an application.
CO5	Appropriately choose the searching and sorting algorithm for an application.

Course Name: Electronic Circuits I
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8351/ Electronics Circuits I	
CO No.	**Course Outcomes**
CO1	Acquire knowledge of Working principles, characteristics and applications of BJT and FET.
CO2	Analyze the performance of small signal BJT Amplifiers.
CO3	Analyze the performance of small signal FET amplifiers - single stage and multi stage amplifiers.
CO4	To analyze the frequency response of small signal amplifiers
CO5	To design and analyze the regulated DC power supplies and troubleshoot and fault analysis of power supplies

Course Name: Signals &Systems
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8352/ Signals & Systems	
CO No.	**Course Outcomes**
CO1	Understand the properties of signals and systems
CO2	Analyze continuous time LTI systems using Fourier and Laplace Transform
CO3	Analyze discrete time LTI systems using Z transform and DTFT.
CO4	Apply Laplace, Fourier, Z transform and DTFT in signal analysis
CO5	Analyze the characteristics of LTI systems

Course Name: Digital Electronics
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8392/Digital Electronics	
CO No.	**Course Outcomes**
CO1	Use electronic circuits involved in the design of logic gates.
CO2	Design various combinational digital circuits using logic gates.
CO3	Do the analysis and design procedures for synchronous sequential circuits
CO4	Do the analysis and design procedures for asynchronous sequential circuits
CO5	Use Semiconductor memories & digital electronics in the present contemporary world

Course Name:Control Systems Engineering **Regulation: 2017** **Semester: III**

Course Code/Course Name: EC8391/Control Systems Engineering	
CO No.	**Course Outcomes**
CO1	Understand the basics of control systems and can obtain the transfer function of a system by using various reduction techniques
CO2	Analyze the time response of first and second order system, its errors and methods to control by controllers with the aid of MATLAB
CO3	Analyze various frequency response methods and compensation techniques using MATLAB
CO4	Evaluate the stability of systems by modern techniques and tools
CO5	Acquire knowledge on state space variable methods and digital control systems aiding for enhancement in research activities

Course Name: Fundamentals of Data Structures in C Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8381/ Fundamentals of Data Structures in C Laboratory	
CO No.	**Course Outcomes**
CO1	Write basic and advanced programs in C
CO2	Implement functions and recursive functions in C
CO3	Implement data structures using C
CO4	Implement stack and Queue using C
CO5	Choose appropriate sorting algorithm for an application and implement it in a modularized way

Course Name: Analog & Digital Circuits Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name: EC8361/ Analog & Digital Circuits Laboratory	
CO No.	**Course Outcomes**
CO1	Design and Test rectifiers, filters and regulated power supplies and Test BJT/JFET amplifiers.
CO2	Differentiate cascode and cascade amplifiers.
CO3	Analyze the limitation in bandwidth of single stage and multi stage amplifier
CO4	Measure CMRR in differential amplifier
CO5	Simulate amplifier circuits using PSpice and Test the digital logic circuits.

Course Name: Interpersonal Skills/Listening &Speaking
Regulation: 2017 **Semester: III**

Course Code/Course Name: HS8381/ Interpersonal Skills/Listening &Speaking	
CO No.	**Course Outcomes**
CO1	Learners will be able to comprehend the importance of listening skill at work place and gain the confidence to talk in English without fear by enquiring and collecting personal information by applying communication strategies and also formulate to produce fragmented sentences.
CO2	Students will be able to comprehend the stages and types of listening and that would help the learners to collect and give the information and also as a part of applying communication strategies.
CO3	Learners will be able to comprehend the importance of lexical chunking which is essential for accuracy and fluency and also able to deliver an informal talk for five minutes and follow the gist in listening skill for effective listening.
CO4	Students will be able to comprehend the importance of listening skill and being an active listener the learners will be able to give the verbal and non-verbal feedback and also give up irksome by participating in group discussion
CO5	Learners will be able to participate confidently and appropriately in conversations both formal and informal and giving directions and instructions in academic and business contexts and also get ready for effective presentations in group/pair and individually for attaining successful career

Course Name: Probability & Random Processes
Regulation: 2017 **Semester: IV**

Course Code/Course Name: MA8451/ Probability & Random Processes	
CO No.	**Course Outcomes**
CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
CO3	Apply the concept random processes in engineering disciplines.
CO4	Understand and apply the concept of correlation and spectral densities.
CO5	Able to analyze the response of random inputs to linear time invariant systems.

Course Name: Electronic Circuits II
Regulation: 2017 **Semester: IV**

Course Code/Course Name: EC8452/ Electronic Circuits II	
CO No.	**Course Outcomes**
CO1	Design and analyze feedback amplifiers
CO2	Analysis and design of LC and RC oscillators
CO3	Analysis and design of tuned amplifier.
CO4	Design wave shaping circuits and multivibrators
CO5	Design power amplifier and DC convertors.

Course Name: Communication Theory
Regulation: 2017 **Semester: IV**

Course Code/Course Name: EC8451/ Communication Theory	
CO No.	**Course Outcomes**
CO1	Design AM communication systems
CO2	Design Angle modulated communication systems
CO3	Apply the concepts of Random Process to the design of Communication Systems.
CO4	Analyze the noise performance of AM and FM systems
CO5	Gain knowledge in sampling and quantization.

Course Name: Electromagnetic Fields
Regulation: 2017 **Semester: IV**

Course Code/Course Name: EC8451/ Electromagnetic Fields	
CO No.	**Course Outcomes**
CO1	Understand the basic mathematical concept of electric and magnetic fields
CO2	Analyze the field potentials due to static electric field by various laws
CO3	Understand the nature of magnetic forces and materials and to analyze field potential due to static magnetic field
CO4	Analyze the relation between the fields under time varying situations
CO5	Understand the principles of propagation of uniform plane waves.

Course Name: Linear Integrated Circuits
Regulation: 2017 **Semester: IV**

Course Code/Course Name: EC8453/ Linear Integrated Circuits	
CO No.	**Course Outcomes**
CO1	Design linear and non linear applications of OP – AMPS
CO2	Design applications using analog multiplier and PLL
CO3	Design ADC and DAC using OP – AMPS
CO4	Generate waveforms using OP – AMP Circuits
CO5	Analyze special function ICs

Course Name: Environmental Science and Engineering
Regulation: 2017 **Semester: IV**

Course Code/Course Name: GE8291/Environmental Science and Engineering	
CO No.	**Course Outcomes**
CO1	Understand the concept of environment and ecosystems
CO2	Understand the concept of biodiversity
CO3	Explain the causes and effects of environmental pollution and remedial actions to control pollution
CO4	Understand the importance of conversation.
CO5	Create public awareness about human population and maintenance of environment

Course Name: Circuit and Simulation Laboratory
Regulation: 2017 **Semester: IV**

Course Code/Course Name: EC8461/Circuit and Simulation Laboratory	
CO No.	**Course Outcomes**
CO1	Analyze various types of feedback amplifiers
CO2	Design the various types of oscillators.
CO3	Design the tuned amplifiers and wave-shaping circuits.
CO4	Design the different types of multivibrators.
CO5	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

Course Name: Linear Integrated Circuit Laboratory **Regulation: 2017**
Semester: IV

Course Code/Course Name: EC8462/ Linear Integrated Circuit Laboratory	
CO No.	**Course Outcomes**
CO1	Design linear and non linear applications of OP – AMPS
CO2	Design applications using analog multiplier and PLL
CO3	Design ADC and DAC using OP – AMPS
CO4	Generate waveforms using OP – AMP Circuits
CO5	Analyze special function ICs

Course Name: Digital Communication
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8501/ Digital Communication	
CO No.	**Course Outcomes**
CO1	Understand the knowledge in various communication techniques
CO2	Work in sampling and PCM schemes
CO3	Understand fundamentals of Waveform coding
CO4	Work with band pass signaling schemes
CO5	Understand fundamentals of digital modulation schemes

Course Name: Discrete-Time Signal Processing
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8553/ **Discrete-Time Signal Processing**	
CO No.	**Course Outcomes**
CO1	Apply DFT for the analysis of digital signals and systems
CO2	Design IIR and FIR filters
CO3	Characterize the effects of finite precision representation on digital filters
CO4	Design multirate filters
CO5	Apply adaptive filters appropriately in communication systems

Course Name: Computer Architecture &Organization
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8552/ Computer Architecture & Organization	
CO No.	**Course Outcomes**
CO1	Describe data representation, instruction formats and the operation of a digital computer
CO2	Illustrate the fixed point and floating-point arithmetic for ALU operation
CO3	Discuss about implementation schemes of control unit and pipeline performance
CO4	Explain the concept of various memories, interfacing and organization of multiple processors
CO5	Discuss parallel processing technique and unconventional architectures

Course Name: Communication Networks
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8551/ Communication Networks	
CO No.	**Course Outcomes**
CO1	Discuss about components of computer networks
CO2	Describe the various inter networking protocols
CO3	Illustrate the flow of information from one node to another in a communication network.
CO4	Understand the features of TCP/UDP
CO5	Describe the functionality at each layer for a given application

Course Name: Basics of Biomedical Instrumentation
Regulation: 2017 **Semester: V**

Course Code/Course Name: OMD551/ Basics of Biomedical Instrumentation	
CO No.	**Course Outcomes**
CO1	The different bio potential and its propagation
CO2	The different electrode placement for various physiological recording
CO3	Design bio amplifier for various physiological recording
CO4	Various technique non-electrical physiological measurements
CO5	Different biochemical measurements

Course Name: Total Quality Management
Regulation: 2017 **Semester: V**

Course Code/Course Name: / Total Quality Management	
CO No.	**Course Outcomes**
CO1	To understand the evolution and concepts of TQM To study the various principles
CO2	To study the various TQM principles
CO3	To apply tools and techniques of quality management to manufacturing processes
CO4	To understand the Quality Function Development
CO5	To understand various quality systems

Course Name: Digital Signal Processing Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8562/ Digital Signal Processing Laboratory	
CO No.	**Course Outcomes**
CO1	Carry out basic signal processing operations.
CO2	Demonstrate their abilities towards Matlab based implementation of various DSP Syatems
CO3	Analyze the Architecture of a DSP Processor.
CO4	Design and Implement the FIR and IIR filters in DSP processor for performing filtering operations over real time signals.
CO5	Design DSP systems for various applications of DSP.

Course Name: Communication Systems Laboratory **Regulation: 2017**
Semester: V

Course Code/Course Name: EC8561/ Communication Systems Laboratory	
CO No.	**Course Outcomes**
CO1	Simulate & validate the various functional modules of a communication system & Apply various channel coding schemes
CO2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes
CO3	Apply various channel coding schemes
CO4	demonstrate their capabilities towards the improvement of the noise performance of communication system
CO5	Simulate end-to-end communication Link

Course Name: Communication Networks Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name: EC8563/ Communication Networks Laboratory	
CO No.	**Course Outcomes**
CO1	Demonstrate the communication between two desktop computers.
CO2	Implement the different OSI layer protocols.
CO3	Implement and compare the various routing algorithms
CO4	Implement the cryptography techniques
CO5	Implement both wired and wireless networks

Course Name: Microprocessors and Microcontrollers
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC8691/ Microprocessors and Microcontrollers	
CO No.	**Course Outcomes**
CO1	Outline the architecture of 8086 microprocessor
CO2	Design and implement programs on 8086 microprocessor.
CO3	Construct aspects of I/O and Memory Interfacing circuits.
CO4	Infer the architecture of 8051 Microcontroller
CO5	Design and implement 8051 microcontroller based systems.

Course Name: VLSI Design
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC8095/ VLSI Design	
CO No.	**Course Outcomes**
CO1	Realize the concepts of digital building blocks using MOS transistor
CO2	Design combinational MOS circuits and power strategies
CO3	Design and construct Sequential Circuits and Timing systems
CO4	Design arithmetic building blocks and memory subsystems
CO5	Apply and implement FPGA design flow and testing

Course Name: Wireless Communication
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC 8652/ Wireless Communication	
CO No.	**Course Outcomes**
CO1	Characterize 1 wireless channels
CO2	Design and implement various signaling schemes for fading channels
CO3	Design a cellular system
CO4	Compare multipath mitigation techniques and analyze their performance
CO5	Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance

Course Name: Principles of Management
Regulation: 2017 **Semester: VI**

Course Code/Course Name: MG8591/ Principles of Management	
CO No.	**Course Outcomes**
CO1	Explain the elements of Management and Organization
CO2	Summarize the types, policies, tools and techniques in Planning in Management
CO3	Relate the job design and human resource management in Organizing.
CO4	Illustrate the skills of leadership and communication.
CO5	Interpret the controlling techniques in Management

Course Name: Transmission Lines and RF Systems
Regulation: 2013 **Semester: VI**

Course Code/Course Name: EC8651/ TransmissionLinesand RF Systems	
CO No.	**Course Outcomes**
CO1	Explain the characteristics of transmission lines and its losses
CO2	Write about the standing wave ratio and input impedance in high frequency transmission lines
CO3	Analyze impedance matching by stubs using smith charts
CO4	Analyze the characteristics of TE and TM waves
CO5	Design a RF transceiver system for wireless communication

Course Name: Intellectual Property Rights
Regulation: 2017 **Semester: VI**

Course Code/Course Name: GE 8075 / Intellectual Property Rights	
CO No.	**Course Outcomes**
CO1	Review an intellectual property portfolio and comprehend the extend of their protection
CO2	Develop a business plan that advances the value of their intellectual property portfolio
CO3	Develop a strategy of marketing their intellectual property and understood some negotiation process
CO4	Explain some of the limits of their intellectual property rights and comprehend some basic legal pitfalls

Course Name: Microprocessors and Microcontrollers Laboratory
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC8681/ **Microprocessors and Microcontrollers Laboratory**	
CO No.	**Course Outcomes**
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations.
CO2	Interface different I/Os with processor.
CO3	Generate waveforms using Microprocessors.
CO4	Execute Programs in 8051.
CO5	Explain the difference between simulator and Emulator.

Course Name: VLSI Design Laboratory
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC 8661/ VLSI Design Laboratory	
CO No.	**Course Outcomes**
CO1	Write HDL code for basic as well as advanced digital integrated circuit
CO2	Write HDL code for basic as well as advanced digital integrated circuit
CO3	Import the logic modules into FPGA Boards
CO4	Synthesize Place and Route the digital IPs
CO5	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDAtools

Course Name: Technical Seminar
Regulation: 2017 **Semester: VI**

Course Code/Course Name: EC8611/ Technical Seminar	
CO No.	**Course Outcomes**
CO1	To study research papers for understanding of a new field, in the absence of a textbook, to summarize and review them.
CO2	To identify promising new directions of various cutting edge technologies
CO3	To impart skills in preparing detailed report describing the project and results
CO4	To effectively communicate by making an oral presentation before an evaluation committee

Course Name: Antennas and Microwave Engineering
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8701/ Antennas and Microwave Engineering	
CO No.	**Course Outcomes**
CO1	Understand the basic principles in antenna and microwave system design
CO2	Enhance the student knowledge in the area of various antenna designs
CO3	Interpret the knowledge about antenna arrays and its applications
CO4	Demonstrate the working of microwave components
CO5	Analyze the Microwave Design principles

Course Name: Optical Communication
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8751/ Optical Communication	
CO No.	**Course Outcomes**
CO1	Classify the various optical fiber modes and configurations associated with optical fiber
CO2	Explain the various signal degradation factors associated with optical fiber
CO3	Illustrate the various optical sources and their use in the optical communication system
CO4	Illustrate the various optical detectors and their use in the optical communication system
CO5	Analyze the digital transmission and its associated parameters on system

Course Name: Embedded and Real Time Systems
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8791/Embedded and Real Time Systems	
CO No.	**Course Outcomes**
CO1	Describe the architecture and programming of ARM processor
CO2	Outline the concepts of embedded systems
CO3	Use the system design techniques to develop software for embedded systems
CO4	Differentiate between the general purpose operating system and the real time operating system
CO5	Explain the basic concepts of real time Operating system design & Model real-time applications using embedded system concepts

Course Name: Adhoc and Wireless Sensor Networks
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8702/Adhoc and Wireless Sensor Networks	
CO No.	**Course Outcomes**
CO1	Know the basics of Ad hoc networks and Wireless Sensor Networks
CO2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
CO3	Apply the knowledge to identify appropriate physical and MAC layer protocols
CO4	Understand the transport layer and security issues possible in Ad hoc and sensor networks
CO5	Be familiar with the OS used in Wireless Sensor Networks and build basic modules

Course Name: Disaster Management
Regulation: 2017 **Semester: VII**

Course Code/Course Name: GE8071/Disaster Management	
CO No.	**Course Outcomes**
CO1	Describe the basic concepts of disaster and hazards in India.
CO2	List various types of natural disaster and various manmade disasters.
CO3	Elaborate on the Principles of disasters management.
CO4	Explain the application of modern techniques used in disaster mitigation and management.
CO5	Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.

Course Name: Supply Chain Management
Regulation: 2017 **Semester: VII**

Course Code/Course Name: OME752/Supply Chain Management	
CO No.	**Course Outcomes**
CO1	Understand fundamental supply chain management concepts
CO2	Understand the design factors and various design options of distribution networks in industries
CO3	Understand the framework of supply chain networks and functions
CO4	Understand the foundational role of logistics as it relates to transportation and warehousing
CO5	Understand the supply chain management in IT industries

Course Name: Embedded Laboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8711/ Embedded Laboratory	
CO No.	**Course Outcomes**
CO1	Write programs in ARM for a specific Application
CO2	Interface memory and Write programs related to memory operations
CO3	Interface A/D and D/A convertors with ARM system
CO4	Write programs for interfacing keyboard, display, motor and sensor.
CO5	Formulate a mini project using embedded system

Course Name: Advanced Communication Laboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name: EC8761/Advanced Communication Laboratory	
CO No.	**Course Outcomes**
CO1	Analyze the performance of simple optical link by measurement of losses.
CO2	Analyzing the mode characteristics of fiber.
CO3	Analyze the eye pattern, pulse broadening of optical fiber and the impact of BER.
CO4	Estimate the wireless channel characteristics and analyze the performance of wireless communication system.
CO5	Understand the intricacies in microwave system design

Course Name: Professional Ethics in Engineering
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: GE8076/ Professional Ethics in Engineering	
CO No.	**Course Outcomes**
CO1	Realize the importance of human values
CO2	Apply engineering ethics in his career
CO3	Analyze the Codes of Ethics and Industrial Standards
CO4	Realize social responsibility and rights that can be utilized in terms of professionalism
CO5	Realize various global issues and its importance

Course Name: Satellite Communication
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: EC8094/Satellite Communication	
CO No.	**Course Outcomes**
CO1	To discuss the orbital parameter, and to calculate the orbital determination and launching methods for different types of satellites
CO2	To inspect spacecraft sub system and Antenna subsystem
CO3	To examine earth space systems and design satellite link with various parameters like antenna gain, C/N,EIRP
CO4	To distinguish multiple access techniques like TDMA, CDMA and FDMA along with encryption Techniques
CO5	Classify different types of satellites for broadcasting & special applications

Course Name: Project Work
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: EC8811/ Project Work	
CO No.	**Course Outcomes**
CO1	To identify & ability to solve a specific problem
CO2	Analyzing & identifying solution methodology by performing literature review
CO3	To Apply modern engineering tools, software and equipment to analyze the problems
CO4	To Evaluate & justify the progress of the project by oral presentation to the review committee
CO5	To compose project reports for the identified problem and to develop skill of working in a team

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Outcome for Regulation -2017

Course Name: Communicative English

Regulation: 2017 **Semester: I**

Course Code/Course Name:HS8151 /Communicative English	
CO. No	**Course Outcome**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name: Engineering Mathematics – I

Regulation: 2017 **Semester: I**

Course Code/Course Name:MA8151 /Engineering Mathematics – I	
CO. No	**Course Outcome**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	Use to analyze Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's), Trigonometric substitutions and Improper integrals.
C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name: Engineering Physics

Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151/Engineering Physics	
CO. No	**Course Outcome**
C103.1	To acquire the knowledge on the basics of properties of matter and its applications.
C103.2	To obtain the knowledge about concepts of waves and optical devices and their applications in fiber optics.
C103.3	To gain the knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C103.4	To get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	To understands the basics of crystals, their structures and different crystal growth techniques.

Course Name: Engineering Chemistry

Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/Engineering Chemistry	
CO. No	**Course Outcome**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources.

Course Name: Problem Solving and Python Programming

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8151 /Problem Solving and Python Programming	
CO. No	**Course Outcome**
C105.1	Develop algorithmic solutions to simple computational problems**.**
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions.
C105.4	Represent compound data using Python lists, tuples, and dictionaries.
C105.5	Read and write data from/to files in Python Programs.

Course Name: Engineering Graphics

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8152 /Engineering Graphics	
CO. No	**Course Outcome**
C106.1	To familiarize with the fundamentals and standards of Engineering graphics perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.2	To perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	To project orthographic projections of lines and plane surfaces.
C106.4	To draw projections and solids and development of surfaces.
C106.5	To visualize and to project isometric and perspective sections of simple solids.

Course Name: Problem Solving and Python Programming Laboratory

Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8161/Problem Solving and Python Programming Laboratory	
CO.No	**Course Outcome**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name: Physics and Chemistry Laboratory

Regulation: 2017 **Semester: I**

Course Code/Course Name:BS8161 /Physics and Chemistry Laboratory	
CO. No	**Course Outcome**
C108.1	The hands on exercises undergone by the students will help them to apply Physics principles of elasticity to evaluate engineering properties of materials.
C108.2	The students can able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	The Students can able to analyze the velocity and compressibility of the given liquid using Ultrasonic interferometer.
C108.4	Students will be able to acquire hands on knowledge in the quantitative chemical analysis of water related specifications.
C108.5	Students will be able to understand different types of instruments for analyzing quality parameters.

Course Name: Technical English

Regulation: 2017 **Semester: II**

Course Code/Course Name:HS8251 /Technical English	
CO. No	**Course Outcome**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly.

Course Name: Engineering Mathematics – II

Regulation: 2017 **Semester: II**

Course Code/Course Name:MA8251 /Engineering Mathematics – II	
CO. No	**Course Outcome**
C110.1	To understand the concepts of Eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledge of Gradient, divergence and curl of a vector point function and related identities, the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping.
C110.4	To understand the techniques of complex integration.
C110.5	To interpret Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name: Physics for Electronics Engineering

Regulation: 2017 **Semester: II**

Course Code/Course Name:PH8253 /Physics for Electronics Engineering	
CO. No	**Course Outcome**
C111.1	To gain knowledge on classical and quantum electron theories and energy band structures.
C111.2	To acquire knowledge on basics of semiconductor physics and its applications in various devices.
C111.3	To get knowledge on magnetic and dielectric properties of materials.
C111.4	To adequate the necessary understanding on the functioning of optical materials for optoelectronics.

C111.5	To understand the basics of quantum structures and their applications in spintronics and carbon electronics.

Course Name: Basic Civil and Mechanical Engineering

Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8252/Basic Civil and Mechanical Engineering	
CO. No	**Course Outcome**
C112.1	To appreciate the Civil and Mechanical Engineering components of Projects.
C112.2	To explain the usage of construction material and proper selection of construction materials.
C112.3	To measure distances and area by surveying
C112.4	To demonstrate working principles of power plants petrol and diesel engine.
C112.5	To elaborate the components of refrigeration and Air conditioning cycle.

Course Name: Circuit Theory

Regulation: 2017 **Semester: II**

Course Code/Course Name:EE8251/Circuit Theory	
CO. No	**Course Outcome**
C113.1	To impart knowledge on the concepts of electric circuits.
C113.2	To impart knowledge on the concepts of network reduction technique and theorem for DC and AC circuits.
C113.3	To ability and analyze AC and DC circuits transients.
C113.4	To ability and analyze on the concepts of three phase balanced circuits and unbalanced circuits with star and delta connected loads.
C113.5	To impart knowledge on the concepts of frequency response of resonant circuits.

Course Name: Environmental Science and Engineering

Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8291 /Environmental Science and Engineering	
CO. No	**Course Outcome**
C114.1	To understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C114.2	To understand about pollution on the environment.
C114.3	To study the various natural resources.
C114.4	To understand the impact of social issues on the environment.
C114.5	To study about human population on the environment.

Course Name: Engineering Practices Laboratory

Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261 /Engineering Practices Laboratory	
CO. No	**Course Outcome**
C115.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C115.2	Can carry out the basic machining operations and Make the models using sheet metal works.
C115.3	To Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
C115.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C115.5	To Elaborate on the components, gates, soldering practices.

Course Name: Electric Circuits Laboratory

Regulation: 2017 **Semester: II**

Course Code/Course Name:EE8261 /Electric Circuits Laboratory	
CO. No	**Course Outcome**
C116.1	The students will have the ability to understand and apply circuit theorems
C116.2	The various experiments in the areas of apply circuit theorems and concepts in engineering applications
C116.3	Students will be able to Simulate electric circuits.
C116.4	Develop the knowledge in Circuit Thermos
C116.5	Students will be able to think innovatively and also improve the creative skills that are essential for engineering.

Course Name: Transforms and Partial Differential Equations

Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8353 /Transforms and Partial Differential Equations	
CO. No	**Course Outcome**
C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.

C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Name: Digital Logic Circuits

Regulation: 2017 **Semester: III**

Course Code/Course Name:EE8351 /Digital Logic Circuits	
CO. No	**Course Outcome**
C202.1	Ability to understand and study various number systems and simplify the logical expressions using Boolean functions.
C202.2	Ability to design combinational and sequential circuits.
C202.3	Ability to design various synchronous circuits.
C202.4	To describe and analyze the Operation of Programmable Logic Device.
C202.5	To develop the VHDL coding for combinational logic and Sequential circuits.

Course Name: Electromagnetic Theory

Regulation: 2017 **Semester: III**

Course Code/Course Name:EE8391/Electromagnetic Theory	
CO. No	**Course Outcome**
C203.1	Ability to understand the basic mathematical concepts related to electromagnetic vector fields.
C203.2	Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications.
C203.3	Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.
C203.4	Ability to understand the different methods of emf generation and Maxwell's equations.
C203.5	Ability to understand the basic concepts electromagnetic waves and characterizing Parameters and Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems

Course Name: Electrical Machines – I

Regulation: 2017 **Semester: III**

Course Code/Course Name:EE8301/Electrical Machines – I	
CO. No	**Course Outcome**
C204.1	Able to understand the Magnetic-circuit analysis and introduce magnetic materials.
C204.2	Ability to understand the prediction of performance of transformers.
C204.3	Ability to study of working principles of electrical machines using the concepts of electromechanical energy conversion principles.
C204.4	Ability to analyze and expressions for generated voltage and torque developed in all Electrical Machines and Generator types, determination of their no-load/load characteristics.
C204.5	To understand the Various losses taking place in D.C. Motor and to study the different testing methods to arrive at their performance.

Course Name: Electron Devices and Circuits

Regulation: 2017 **Semester: III**

Course Code/Course Name:EC8353 /Electron Devices and Circuits	
CO. No	**Course Outcome**
C205.1	Explain the structure and working operation of basic electronic devices.
C205.2	Able to identify and differentiate both active and passive element .
C205.3	Analyze the characteristics of different electronic devices such as diodes and transistors.
C205.4	Choose and adapt the required components to construct an amplifier circuit.
C205.5	Employ the acquired knowledge in design and analysis of oscillators.

Course Name: Power Plant Engineering

Regulation: 2017 **Semester: III**

Course Code/Course Name:ME8792 /Power Plant Engineering	
CO. No	**Course Outcome**
C206.1	To understand different systems of power generation methods and steam boilers.
C206.2	To analyze and optimize different thermodynamic cycles in various power plants.
C206.3	To apply nuclear science in power generation using mechanical systems and handling of nuclear waste disposal.
C206.4	To utilize different renewable sources of energy in modern power generating systems.
C206.5	To evaluate the cost analysis of power tariff by load curves and load duration curve method.

Course Name: Electronics Laboratory

Regulation: 2017 **Semester: III**

Course Code/Course Name:EC8311/Electronics Laboratory	
CO. No	**Course Outcome**
C207.1	Study CRO for amplitude, Frequency and phase measurement.
C207.2	Able to understand Characteristics of Semiconductor Diodes and Rectifier circuits.
C207.3	To understand characteristics of Bipolar devices and design.
C207.4	To understand characteristics of Unipolar devices and design.
C207.5	To understand characteristics of photo Semi conductor Devices and Passive filters.

Course Name: Electrical Machines Laboratory – I

Regulation: 2017 **Semester: III**

Course Code/Course Name:EE8311 /Electrical Machines Laboratory – I	
CO. No	**Course Outcome**
C208.1	Analyze the characteristics of DC shunt generator DC compound generator and calculate critical resistance and critical speed.
C208.2	Examine load characteristics of DC shunt, series and compound motor and Identify its maximum efficiency operating point.
C208.3	Predict the efficiency of DC shunt machine in different methods.
C208.4	Explain the load characteristics of single phase and three phase transformer, separate the different losses and to find the efficiency.
C208.5	Predetermine the equivalent circuit parameters of single phase transformer in two different methods and compare the results.

Course Name: Numerical Methods

Regulation: 2017 **Semester: IV**

Course Code/Course Name:MA8491 /Numerical Methods	
CO. No	**Course Outcome**
C209.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.
C209.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
C209.3	Apply the numerical techniques of differentiation and integration for engineering problems.
C209.4	Understand the knowledge of various techniques and methods for solving first and second

	order ordinary differential equations.
C209.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

Course Name: Electrical Machines – II

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8401/Electrical Machines – II	
CO. No	**Course Outcome**
C210.1	Understand the constructional details and the performance of salient and non – salient type synchronous generators.
C210.2	Understand the Principle of operation and performance of synchronous motor.
C210.3	Understand the construction, principle of operation and performance of three phase induction machines.
C210.4	Understand the starting and speed control methods of three phase motor
C210.5	Understand the construction, principle of operation and performance of single phase induction motors and special machines

Course Name: Transmission and Distribution

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8402 /Transmission and Distribution	
CO. No	**Course Outcome**
C211.1	To understand the importance and the functioning of transmission line parameters.
C211.2	To understand the concepts of Lines and Insulators.
C211.3	To acquire knowledge on the performance of Transmission lines.
C211.4	To understand the importance of distribution of the electric power in power system and acquire knowledge on Underground cables.
C211.5	To become familiar with the function of different components used in Transmission and Distribution levels of power system and modeling of these components.

Course Name: Measurements and Instrumentation

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8403 /Measurements and Instrumentation	
CO. No	**Course Outcome**
C212.1	To acquire knowledge on Basic functional elements of instrumentation.

C212.2	To understand the concepts of Fundamentals of electrical and electronic instruments.
C212.3	Ability to compare between various measurement techniques.
C212.4	To acquire knowledge on Various storage and display devices.
C212.5	To understand the concepts Various transducers and the data acquisition systems.

Course Name: Linear Integrated Circuits and Applications

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8451 /Linear Integrated Circuits and Applications	
CO. No	**Course Outcome**
C213.1	Understand the procedure for the fabrication of IC.
C213.2	Understand the DC & AC characteristics of Operational amplifier and Design basic circuits using OP-AMP.
C213.3	Understand the applications of Operational amplifier and design the circuit
C213.4	Understand the internal functional blocks of special ICs like Timer and PLL and design the circuit.
C213.5	Understand types of voltage regulators and the special ICs.

Course Name: Control Systems

Regulation: 2017 **Semester: IV**

Course Code/Course Name:IC8451/Control Systems	
CO. No	**Course Outcome**
C214.1	Understand the basics of control systems and can obtain the transfer function of a system by using various reduction techniques.
C214.2	Analyze the time response of first and second order system, its errors and methods to control by various controllers.
C214.3	Analyze various frequency response plots and can obtain the frequency domain specifications.
C214.4	Evaluate the stability of systems and can able to design the compensators.
C214.5	Acquire knowledge on state space variable methods and apply in project/ research activities.

Course Name: Electrical Machines Laboratory – II

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8411 /Electrical Machines Laboratory – II	
CO. No	**Course Outcome**
C215.1	Determine the voltage regulation of three phase alternator in different methods and compare the results.
C215.2	Determine the voltage regulation of salient pole synchronous machine and find negative &zero sequence components.
C215.3	Explain the V and inverted V characteristics of three phase synchronous machine at different load condition.
C215.4	Determine and pre determine performance characteristics of three phase induction motor.
C215.5	Determine and pre determine performance characteristics of single phase induction motor.

Course Name: Linear and Digital Integrated Circuits Laboratory

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8461 /Linear and Digital Integrated Circuits Laboratory	
CO. No	**Course Outcome**
C216.1	Implementation of Boolean Functions and Design Adder, Subtractor , code converter, Parity generator and checker .
C216.2	Design Encoder, decoder, Multiplexer and Demultiplexer.
C216.3	Design 3bit Synchronous and Asynchronous and 4-Bit Shift register.
C216.4	Design basic OP-AMP application circuits and Variability Voltage Regulator using IC LM317.
C216.5	Design Monostable and Astable Multivibrator and Voltage to frequency characteristics of NE/ SE 566 IC.

Course Name: Technical Seminar

Regulation: 2017 **Semester: IV**

Course Code/Course Name:EE8412 /Technical Seminar	
CO. No	**Course Outcome**
C217.1	Present seminar in the field of electrical and electronics engineering subjects studied.
C217.2	Solve objective type questions in the field of electrical and electronics engineering.
C217.3	Communicate effectively, the subjects learned in the form of seminar presentation.

C217.4	Communicate effectively, the modern trends in the field of electrical and electronics engineering.
C217.5	Answer effectively during technical interviews.

Course Name: Power System Analysis

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8501 /Power System Analysis	
CO. No	**Course Outcome**
C301.1	Understand the per unit system and Formation of Y-Bus matrix in power system
C301.2	Develop power flow equation and Apply the concept iterative method to power flow problem
C301.3	Analyze the Symmetrical Fault occur in power system
C301.4	Analyze Un symmetrical Fault occur in power system
C301.5	Understand stability of power system and analyze the stability by numerical methods

Course Name: Microprocessor and Micro controller

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8551 /Microprocessor and Micro controller	
CO. No	**Course Outcome**
C302.1	To acquire knowledge in Addressing modes & instruction set of 8085 & 8051.
C302.2	To need & use of Interrupt structure 8085 & 8051
C302.3	To understand the importance of Interfacing.
C302.4	To explain the architecture of Microprocessor and Microcontroller
C302.5	To write the assembly language programme.

Course Name: Power Electronics

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8552/Power Electronics	
CO. No	**Course Outcome**
C303.1	Explain the significance of switching devices and its application to power converters and demonstrate the triggering circuit and snubber circuits.
C303.2	Compare the operation of two, three Pulse Converters and draw output waveforms with and without source and load inductance.
C303.3	Classify the operation of Choppers and outline the application of SMPS.

C303.4	Analyze the operation of single phase and three phase Inverters with and without PWM techniques.
C303.5	Illustrate the operation of AC voltage controller and cyclo converter and its application.

Course Name: Digital Signal processing

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8591/ Digital Signal processing	
CO. No	**Course Outcome**
C304.1	Understand the different types of signals and systems and their representation in continue time and Discrete time.
C304.2	Apply Z-Transform and DTFT in Discrete time signals and discrete time systems
C304.3	Apply Radix-2 Decimation in Time (DIT) and Decimation in Frequency (DIF) FFT Algorithm to Compute Discrete Fourier Transform.
C304.4	Design the Infinite Impulse Response (IIR) filters and Finite Impulse Response (FIR) filters.
C304.5	Understand various architectures of Digital signal processors.

Course Name: Object oriented programming

Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8392/Object Oriented programming	
CO. No	**Course Outcome**
C305.1	Develop and implement java programs for simple applications that makes use of classes , package and interfaces
C305.2	Develop and implement java programs array list and exception handling
C305.3	Design applications using file processing multithreading
C305.4	Develop Java applications with threads and generic classes
C305.5	Develop Java programs for event handling

Course Name: Sensors & Transducer

Regulation: 2017 **Semester: V**

Course Code/Course Name:OAN551/Sensors & Transducer	
CO. No	**Course Outcome**
C312.1	To Expertise in various calibration techniques and signal types for sensors
C312.2	To Apply the various sensors in the Automotive applications
C312.3	To Apply the various sensors in the Mechatronics applications

C312.4	To Study the basic principles of various smart sensors.
C312.5	To Implement the DAQ systems with different sensors for real time applications

Course Name: Control and Instrumentation laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8511 /Control and Instrumentation laboratory	
CO. No	**Course Outcome**
C315.1	Determine the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system.
C315.2	Compute the transfer function of a Field controlled DC motor experimentally and Design the Lag, Lead and Lag-Lead Compensators for the given specifications and hook up it using RC networks.
C315.3	Draw the transient response of Position Control system experimentally, Determine the Characteristics of Synchro-Transmitter- Receiver and Use the MATLAB for the Simulation of Control Systems.
C315.4	Calculate the unknown Capacitance, Inductance and Resistance using AC and DC Bridges experimentally and Analyze the Dynamics of Sensors/Transducers (a) Temperature (b) Pressure (c) Displacement (d) Optical (e) Strain and (f) Flow.
C315.5	Measure the Power and Energy experimentally; Analyze the Signal Conditioning units (a) Instrumentation Amplifier (b) ADC and DACs.

Course Name: Professional Communication

Regulation: 2017 **Semester: V**

Course Code/Course Name:HS8581/ Professional Communication	
CO. No	**Course Outcome**
C316.1	Apply appropriate communication skills across settings, purposes and audiences.
C316.2	Demonstrate knowledge of communication theory and applications.
C316.3	Practice critical thinking to develop innovative and well-founded perspectives related to the students emphasis. Build and maintain healthy and effective relationships.
C316.4	Use technology to communicate effectively in various settings and contexts.
C316.5	Demonstrate appropriate and professional ethical behavior.

Course Name: Object Oriented Programming Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name:CS8383 /Object Oriented Programming Laboratory	
CO. No	**Course Outcome**
C317.1	Design C++ programs using functions, classes with objects, member functions and constructors.
C317.2	Develop operator and function overloading and run time polymorphism using C++.
C317.3	Develop file handling techniques in C++ for sequential and random access also use Java code for strings.
C317.4	Construct packages and interfaces in Java.
C317.5	Create threads in Java and handle predefined and user defined exceptions.

Course Name: Solid state Drives

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8601/Solid state Drives	
CO. No	**Course Outcome**
C318.1	Ability to study about the steady state operation and transient dynamics of a motor load system and select suitability drive for the given application
C318.2	Analyze the operation of the converter/chopper fed dc drive, both qualitatively and quantitatively.
C318.3	To evaluate the performance and analyze the operation of Induction motor drives
C318.4	Ability to analyze the operation and performance of Synchronous motor drives
C318.5	Ability to analyze and design the current and speed controllers for a closed loop solid state DC motor drive.

Course Name: Protection and Switch gear

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8602/Protection and Switch gear	
CO. No	**Course Outcome**
C319.1	Ability to understand and analyze power system operation, stability, control and protection.
C319.2	Ability to understand the principle of protective schemes and various faults in the Power System Scenario.
C319.3	Ability to examine protection of power system with various protection relays.

C319.4	Able to study the various types of the circuit breakers.
C319.5	Able to impart knowledge, the arc quenching phenomena and the protection against over voltages.

Course Name: Embedded Systems

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8691/Embedded Systems	
CO. No	**Course Outcome**
C320.1	Analyze the basic build process of embedded systems, structural units in embedded processor and selection of processor and memory devices depending upon the applications.
C320.2	Classify the types of I/O device ports and buses and different interfaces for data transfer
C320.3	Modeling of the Embedded Product Development Life Cycle (EDLC) by using different techniques like state machine model, sequential program model and concurrent model
C320.4	Analyze about the basic concept of Real Time Operating Systems and plan to scheduling of different task and compare the features of different types of Real Time Operating Systems
C320.5	Apply the knowledge of programming concepts of Embedded Systems for various applications like Washing Machine automotive and Smart Card System applications

Course Name: Design of Electrical Apparatus

Regulation: 2017 **Semester: VI**

Course Code/Course Name: : EE8002/ Design of Electrical Apparatus	
CO. No	**Course Outcome**
C323.1	To study considerations, limitations and thermal ratings of machine design.
C323.2	To analyze the design parameters of DC machine
C323.3	To analyze the design parameters of DC machine transformers.
C323.4	To analyze the design parameters of induction machines.
C323.5	To analyze the design parameters of synchronous machines

Course Name: Special Electrical Machines

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8005/Special Electrical Machines	
CO. No	**Course Outcome**
C328.1	To impart knowledge on Construction, principle of operation and performance of synchronous reluctance motors.

C328.2	To impart knowledge on the Construction, principle of operation, control and performance of stepping motors.
C328.3	To impart knowledge on the Construction, principle of operation, control and performance of switched reluctance motors.
C328.4	To impart knowledge on the Construction, principle of operation, control and performance of permanent magnet brushless D.C. motors.
C328.5	To impart knowledge on the Construction, principle of operation and performance of permanent magnet synchronous motors.

Course Name: Power Electronics and Drives Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8661/Power Electronics and Drives Laboratory	
CO. No	**Course Outcome**
C332.1	Draw the VI characteristics of SCR and generate the Gate Pulse using R, RC and UJT.
C332.2	Plot the characteristics of MOSFET and IGBT
C332.3	Simulate a single phase AC to DC half and fully controlled converter.
C332.4	Draw the output response of step up and step down MOSFET based chopper and simulate a single phase IGBT based PWM inverter.
C332.5	Plot the output response of AC voltage controller and simulate the Power Electronic Circuits.

Course Name: Microprocessors and Microcontrollers Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8681/Microprocessors and Microcontrollers Laboratory	
CO. No	**Course Outcome**
C333.1	Predict the smallest/ largest number from a given array and to Perform various mathematical operations using 8085 processor
C333.2	Convert the given analog input to digital value and to control the traffic signals using 8085 programming
C333.3	Develop coding to display the given word using keyboard and display controller and for serial communication
C333.4	Manipulate the basic operations involving jumps and loops using 8051 Microcontroller and to interface stepper motor and other devices
C333.5	Design circuits for implementing real time applications

Course Name: Mini Projects

Regulation: 2017 **Semester: VI**

Course Code/Course Name:EE8611/Mini Projects	
CO. No	**Course Outcome**
C334.1	Apply the fundamentals of mathematics, science and engineering knowledge to identify , formulate , design and investigate complex engineering problems of electrical and electronics engineering and allied applications .
C334.2	Apply appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.
C334.3	Apply reasoning informed by the contextual knowledge to assess societal , health, safety, legal and cultural issues with societal and environmental context , applying ethical principles in the field of electrical and electronics engineering and allied applications.
C334.4	Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.
C334.5	Demonstrate the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.

Course Name: High Voltage Engineering

Regulation: 2017 **Semester: VII**

Course Code/Course Name:EE8701 / High Voltage Engineering	
CO. No	**Course Outcome**
C401.1	Identify the causes of over voltage and its effects in power system.
C401.2	Classify the breakdown Mechanisms in Solid, Liquid, gases and Composite dielectrics
C401.3	Design different type of Generating circuit for high voltage D.C and high voltage A.C
C401.4	Measure A.C and D.C high voltage and current using appropriate method
C401.5	Test the transformer ,insulator , circuit breakers, surge diverters and cables also discuss the insulation coordination

Course Name: Power System Operation and Control

Regulation: 2017 **Semester: VII**

Course Code/Course Name: EE8702/Power System Operation and Control	
CO. No	**Course Outcome**
C402.1	Analyze the various load characteristics with load curve and load duration curve.
C402.2	Describe modeling of power-frequency dynamics and design power-frequency controller

C402.3	Explain the modeling of reactive power-voltage interaction and the control actions
C402.4	Solve economic dispatch problems and unit commitment problems in power systems
C402.5	Explain the need of computer controls to energy management using SCADA

Course Name: Renewable Energy Systems

Regulation: 2017 **Semester: VII**

Course Code/Course Name: EE8703/Renewable Energy Systems	
CO. No	**Course Outcome**
C403.1	Ability to create awareness about renewable Energy Sources and technologies
C403.2	Ability to acquire knowledge about Wind energy
C403.3	Ability to acquire knowledge about solar energy
C403.4	Ability to understand basics about biomass energy and various renewable energy resources and technologies and their applications.
C403.5	Ability to recognize current and possible future role of renewable energy sources

Course Name: Signals and Systems

Regulation: 2017 **Semester: VII**

Course Code/Course Name:OEC753/Signals and Systems	
CO. No	**Course Outcome**
C407.1	Understand the different types of signals and systems and their representation in continue time and Discrete time.
C407.2	Understand the concept of Fourier series, Laplace transform and Fourier transform
C407.3	Analyze the continues time system by using Laplace and Fourier transform
C407.4	Analyze Z-Transform and DTFT in Discrete time signals and analyze the system
C407.5	Apply DFT and Z-transform in recursive and non recursive systems

Course Name: Disaster Management

Regulation: 2017 **Semester: VII**

Course Code/Course Name:GE8071/Disaster Management	
CO. No	**Course Outcome**
C408.1	Ability to study varies types of disaster and dos and don'ts during various types of disasters
C408.2	Ability to understand the approaches to disaster risk reduction
C408.3	Ability to understand inter-relationship between disasters and development
C408.4	Able to study the disaster risk management in India
C408.5	Able to impart knowledge , disaster management: applications and case studies and field works

Course Name: Total Quality Management

Regulation: 2017 **Semester: VII**

Course Code/Course Name:GE8077/Total Quality Management	
CO. No	**Course Outcome**
C419.1	Describe the basic of Basic concepts of TQM and its need , Contributions of Deming, Juran and Crosby , Customer focus, Costs of quality.
C419.2	Explain the Leadership, Quality Councils, Employee involvement, Teamwork, Quality circles, Performance appraisal, PDCA cycle, 5S, Kaizen, Supplier partnership.
C419.3	Compare the different tools of quality, New management tools, Six sigma, Bench marking.
C419.4	Estimate the TQM using Control Charts, Taguchi quality loss function, TPM - Concepts, improvement needs and Performance measures.
C419.5	Apply the knowledge using the various System using ISO 9000 - ISO 9001- 2008 , Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 – Concepts etc

Course Name: Power System Simulation Laboratory

Regulation: 2017 **Semester: VII**

Course Code/Course Name:EE8711/Power System Simulation Laboratory	
CO. No	**Course Outcome**
C420.1	Determine the bus impedance and admittance matrices using MATLAB.
C420.2	Apply numerical methods for solving load flow problems and verify using MATLAB.
C420.3	Analyze various faults occurring in power system and simulate the faults using MATLAB.
C420.4	Analyze small signal stability of Single Machine Infinite Bus (SMIB) system and draw the swing curve using MATLAB.
C420.5	Generate the coding for economic dispatch problems and load frequency Dynamics problems using MATLAB.

Course Name: Renewable Energy Systems Laboratory

Regulation: 2017 **Semester: VII**

Course Code/Course Name: EE8712/Renewable Energy Systems Laboratory	
CO. No	**Course Outcome**
C421.1	Ability to understand and analyze Renewable energy systems.
C421.2	The students are well trained in Renewable Energy Sources and technologies.
C421.3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.
C421.4	Ability to simulate the various Renewable energy sources
C421.5	Ability to recognize current and possible future role of Renewable energy sources.

Course Name: Principle of Management

Regulation: 2017 **Semester: VIII**

Course Code/Course Name:	
CO. No	**Course Outcome**
C428.1	Describe the basic of management and its types, skills, management roles, types of business organizations and current trends in business.
C428.2	Explain the nature and purpose of planning , types, objective of planning and decision process
C428.3	Compare the different organization structures, Authorities and responsibilities, Human resource management and training and development.
C428.4	Estimate the individual and group behavior, motivation, job satisfaction, types and theories of leadership, communication and IT.
C428.5	Apply the knowledge using the various System and process of controlling, Budgetary and non-budgetary control techniques, use of computers and IT in Management control, reporting.

Course Name: Micro Controller based System Design

Regulation: 2017 **Semester: VIII**

Course Code/Course Name:	
CO. No	**Course Outcome**
C432.1	Understand the architecture of PIC micro controller (PIC16C6X, PIC16C7X
C432.2	Understand the use of interrupts, Timer modes DAC and Sensor

C432.3	Understand the Interfacing of LCD, Keyboard, ADC, DAC and Sensor with PIC
C432.4	Understand the functional blocks and architecture of ARM Processors
C433.5	Understand Instruction set and Architectural support for operating system

Course Name: Project Work

Regulation: 2017 **Semester: VIII**

Course Code/Course Name:EE8811/Project work	
CO. No	**Course Outcome**
C436.1	Apply the fundamentals of mathematics, science and engineering knowledge to identify , formulate , design and investigate complex engineering problems of electrical and electronics engineering and allied applications .
C436.2	Apply appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.
C436.3	Apply reasoning informed by the contextual knowledge to assess societal , health, safety, legal and cultural issues with societal and environmental context , applying ethical principles in the field of electrical and electronics engineering and allied applications.
C436.4	Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.
C436.5	Demonstrate the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.

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DEPARTMENT OF MECHATRONICS ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF MECHATRONICS ENGINEERING

Courses and Course Outcomes - Regulation 2017

Course Name: Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name:HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name: Engineering Mathematics –I
Regulation: 2017 **Semester: I**

Course Code/Course Name:MA8151/Engineering Mathematics –I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	use to analyse Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's), Trigonometric substitutions and Improper integrals.
C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solvingthe Homogeneous and simultaneous differential equation.

Course Name: Engineering Physics – I
Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151/ Engineering Physics – I	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name: Engineering Chemistry – I
Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/ Engineering Chemistry – I	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources

Course Name: Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8151/Problem Solving and PythonProgramming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions
C105.4	Represent compound data using Python lists, tuples, and dictionaries.
C105.5	Read and write data from/to files in Python Programs

Course Name: Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	To understand and draw different types of projections, curves and scales.
C106.2	Can do orthographic projection of lines and plane surfaces.
C106.3	To design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Able to prepare isometric and perspective sections of simple solids.
C106.5	To create real-time drawings that supports different machine drawing technique apply to different engineering Field.

Course Name: Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8161/Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name: Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: BS8161/ Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysis of water quality related parameters.
C108.5	Students will be able to think innovatively and also improve the creative skills that are essential for engineering.

Course Name: Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name: HS6251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly

Course Name: Engineering Mathematics – II
Regulation: 2017 **Semester: II**

Course Code/Course Name: MA8251/Engineering Mathematics – II	
CO No.	**Course Outcomes**
C110.1	To understand the concepts of eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledge of Gradient, divergence and curl of a vector point function and related identities, the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping
C110.4	To understand the techniques of complex integration
C110.5	To interpret Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name: Materials Science
Regulation: 2017 **Semester: II**

Course Code/Course Name: PH8251/ **Materials Science**	
CO No.	**Course Outcomes**
C111.1	To gain the knowledge on the various phase diagrams and their applications.
C111.2	To acquire knowledge on Fe-Fe3C phase diagram,various microstructures and alloys.
C111.3	To get knowledge on mechanical properties of materials and their measurement.
C111.4	To gain knowledge on magnetic, dielectric and superconducting properties of materials.
C111.5	To understand the basics of ceramics, composites and nanomaterials.

Course Name: Basic Electrical, Electronics and Instrumentation Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8253/ Basic Electrical, Electronics and Instrumentation Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the basics in electric circuits
C112.2	Understand single and three phase circuit
C112.3	Understand electric circuits and working principles of electrical machines
C112.4	Understand the concepts of various electronic devices.
C112.5	Choose appropriate instruments for electrical measurement for a specific application

Course Name: Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8291/ Environmental Science and Engineering	
CO No.	**Course Outcomes**
C113.1	To understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C113.2	To understand about pollution on the environment.
C113.3	To study the various natural resources.
C113.4	To understand the impact of social issues on the environment.
C113.5	To study about human population on the environment.

Course Name: Engineering Mechanics
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8292/Engineering Mechanics	
CO No.	**Course Outcomes**
C114.1	Can illustrate the vectorial and scalar representation of forces and moments
C114.2	Able to analyse the rigid body in equilibrium
C114.3	Can evaluate the properties of surfaces and solids
C114.4	Able to calculate dynamic forces exerted in rigid body
C114.5	Able to determine the friction and the effects by the laws of friction

Course Name: Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C115.2	Can carry out the basic machining operations and Make the models using sheet metal works.
C115.3	ToIllustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings.
C115.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C115.5	To Elaborate on the components, gates, soldering practices.

Course Name: Basic Electrical, Electronics and Instrumentation Engineering Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8261/Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
CO No.	**Course Outcomes**
C116.1	Ability to determine the speed characteristic of different electrical machines
C116.2	Ability to verify circuit laws and theorem.
C116.3	Ability to design simple circuits involving diodes.
C116.4	Ability to design simple circuits involving transistors
C116.5	Ability to use operational amplifiers

Course Name: Transforms and Partial Differential Equations

Regulation: 2017 **Semester: III**

Course Code/Course Name: MA8353 / Transforms and Partial Differential Equations	
CO. No	**Course Outcome**
C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Name: Strength of Materials for Mechanical Engineers

Regulation: 2017 **Semester: III**

Course Code/Course Name: CE8395/ Strength of Materials for Mechanical Engineers	
CO. No	**Course Outcome**
C202.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C202.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
C202.3	Apply basic equation of simple torsion in designing of shafts and helical spring.
C202.4	Calculate the slope and deflection in beams using different methods.
C202.5	Analyze and design thin and thick shells for the applied internal and external pressures.

Course Name: Fluid Mechanics and Machinery

Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8394/ Fluid Mechanics and Machinery	
CO. No	**Course Outcome**
C203.1	Apply mathematical knowledge to predict the properties and characteristics of a fluid.
C203.2	Can analyse and calculate major and minor losses associated with pipe flow in piping networks.
C203.3	Can mathematically predict the nature of physical quantities.
C203.4	Can critically analyse the performance of pumps.
C203.5	Can critically analyse the performance of turbines.

Course Name: Digital Electronics

Regulation: 2017 **Semester: III**

Course Code/Course Name:EC8392/ Digital Electronics	
CO. No	**Course Outcome**
C204.1	Use digital electronics in the present contemporary world
C204.2	Design various combinational digital circuits using logic gates.
C204.3	Do the analysis and design procedures for synchronous and asynchronous sequential circuits.
C204.4	Use the semiconductor memories and related technology.
C204.5	Use electronic circuits involved in the design of logic gates.

Course Name: Electrical Machines and Drives

Regulation: 2017 **Semester: III**

Course Code/Course Name:MT8301/ Electrical Machines and Drives	
CO. No	**Course Outcome**
C205.1	Get the basic knowledge about the Electric circuits and transformers.
C205.2	Understand the various types of electrical motors.
C205.3	Know about speed control and starting methods DC and induction motors.
C205.4	Understand about various types of electrical drives.
C205.5	Get exposure with solid state drives.

Course Name: Analog Devices and Circuits

Regulation: 2017 **Semester: III**

Course Code/Course Name:MT8302/ Analog Devices and Circuits	
CO. No	**Course Outcome**
C206.1	Apply the various switching devices in electronic circuits.
C206.2	Work with various applications of amplifiers.
C206.3	Design various circuits using ICs.
C206.4	Test and measure different parameters available in electronic circuits.
C206.5	Explain the principles of various display devices.

Course Name:Strength of Materials and Fluid Mechanics & Machinery Laboratory

Regulation: 2017 **Semester: III**

Course Code/Course Name:CE8381/ Strength of Materials and Fluid Mechanics & Machinery Laboratory	
CO. No	**Course Outcome**
C207.1	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.
C207.2	Determine the flow rate and Co-efficient of discharge for given Orificemeter and Venturimeter.
C207.3	Determine the flow rate of Rotameter and Analyzing the performance of Gear pump.
C207.4	Calculate the friction factor of pipes made up of various materials.
C207.5	Compare the performance characteristics of various hydraulic turbines, positive and Variable displacement pumps.

Course Name: Electrical Machines and Drives Laboratory

Regulation: 2017 **Semester: III**

Course Code/Course Name:EE6362/Electrical Machines and Drives Laboratory	
CO. No	**Course Outcome**
C208.1	Test and assess the performances of the DC motors and single phase AC motor for varying load.
C208.2	Control the speed of AC and DC motor.
C208.3	To understand and analyze the concept of synchronous motor by conducting (or) demonstration through load test.
C208.4	To analyze the performance characteristics of single phase and Polyphase Induction Machines.
C208.5	Analyze and present the findings of experimental observations in both written and oral format.

Course Name: Interpersonal Skills/Listening & Speaking

Regulation: 2017 **Semester: III**

Course Code/Course Name: HS8381/Interpersonal Skills/Listening & Speaking	
CO. No	**Course Outcome**
C209.1	Listen and respond appropriately.
C209.2	Participate in group discussions.
C209.3	Make effective presentations .
C209.4	Participate confidently and appropriately in conversations both formal and informal.
C209.5	Strategies for interactive communication.

Course Name: Statistics and Numerical Methods

Regulation: 2017 **Semester: IV**

Course Code/Course Name: MA8452/ Statistics and Numerical Methods	
CO. No	**Course Outcome**
C210.1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
C210.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
C210.3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
C210.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
C210.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques withengineering applications.

Course Name: Manufacturing Technology

Regulation: 2017 **Semester: IV**

Course Code/Course Name:ME8392/Manufacturing Technology	
CO. No	**Course Outcome**
C211.1	Apply the different casting process and its use in industry for component production.
C211.2	Apply the different welding process.
C211.3	Understand the process involved in conventional machining process.
C211.4	Understand the process involved in Forming, Shaping of plastics.
C211.5	Understand the principles of metal forming and powder metallurgy.

Course Name: Microprocessors and Microcontrollers

Regulation: 2017 **Semester: IV**

Course Code/Course Name:MT8491/Microprocessors and Microcontrollers	
CO. No	**Course Outcome**
C212.1	Distinguish the feature of the8085microprocessor, Hardware Architecture and PIN diagram.
C212.2	Demonstrate programming proficiency using the various addressing mode sand data transfer instructions of 8085 microprocessor.
C212.3	Acquaint the knowledge on architecture and programming of Microcontroller 8051.
C212.4	Illustrate the interrupts handling and demonstrate peripherals applications in different IC and know about A/D and D/A converters.
C212.5	Apply the programming concepts to interface the hardware units with microprocessor and Microcontroller.

Course Name: Kinematics of Machinery

Regulation: 2017 **Semester: IV**

Course Code/Course Name:ME8492/ Kinematics ofMachinery	
CO. No	**Course Outcome**
C213.1	Discuss the basics of mechanism.
C213.2	Calculate velocity and acceleration in simple mechanisms.
C213.3	Develop CAM profiles.
C213.4	Solve problems on gears and gear trains.
C213.5	Examine friction in machine elements.

Course Name: Thermodynamics and Heat Transfer

Regulation: 2017 **Semester: IV**

Course Code/Course Name:MT8401/Thermodynamics andHeat Transfer	
CO. No	**Course Outcome**
C214.1	Understand the basic concepts associated with first law of thermodynamics.
C214.2	Understand basic concepts associated with second law of thermodynamics.
C214.3	Describing the working of I.C engines and to determine its performance parameter.
C214.4	Basic principles of refrigeration, air conditioning and psychometric chart.
C214.5	Distinguishing the various modes of heat transfer and its applications.

Course Name: Microprocessor and Microcontrollers Laboratory

Regulation: 2017 **Semester: IV**

Course Code/Course Name: MT8411/ Microprocessor and Microcontrollers Laboratory	
CO. No	**Course Outcome**
C215.1	To become familiar with the architecture and Instruction set of Intel 8085 microprocessor.
C215.2	Set up programming strategies and select proper mnemonics and run their program on the training boards.
C215.3	To Understand the concepts related to I/O and memory interfacing.
C215.4	Solve the arithmetic operations using microcontrollers and various on-chip and off-chip interfacing and algorithms
C215.5	Design the digital and analogy hardware interface for microcontroller-based systems

Course Name: Manufacturing Technology Laboratory

Regulation: 2017 **Semester: IV**

Course Code/Course Name:ME8461/ManufacturingTechnology Laboratory	
CO. No	**Course Outcome**
C216.1	Ability to use different machine tools to manufacturing gears.
C216.2	Perform Drilling, Tapping and Reaming operation for a given specification.
C216.3	Ability to use different machine tools for finishing operations.
C216.4	Ability to manufacture tools using cutter grinder
C216.5	Develop CNC part programming.

Course Name: Computer Aided Machine Drawing

Regulation: 2017 **Semester: IV**

Course Code/Course Name:ME8381/Computer Aided MachineDrawing	
CO. No	**Course Outcome**
C217.1	Ability to follow the drawing standards, Fits and Tolerances.
C217.2	Able to understand and interpret drawings of machine components.
C217.3	Able to prepare assembly drawings both manually and using standard CAD packages.
C217.4	Able to create 2D drafting and 3D modeling of Mechanical components.
C217.5	Re-create part drawings, sectional views and assembly drawings as per standards.

Course Name: Advanced Reading and Writing

Regulation: 2017 **Semester: IV**

Course Code/Course Name:HS8461/Advanced Reading andWriting	
CO. No	**Course Outcome**
C218.1	Write different types of essays.
C218.2	Write winning job applications.
C218.3	Read and evaluate texts critically.
C218.4	Display critical thinking in various professional contexts.
C218.5	Able to develop their project and proposal writing skills.

Course Name: Power Electronics

Regulation: 2017 **Semester: V**

Course Code/Course Name:EE8552/ Power Electronics	
CO. No	**Course Outcome**
C301.1	Understand the characteristics of various power semi- conductor devices
C301.2	Understand the operation, characteristics and performance parameters of converters
C301.3	Interpret the operation and characteristics of inverters and its related techniques
C301.4	Acquire the knowledge on AC to AC conversion techniques
C301.5	Analyze the operation of DC chopper

Course Name: Sensors and Instrumentation

Regulation: 2017 **Semester: V**

Course Code/Course Name:MT8591/Sensors and Instrumentation	
CO. No	**Course Outcome**
C302.1	Familiar with various calibration techniques and signal types for sensors.
C302.2	Apply the various sensors in the Automotive and Mechatronics applications.
C302.3	Describe the working principle and characteristics of force, magnetic and heading sensors.
C302.4	Understand the basic principles of various pressure and temperature, smart sensors.
C302.5	Ability to implement the DAQ systems with different sensors for real time applications.

Course Name: Dynamics of Machines

Regulation: 2017 **Semester: V**

Course Code/Course Name:ME8594/Dynamics of Machines	
CO. No	**Course Outcome**
C303.1	Calculate static and dynamic forces of mechanisms.
C303.2	Calculate the balancing masses and their locations of reciprocating and rotating masses.
C303.3	Compute the frequency of free vibration.
C303.4	Compute the frequency of forced vibration and damping coefficient .
C303.5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.

Course Name: Control Systems Engineering

Regulation: 2017 **Semester: V**

Course Code/Course Name:EC8391/ Control Systems Engineering	
CO. No	**Course Outcome**
C304.1	Identify the various control system components and their representations.
C304.2	Analyze the various time domain parameters.
C304.3	Analysis the various frequency response plots and its system.
C304.4	Apply the concepts of various system stability criterions.
C304.5	Design various transfer functions of digital control system using state variable models.

Course Name: Industrial Safety Engineering

Regulation: 2017 **Semester: V**

Course Code/Course Name:OME553/ Industrial Safety Engineering	
CO. No	**Course Outcome**
C305.1	Illustrate and familiarize the basic concepts of Engineering safety.
C305.2	Illustrate and familiarize the scope of Engineering safety.
C305.3	Understand the standards of Professional conduct that are published by the professional safety organizations.
C305.4	Able to understand the knowledge of air and water pollution and their control.
C305.5	Illustrate the importance of safety of employees while working with machineries.

Course Name: Power Electronics Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name:MT8511/Power ElectronicsLaboratory	
CO. No	**Course Outcome**
C306.1	Illustrate the characteristics of various power semiconductor devices.
C306.2	Analyze the basic topologies of DC–DC converters.
C306.3	Evaluate the performance of AC voltage controllers.
C306.4	Make use of different PWM techniques for inverters.
C306.5	Demonstrate the operation of speed control of DC motor.

Course Name: MT8512 Sensors and Instrumentation Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name:MT8512/Sensors and InstrumentationLaboratory	
CO. No	**Course Outcome**
C307.1	Generate appropriate design procedure, suitable for signal conversion to interface with computer.
C307.2	Design appropriate circuits by using conventional formulas used in signal conditioning and conversion.
C307.3	Implement their design in bread board and test it.
C307.4	Generate appropriate design procedure to obtain a required measurement data for temperature, force, humidity, displacement and sound.
C307.5	Use transducers to create simple Mechatronics applications using data logging software.

Course Name: Dynamics Laboratory

Regulation: 2017 **Semester: V**

Course Code/Course Name:ME8481/Dynamics Laboratory	
CO. No	**Course Outcome**
C308.1	Review the various types of gears, gear trains, kinematic mechanisms, and universal joints.
C308.2	Estimate the mass moment of inertia of single, double rotor systems, spring mass system and transverse vibrations.
C308.3	Inspect the critical speed of shaft under the given load conditions and the gyroscopic effect and couple on motorized gyroscope.
C308.4	Sketch the characteristic curves of Watt, Porter, Proell and Hartnell governors and motion curves for the given cam follower setup.
C308.5	Examine the balancing of rotating masses in dynamic balancing machine.

Course Name: Professional Communication
Regulation: 2017 **Semester: V**

Course Code/Course Name:HS8581/Professional Communication	
CO. No	**Course Outcome**
C309.1	Make effective presentations
C309.2	Participate confidently in Group Discussions.
C309.3	Attend job interviews and be successful in them
C309.4	Develop adequate Soft Skills required for the workplace
C309.5	Able to develop a long term career plan.

Course Name: Applied Hydraulics and Pneumatics

Regulation: 2017 **Semester: VI**

Course Code/Course Name:ME8591/Applied Hydraulics andPneumatics	
CO. No	**Course** Outcome
C310.1	Understanding operating principles and constructional features of hydraulic and Pneumatic systems.
C310.2	Knowledge with selection of hydraulic / pneumatic components
C310.3	Understanding of designing and layout of Hydraulic Power package and trouble Shooting.
C310.4	Understanding of designing and layout of Pneumatic systems and trouble shooting.
C310.5	Understanding Installation, Selection, Maintenance, Trouble Shooting and Remedies in Hydraulic and Pneumatic systems.

Course Name: Design of Mechatronics System

Regulation: 2017 **Semester: VI**

Course Code/Course Name:MT8601/Design of Mechatronics System	
CO. No	**Course Outcome**
C311.1	Understand the basics and key elements of Mechatronics design process
C311.2	Familiar with basic system modeling
C311.3	Understand the concepts of engineering system and dynamic response of the system.
C311.4	Realize the concepts of real time interfacing and data acquisition
C311.5	Understanding the concepts of design of Mechatronics system through case studies.

Course Name: Design of Machine Elements

Regulation: 2017 **Semester: VI**

Course Code/Course Name:ME8593/Design of Machine Elements	
CO. No	**Course Outcome**
C312.1	Explain the influence of steady and variable stresses in machine component design.
C312.2	Apply the concepts of design to shafts, key sand couplings.
C312.3	Apply the concepts of design to temporary and permanent joints.
C312.4	Apply the concepts of design to energy absorbing members, bearings and connecting rod.
C312.5	Apply the concepts of design to bearings.

Course Name: Industrial Automation

Regulation: 2017 **Semester: VI**

Course Code/Course Name:MT8602/Industrial Automation	
CO. No	**Course Outcome**
C313.1	Choose appropriate PLC and explain the architecture, installation procedure sand trouble shooting.
C313.2	Develop PLC programs using various functions of PLCs for a given application.
C313.3	Explain the application development procedures in SCADA and manage data, alarm and storage.
C313.4	Distinguish DCS, SCADA and PLC and explain the architecture of DCS.
C313.5	Describe the controller elements and program methods.

Course Name: Principles of Management

Regulation: 2017 **Semester: VI**

Course Code/Course Name:MG8591/Principles of Management	
CO. No	**Course Outcome**
C314.1	Describe the basic of management and its types, skills, management roles, types of business organization and current trends in business.
C314.2	Explain the nature and purpose of planning, types, objectives of planning and decision process.
C314.3	Compare the different organization structures, authorities and responsibilities, human resource management and training and development.
C314.4	Estimate the individual and group behavior, motivation, job satisfaction types and theories of leadership, communication and IT.
C314.5	Apply the knowledge using the various system and process of controlling, budgetary and non-budgetary control techniques, use of computer and IT in management control, reporting

Course Name: Automobile Engineering

Regulation: 2017 **Semester: VI**

Course Code/Course Name:ME8091/Automobile Engineering	
CO. No	**Course Outcome**
C315.1	Recognize the various parts of the automobile and their functions and materials
C315.2	Discuss the engine auxiliary systems and engine emission control.
C315.3	Distinguish the working of different types of transmission systems.
C315.4	Explain the Steering, Brakes and Suspension Systems.
C315.5	Predict possible alternate sources of energy for IC Engines.

Course Name: Applied Hydraulics and Pneumatics Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:MT8611/Applied Hydraulics andPneumatics Laboratory	
CO. No	**Course Outcome**
C316.1	Select the actuators and valves for the design of fluid power circuits.
C316.2	Design and simulate the fluid power circuits using software tool.
C316.3	Test the simulated output by constructing the fluid power circuits using suitable actuators and valves.
C316.4	Design and test the hydraulic and pneumatic circuits using LABVIEW software
C316.5	Design and simulate the hydraulic and pneumatic circuits using Auto SIM software

Course Name: MT8612 Industrial Automation Laboratory

Regulation: 2017 **Semester: VI**

Course Code/Course Name:MT8612/Industrial AutomationLaboratory	
CO. No	**Course Outcome**
C317.1	Carryout wiring connections and troubleshoot in different PLCs.
C317.2	Develop simple applications using LD, ST and FBD mode of programming.
C317.3	Use timers and counter functions of PLC to construct simple applications.
C317.4	Integrate and control process station with PLC.
C317.5	Develop and Perform SCADA application using open source software and speed control on AC motor using VFD and PLC.

Course Name: Design and Fabrication Project

Regulation: 2017 **Semester: VI**

Course Code/Course Name:ME8682/Design and Fabrication Project	
CO. No	**Course Outcome**
C318.1	Design, and realize a simple Mechanical / Electrical / Electronic / Mechatronics system.
C318.2	Analyze a real world problem, identify the requirement and develop the design solutions.
C318.3	Utilize various sensors, actuators and controllers.
C318.4	Opportunity to work with a team in confined time duration and distribute works both in oral and written format.
C318.5	Investigation and validate through conformance of the developed working model and also analysis the cost effectiveness.

Course Name: Computer Aided Design and Manufacturing

Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8691/ Computer Aided Design and Manufacturing	
CO. No	**Course Outcome**
C401.1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics
C401.2	Explain the fundamentals of parametric curves, surfaces and Solids
C401.3	Summarize the different types of Standard systems used in CAD
C401.4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
C401.5	Summarize the different types of techniques used in Cellular Manufacturing and FMS

Course Name: Robotics and Machine Vision System

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8701/ Robotics and Machine Vision System	
CO. No	**Course Outcome**
C402.1	Express the basic concepts, laws, components and parameters of robots
C402.2	Explain the types of grippers and its functions
C402.3	Evaluate the kinematic calculations and apply Lagrangian and Newton-Euler methods to analyze dynamic characteristics of robots
C402.4	Describing the various programming techniques used in industrial robots
C402.5	Basis of machine vision and apply the concept of image processing

Course Name: Embedded System Design

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8791/ Embedded System Design	
CO. No	**Course Outcome**
C403.1	Explain the need of embedded systems and their development procedures.
C403.2	Summaries the concepts involved in Real time operating systems.
C403.3	Use various tools for developing embedded applications.
C403.4	Explain the construction, addressing modes and instructions sets of PIC micro controller.
C403.5	Conduct experiments with I/O systems used in embedded systems.

Course Name: Low cost Automation

Regulation: 2017 **Semester: VII**

Course Code/Course Name: OAN751/ Low cost Automation	
CO. No	**Course Outcome**
C404.1	Understand the basic knowledge about automation.
C404.2	Understand the basic hydraulics for automation.
C404.3	Understand the basic pneumatics systems for automation.
C404.4	Understand the Using Electronic Systems.
C404.5	Understand and apply the assembly automation.

Course Name: Medical Mechatronics

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8003/ Medical Mechatronics	
CO. No	**Course Outcome**
C405.1	Understand the different measurement techniques used in physiological parameters measurement
C405.2	Design the sensors and signal conditioning circuits used in biomedical engineering.
C405.3	Understand about various amplifiers, recording and display devices.
C405.4	Analyze the working of recorders and explain the advanced systems used in medicine
C405.5	Understand about various Bio- medical diagnostics instrumentation

Course Name: Advanced Manufacturing Technology

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8002/ Advanced Manufacturing Technology	
CO. No	**Course Outcome**
C406.1	Understand the basics and working principles of various sheet metal working and Forming processes.
C406.2	Knowledge on various non-traditional machining processes with its applications
C406.3	Analyze the various types of surface finishing and surface hardening process.
C406.4	Apply concept of EDM and ECM with its characteristics to modern machining Processes.
C406.5	Understand the work and tool holding devices used for different machine tools .

Course Name: Computer Aided Design and Manufacturing Laboratory

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8003/ Medical Mechatronics	
CO. No	**Course Outcome**
C407.1	Model and assemble a given three dimensional engineering components
C407.2	Perform various analyses on simple structures for the application of different loads.
C407.3	Generate CNC programs for a given components to work with CNC machines

Course Name: Robotics Laboratory

Regulation: 2017 **Semester: VII**

Course Code/Course Name: MT8781/ Robotics Laboratory	
CO. No	**Course Outcome**
C408.1	Use of any robotic simulation software and
C408.2	To calculate work volume for different robots
C408.3	To model the different types of robots

Course Name: Automotive Electronics

Regulation: 2017 **Semester: VIII**

Course Code/Course Name: MT8801/ Automotive Electronics	
CO. No	**Course Outcome**
C409.1	Know the importance of emission standards in automobiles.
C409.2	Understand the electronic fuel injection/ignition components and their function
C409.3	Choose and use sensors and equipment for measuring mechanical quantities, temperature and appropriate actuators.
C409.4	Diagnose electronic engine control systems problems with appropriate diagnostic tools.
C409.5	Analyses the chassis and vehicle safety system

Course Name: Product Design and Development

Regulation: 2017 **Semester: VIII**

Course Code/Course Name: IM8071/ Product Design and Development	
CO. No	**Course Outcome**
C410.1	Knowledge gained on concept generation and selection through prototyping technology will help the student to make a prototype of a problem
C410.2	Knowledge gained on product architecture through prototyping technology will help the student to make a prototype of a problem
C410.3	Knowledge gained on industrial design through prototyping technology will help the student to make a prototype of a problem
C410.4	To design some products for the given set of applications through prototyping technology
C410.4	To design for manufacturing some products for the given set of applications through prototyping technology

Course Name: Entrepreneurship Development

Regulation: 2017 **Semester: VIII**

Course Code/Course Name: MG8091/ Entrepreneurship Development	
CO. No	**Course Outcome**
C411.1	To Gain knowledge and skills on entrepreneurship needed to run a business successfully
C411.2	To Gain knowledge and skills on motivation needed to run a business successfully.
C411.3	To Gain knowledge and skills on business needed to run a business successfully
C411.4	To Gain knowledge and skills on financial and accounting needed to run a business successfully
C411.5	To Gain knowledge and skills on support to entrepreneurs needed to run a business successfully

Course Name: Marketing Management

Regulation: 2017 **Semester: VIII**

Course Code/Course Name: IM8071/ Marketing Management	
CO. No	**Course Outcome**
C412.1	To enhance the knowledge about Marketer's Practices
C412.2	To enhance the knowledge about buying behavior and market segmentation.
C412.3	To enhance the knowledge about product pricing and marketing research
C412.4	To enhance the knowledge about market planning and strategy formulation
C412.5	To enhance the knowledge about advertizing, sales promotion and distribution.

Course Name: Project Work

Regulation: 2017 **Semester: VIII**

Course Code/Course Name: MT8811/ Project Work	
CO. No	**Course Outcome**
C413.1	Design, analyze, realize / simulate a physical system by using the technology they learnt during the program
C413.2	Integrate various systems into one Mechatronics product.
C413.3	Work in a team with confined time duration.
C413.4	Disseminate his work both in oral and written format.

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DEPARTMENT OF MECHANICAL ENGINEERING

Courses and Course Outcomes

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DEPARTMENT OF MECHANICAL ENGINEERING

Courses and Course Outcomes - Regulation 2017

Course Name: Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name: HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name: Engineering Mathematics –I
Regulation: 2017 **Semester: I**

Course Code/Course Name: MA8151/ Engineering Mathematics –I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	use to analyse Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's), Trigonometric substitutions and Improper integrals.
C102.4	To understand the concepts of Double and Triple integrals.

C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name: Engineering Physics – I
Regulation: 2017 **Semester: I**

Course Code/Course Name: PH8151/ Engineering Physics – I	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name: Engineering Chemistry – I
Regulation: 2017 **Semester: I**

Course Code/Course Name: CY8151/ Engineering Chemistry – I	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources

Course Name: Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8151/ Problem Solving and Python Programming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions
C105.4	Represent compound data using Python lists, tuples, and dictionaries.
C105.5	Read and write data from/to files in Python Programs

Course Name: Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	To understand and draw different types of projections, curves and scales.
C106.2	Can do orthographic projection of lines and plane surfaces.
C106.3	To design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Able to prepare isometric and perspective sections of simple solids.
C106.5	To create real-time drawings that supports different machine drawing technique apply to different engineering Field.

Course Name: Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: GE8161/ Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name: Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name: BS8161/ Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysis of water quality related parameters..
C108.5	Students will be able to think innovatively and also improve the creative skills that are essential for engineering.

Course Name: Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name: HS6251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly

Course Name: Engineering Mathematics – II
Regulation: 2017 **Semester: II**

Course Code/Course Name: MA8251/ Engineering Mathematics – II	
CO No.	**Course Outcomes**
C110.1	To understand the concepts of eigen values and eigenvectors, diagonalization of a matrix.
C110.2	To acquire the knowledge of Gradient, divergence and curl of a vector point function and related identities,the techniques of evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
C110.3	To perceive the significance of analytic functions, conformal mapping
C110.4	To understand the techniques of complex integration
C110.5	To interpret Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name: Materials Science
Regulation: 2017 **Semester: II**

Course Code/Course Name: PH8251/ **Materials Science**	
CO No.	**Course Outcomes**
C111.1	To gain the knowledge on the various phase diagrams and their applications.
C111.2	To acquire knowledge on Fe-Fe3C phase diagram,various microstructures and alloys.
C111.3	To get knowledge on mechanical properties of materials and their measurement.
C111.4	To gain knowledge on magnetic, dielectric and superconducting properties of materials.
C111.5	To understand the basics of ceramics, composites and nanomaterials.

Course Name: Basic Electrical, Electronics and Instrumentation Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name: BE8253/ Basic Electrical, Electronics and Instrumentation Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the basics in electric circuits
C112.2	Understand single and three phase circuit
C112.3	Understand electric circuits and working principles of electrical machines
C112.4	Understand the concepts of various electronic devices.
C112.5	Choose appropriate instruments for electrical measurement for a specific application

Course Name: Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8291/ Environmental Science and Engineering	
CO No.	**Course Outcomes**
C113.1	To understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C113.2	To understand about pollution on the environment.
C113.3	To study the various natural resources.
C113.4	To understand the impact of social issues on the environment.
C113.5	To study about human population on the environment.

Course Name: Engineering Mechanics
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8292/ Engineering Mechanics	
CO No.	**Course Outcomes**
C114.1	Can illustrate the vectorial and scalar representation of forces and moments
C114.2	Able to analyse the rigid body in equilibrium
C114.3	Can evaluate the properties of surfaces and solids
C114.4	Able to calculate dynamic forces exerted in rigid body
C114.5	Able to determine the friction and the effects by the laws of friction

Course Name: Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	To fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures.
C115.2	Can carry out the basic machining operations and Make the models using sheet metal works.
C115.3	ToIllustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings.
C115.4	Carry out basic home electrical works and appliances and Measure the electrical quantities
C115.5	To Elaborate on the components, gates, soldering practices.

Course Name: Basic Electrical, Electronics and Instrumentation Engineering Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name: GE8261/ Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
CO No.	**Course Outcomes**
C116.1	Ability to determine the speed characteristic of different electrical machines
C116.2	Ability to verify circuit laws and theorem.
C116.3	Ability to design simple circuits involving diodes.
C116.4	Ability to design simple circuits involving transistors
C116.5	Ability to use operational amplifiers

Course Name: Transforms and Partial Differential Equations
Regulation: 2017 **Semester: III**

Course Code/Course Name: MA8353/ Transforms and Partial Differential Equations	
CO No.	**Course Outcomes**
C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in Engineering applications
C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of Engineering.
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems

Course Name: ME8391/ Engineering Thermodynamics
Regulation: 2017 **Semester: III**

Course Code/Course Name: ME8391/ Engineering Thermodynamics	
CO No.	**Course Outcomes**
C202.1	The students will be able to Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions
C202.2	The students will be able to Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
C202.3	The students will be able to Apply Rankine cycle to steam power plant and compare few cycle improvement methods
C202.4	The students will be able to Derive simple thermodynamic relations of ideal and real gases
C202.5	The students will be able to Calculate the properties of gas mixtures and moist air and its use in psychometric processes

Course Name: Fluid Mechanics and Machinery
Regulation: 2017 **Semester: III**

Course Code/Course Name: CE8394/ Fluid Mechanics and Machinery	
CO No.	**Course Outcomes**
C203.1	To study and apply the mathematical techniques to provide solutions of practical flow problems in the field of mechanical engineering.
C203.2	Formulate and solve equations based on control volume process for fluid flow systems for automation issues
C203.3	To study the dimensional analysis for various fluid mechanics problems
C203.4	To evaluate hydraulic machines and their performance curves from the existing systems
C203.5	To develop new hydraulic systems by studying different types of pumps

Course Name: Manufacturing Technology - I
Regulation: 2017 **Semester: III**

Course Code/Course Name: ME8351/ Manufacturing Technology - I	
CO No.	**Course Outcomes**
C204.1	At the end of course students can able to explain different metal casting processes, associated defects, merits and demerits.
C204.2	At the end of course students can able to compare different welding processes**.**
C204.3	At the end of course students can able to summarize various hot working and cold working methods of metals.
C204.4	At the end of course students can explain various sheet metal making processes.
C204.5	At the end of course students can able to distinguish various methods of manufacturing plastic components

Course Name: Electrical Drives and Controls
Regulation: 2017 **Semester: III**

Course Code/Course Name: EE8353/ Electrical Drives and Controls	
CO No.	**Course Outcomes**
C205.1	Select the rating and classes of duty of machines for particular application electrical drive and draw the heating and cooling curves.
C205.2	Explain the mechanical and braking characteristics of dc and ac machines for particular application of electrical drive.
C205.3	Describe the starting methods of both dc and ac machines.
C205.4	Clarify conventional and solid state speed control of dc drives.
C205.5	Enlighten the speed control of dc and ac drive by conventional and solid state methods.

Course Name: Manufacturing Technology Laboratory - I
Regulation: 2017 **Semester: III**

Course Code/Course Name: ME8361/ Manufacturing Technology Laboratory - I	
CO No.	**Course Outcomes**
C206.1	Perform the taper turning operation for a given specification.
C206.2	Perform thread cutting operation as per the diagrams and compare with standard thread gauges.
C206.3	Calculate the eccentricity value for the required stroke length and practice eccentricity turning operation in a lathe.
C206.4	Produce square head using shaper machine as per given drawing and estimate the machining time.
C206.5	Calculate the material removal rate and perform Hexagonal head shaping on a given cylindrical work piece as per given drawing.

Course Name: Computer Aided Machine Drawing
Regulation: 2017 **Semester: III**

Course Code/Course Name: ME8381/ Computer Aided Machine Drawing	
CO No.	**Course Outcomes**
C207.1	To make the students understand and interpret drawings of machine components.
C207.2	To prepare assembly drawings both manually and using standard CAD packages.
C207.3	To familiarize the students with Indian Standards on drawing practices and standard components.
C207.4	To gain practical experience in handling 2D drafting.
C207.5	To gain practical experience in handling 3D modeling software systems.

Course Name: Electrical Engineering Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name: EE8361/ Electrical Engineering Laboratory	
CO No.	**Course Outcomes**
C208.1	Perform the load test, OCC, load characteristics and speed control of DC shunt and DC series motor
C208.2	Perform the load test, OC and SC test on a single phase transformer
C208.3	Examine the regulation of an alternator by EMF and MMF methods
C208.4	Conduct the load test, speed control on various phase of induction motor
C208.5	Explore the DC and AC starters

Course Name: Interpersonal Skills / Listening & Speaking
Regulation: 2017 **Semester: III**

Course Code/Course Name: HS8381/ Interpersonal Skills / Listening & Speaking	
CO No.	**Course Outcomes**
C209.1	Learners will be able to comprehend the importance of listening skill at work place and gain the confidence to talk in English without fear by enquiring and collecting personal information by applying communication strategies and also formulate to produce fragmented sentences.
C209.2	Students will be able to comprehend the stages and types of listening and that would help the learners to collect and give the information and also as a part of applying communication strategies.
C209.3	Learners will be able to comprehend the importance of lexical chunking which is essential for accuracy and fluency and also able to deliver an informal talk for five minutes and follow the gist in listening skill for effective listening.
C209.4	Students will be able to comprehend the importance of listening skill and being an active listener the learners will be able to give the verbal and non-verbal feedback and also give up irksome by participating in group discussion.
C209.5	Learners will be able to participate confidently and appropriately in conversations both formal and informal and giving directions and instructions in academic and business contexts and also get ready for effective presentations in group/pair and individually for attaining successful career.

Course Name: Statistics and Numerical Methods
Regulation: 2017 **Semester: IV**

Course Code/Course Name: MA8452/ Statistics and Numerical Methods	
CO No.	**Course Outcomes**
C210.1	Identify small, large samples and apply testing of hypothesis.
C210.2	Apply ANOVA test to design of experiments.
C210.3	Determine the solution of algebraic and transcendal system of linear equations.
C210.4	To interpolate the values of unknown functions using Newton's Formula
C210.5	Estimate the numerical values of the derivatives and integrals of unknown function difference equations

Course Name: Kinematics of Machinery
Regulation: 2017 **Semester: IV**

Course Code/Course Name: ME8492/ Kinematics of Machinery	
CO No.	**Course Outcomes**
C211.1	Upon completion of this course the Students can able to understand the basic Concepts of mechanisms, machines and related terminologies.
C211.2	Able to analyze planar mechanism for displacement, velocity and acceleration at any point in a link of a mechanism, graphically.
C211.3	Upon completion of this course, the students can able to apply fundamentals of cam and develop cam profiles for the designing of new mechanisms.
C211.4	Able to evaluate appropriate gears and gear train mechanism for particular application.
C211.5	Upon completion of this course, the students can able to Create new mechanisms considering frictional elements in account and analyze them for optimum design.

Course Name: Manufacturing Technology– II
Regulation: 2017 **Semester: IV**

Course Code/Course Name ME8451/ Manufacturing Technology– II	
CO No.	**Course Outcomes**
C212.1	Understanding the basics of metal cutting process, tools and cutting fluids.
C212.2	To learn about the turning machines and their applications
C212.3	To learn about shaper, boring machine, milling machine, drilling machine, Gear cutting processes
C212.4	To learn about the Grinding, Broaching machines and the processes
C212.5	To apply the CNC machining and the programming in various jobs.

Course Name: Engineering Metallurgy
Regulation: 2017 **Semester: IV**

Course Code/Course Name: ME8491/ Engineering Metallurgy	
CO No.	**Course Outcomes**
C213.1	To understand the physical chemical and mechanical behavior of materials and its microstructure.
C213.2	Understanding the basics of Materials and metallurgical process, properties of engineering materials.
C213.3	Study the heat and other treatments of Ferrous and nonferrous materials for industry specific applications.
C213.4	Analyze, apply and innovate to find new materials for modern applications.
C213.5	Learn formulation of newer materials and testing procedures to apply for various engineering applications

Course Name: Strength of Materials for Mechanical Engineers
Regulation: 2017 **Semester: IV**

Course Code/Course Name: CE8395/ Strength of Materials for Mechanical Engineers	
CO No.	**Course Outcomes**
C214.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C214.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
C214.3	Apply basic equation of simple torsion in designing of shafts and helical spring Calculate the slope and deflection in beams using different methods.
C214.4	Analyze and design thin and thick shells for the applied internal and external pressures
C214.5	To create newer mechanisms, the knowledge is taken as the basics of understanding of material behavior under stress and strain

Course Name: Thermal Engineering -I
Regulation: 2017 **Semester: IV**

Course Code/Course Name: ME8493/ Thermal Engineering - I	
CO No.	**Course Outcomes**
C215.1	To apply thermodynamic concepts to different air standard cycles and solve problems.
C215.2	To solve problems in single stage and multistage air compressors.
C215.3	To explain the functioning and features of IC engines, components and auxiliaries.
C215.4	To calculate performance parameters of IC Engines.
C215.5	To explain the flow in Gas turbines and solve problems.

Course Name: Manufacturing Technology Laboratory–II
Regulation: 2017 **Semester: IV**

Course Code/Course Name: ME8462/ Manufacturing Technology Laboratory–II	
CO No.	**Course Outcomes**
C216.1	Understanding the mechanism of metal cutting processes.
C216.2	Analyzing the working mechanism and operations performed by lathe machines
C216.3	Applying the basic mechanism and understanding the concept of special machines.
C216.4	Applying the basic mechanism and understanding the concept of abrasive machines and Processes.
C216.5	Evaluating and implementing new technologies in machining processes.(CNC)

Course Name: Strength of Materials and Fluid Mechanics and Machinery Laboratory I

Regulation: 2017 **Semester: IV**

Course Code/Course Name: CE8381/ Strength of Materials and Fluid Mechanics and Machinery Laboratory	
CO No.	**Course Outcomes**
C217.1	To study the mechanical properties of materials when subjected to different types of loading.
C217.2	Ability to perform Tension, Torsion, Hardness, Compression, and deformation test on solid materials.
C217.3	Analyze the microstructure and characteristics of specimen.
C217.4	Calculate the coefficient of discharge for Orifice meter and Venturimeter.
C217.5	Predict performance characteristics of centrifugal pump, submergible pump. Reciprocating pump, gear pump and turbines.

Course Name: Advanced Reading and Writing

Regulation: 2017 **Semester: IV**

Course Code/Course Name: HS8461/ Advanced Reading and Writing	
CO No.	**Course Outcomes**
C218.1	To write different types of essays.
C218.2	To write winning job applications.
C218.3	To read and evaluate texts critically
C218.4	To display critical thinking in various professional contexts.
C218.5	To develop their project and proposal writing skills.

Course Name: Thermal Engineering- II
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8595/ Thermal Engineering- II	
CO No.	**Course Outcomes**
C301.1	Solve problems in Steam Nozzle.
C301.2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.
C301.3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.
C301.4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers.
C301.5	Solve problems using refrigerant table / charts and psychrometric charts

Course Name: Design of Machine Elements
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8593/ Design of Machine Elements	
CO No.	**Course Outcomes**
C302.1	To have acquired the knowledge of Mechanical engineering design concepts and principles used in industrial environment and related issues.
C302.2	To be able to gather data from standard data books and use the same for modified or new components design using failure modes of components
C302.3	To be able to perform design functions of research and development discussion outcomes in to new products to be used in mechanical systems using standard catalogues.
C302.4	Analyze, apply and innovate to find new Components for modern applications.
C302.5	Learn formulation of newer components and design procedures to apply for various engineering applications

Course Name: Metrology and Measurements
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8501/ Metrology and Measurements	
CO No.	**Course Outcomes**
C303.1	To understand the concepts of measurements to apply in various metrological instruments.
C303.2	Outline the principles of linear and angular measurement tools used for industrial applications.
C303.3	To be able to explain the procedure for conducting computer aided inspection
C303.4	To demonstrate the techniques of form measurement used for industrial components.
C303.5	To discuss various measuring techniques of mechanical properties in industrial Applications.

Course Name: Dynamics of Machines
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8594/ Dynamics of Machines	
CO No.	**Course Outcomes**
C304.1	To understand static and dynamic forces of mechanisms and turning moment diagrams of different engines
C304.2	Would be able to calculate the balancing masses and their locations of rotating masses and reciprocating masses
C304.3	Would be able to apply the frequency of free vibration related theory knowledge to mechanical systems
C304.4	To evaluate the frequency of forced vibration and damping coefficient and apply in mechanism
C304.5	To design a dynamic system for automobiles, ships and airplanes by taking into account of speed control and stability Control mechanisms

Course Name: Lean Manufacturing
Regulation: 2017 **Semester: V**

Course Code/Course Name: OIM552/ Lean Manufacturing	
CO No.	**Course Outcomes**
C305.1	On completion of course students can able to understand the principles and basics of Lean Manufacturing.
C305.2	**S**tudents can able to explain the concepts of TPM, JIT and Cellular manufacturing on studying this course
C305.3	At the end of course students can able to understand the set up time reduction, TQM, 5S, VSM
C305.4	At the end of course students can explain Six Sigma.
C305.5	At the end of course students can able to do apply the knowledge gained to case studies.

Course Name: Renewable Sources of Energy
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8072/ Renewable Sources of Energy	
CO No.	**Course Outcomes**
C306.1	Discuss the importance and Economics of renewable Energy.
C306.2	Discuss the method of power generation from solar energy.
C306.3	Discuss the method of power generation from Wind energy.
C306.4	Discuss the method of power generation from Bio energy.
C306.5	Explain the tidal energy, Wave energy, OTEC, Hydro energy, Geothermal energy, Fuel cells and Hybrid systems.

Course Name: Kinematics and Dynamics Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name ME8511/ Kinematics and Dynamics Laboratory	
CO No.	**Course Outcomes**
C307.1	To make the students understand the gear parameters, Kinematics of Mechanisms and working of lab equipments.
C307.2	To determine mass moment of inertia of mechanical element.
C307.3	To determine gyroscopic effect on motorized gyroscope, governor effort and range sensitivity,cam profile drawing.
C307.4	To determine the single, multi degree of freedom, natural frequency and damping coefficient, torsional frequency.
C307.5	To determine critical speeds of shafts, balancing of rotating and reciprocating masses

Course Name: Thermal Engineering Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8512/ Thermal Engineering Laboratory-II	
CO No.	**Course Outcomes**
C308.1	Conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials.
C308.2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.
C308.3	Conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.
C308.4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.
C308.5	Conduct tests to evaluate the performance of refrigeration and airconditioning test rigs.

Course Name: Metrology and Measurements Laboratory
Regulation: 2017 **Semester: V**

Course Code/Course Name: ME8513/ Metrology and Measurements Laboratory	
CO No.	**Course Outcomes**
C309.1	Check the dimensions and the dimensional deviations of given parts.
C309.2	Inspect the dimensions, angularity and parallelism of a given component.
C309.3	Construct the torque characteristic curves to various loads at various distances.
C309.4	Evaluate the straightness of surfaces and determine size of irregularities on a machined surface.
C309.5	Measure the vertical distances or height of objects, taper angle of slope for a given component, various parameters of threads and gear wheel.

Course Name: Design of Transmission Systems
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8651/ Design of Transmission Systems	
CO No.	**Course Outcomes**
C310.1	Apply the concepts of design to belts, chains and rope drives.
C310.2	Apply the concepts of design to spur, helical gears.
C310.3	Apply the concepts of design to worm and bevel gears.
C310.4	Apply the concepts of design to gear boxes.
C310.5	Apply the concepts of design to cams, brakes and clutches.

Course Name: Computer Aided Design and Manufacturing
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8691/ Computer Aided Design and Manufacturing	
CO No.	**Course Outcomes on successful completion of this course students will be able to**
C311.1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics.
C311.2	Explain the fundamentals of parametric curves, surfaces and Solids.
C311.3	Summarize the different types of Standard systems used in CAD.
C311.4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines.
C311.5	Summarize the different types of techniques used in Cellular Manufacturing and FMS.

Course Name: Heat and Mass Transfer
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8693/ Heat and Mass Transfer	
CO No.	**Course Outcomes**
C312.1	To get knowledge on heat transfer principles and difference over Thermal engineering principles.
C312.2	To develop skills on heat transfer in flow over or through surfaces and apply principles on heat exchanger design.
C312.3	To develop innovative systems with thermal heat and mass transfer knowledge for mechanical engineering related systems.
C312.4	To evaluate the thermal properties in radiation.
C312.5	To analyze the different modes of mass transfer.

Course Name: Finite Element Analysis
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8692/ Finite Element Analysis	
CO No.	**Course Outcomes**
C313.1	Understand the concepts behind variation methods and weighted residual methods in FEM.
C313.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoperimetric elements, and 3-D element.
C313.3	Develop element characteristic equation procedure and generation of global stiffness equation will be applied.
C313.4	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
C313.5	Able to evaluate how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.

Course Name: Hydraulics and Pneumatics
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8694/ Hydraulics and Pneumatics	
CO No.	**Course Outcomes**
C314.1	Explain the Fluid power and operation of different types of pumps.
C314.2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves.
C314.3	Explain the different types of Hydraulic circuits and systems.
C314.4	Explain the working of different pneumatic circuits and systems.
C314.5	Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.

Course Name: Automobile Engineering
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8091/ Automobile Engineering	
CO No.	**Course Outcomes**
C318.1	Students will be able to Recognize the various parts of the automobile and their function and materials.
C318.2	Students will be able to discuss the engine auxiliary system and engine Emission control.
C318.3	Students will be able to Distinguish the working of different types transmission Systems.
C318.4	Students will be able to explain the steering, brakes and suspension systems.
C318.5	Students will be able to predict possible alternate energy sources for IC engines.

Course Name: Welding Technology
Regulation: 2017 **Semester: VI**

1. Course Code/Course Name: PR8592 / Welding Technology	
CO No.	**Course Outcomes**
C319.1	Understand the construction and working principles of gas and arc welding process.
C319.2	Understand the construction and working principles of resistance welding process.
C319.3	Understand the construction and working principles of various solid state welding process.
C319.4	Understand the construction and working principles of various special welding processes.
C319.5	Understand the concepts on weld joint design, weld ability and testing of weldments.

Course Name: CAD / CAM. Laboratory
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8681/ CAD / CAM. Laboratory	
CO No.	**Course Outcomes**
C320.1	To make the students understand the practical experience in handling 2D drafting and 3D modeling software systems
C320.2	To create 3D model and prepare assembly drawings by using standard CAD packages
C320.3	To familiarize the students by creating 2D Detailed drawings from 3D Model
C320.4	To study the features of CNC Machine Tool.
C320.5	To expose students to modern control systems (Fanuc, Siemens etc.,)

Course Name: Design and Fabrication Project
Regulation: 2017 **Semester: VI**

Course Code/Course Name: ME8682/ Design and Fabrication Project	
CO No.	**Course Outcomes**
C321.1	Identify / Analyze a problem in Mechanical Engineering field.
C321.2	Demonstrate a depth of knowledge of Mechanical Engineering Fabrications.
C321.3	Analyze complex Mechanical Engineering problems. Develop methodology using appropriate tools to find the solution for the problem.
C321.4	Apply appropriate Engineering techniques, methodology and design processes of any components.
C321.5	Develop solutions to problems and apply innovative approaches in design / fabricate of (any components using different manufacturing tools) Mechanical systems and machines and

Course Name: Professional Communication
Regulation: 2017 **Semester: VI**

Course Code/Course Name: HS8581/ Professional Communication	
CO No.	**Course Outcomes**
C322.1	Make effective presentations.
C322.2	Participate confidently in Group Discussions.
C322.3	Attend job interviews and be successful in them.
C322.4	Orient the students towards grooming as a professional.
C322.5	Develop adequate Soft Skills required for the workplace.

Course Name: Power Plant Engineering
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8792 Power Plant Engineering	
CO No.	**Course Outcomes**
C401.1	**Upon the completion of this course the students will be able to** Explain the layout, construction and working of the components inside a thermal power plant
C401.2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
C401.3	Explain the layout, construction and working of the components inside nuclear powerplants.
C401.4	Explain the layout, construction and working of the components inside Renewableenergy power plants.
C401.5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

Course Name: Process Planning and Cost Estimation
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME 8792 **Process Planning and Cost Estimation**	
CO No.	**Course Outcomes**
C402.1	**Upon the completion of this course the students will be able to** select the process, equipment and tools for various industrial products.
C402.2	prepare process planning activity chart.
C402.3	explain the concept of cost estimation.
C402.4	compute the job order cost for different type of shop floor.
C402.5	calculate the machining time for various machining operations.

Course Name: Mechatronics
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME 8791 Mechatronics	
CO No.	**Course Outcomes**
C403.1	**Upon the completion of this course the students will be able to** Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensortechnology.
C403.2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.
C403.3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing
C403.4	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.
C403.5	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies

Course Name: Refrigeration and Airconditioning
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8071 Refrigeration and Airconditioning	
CO No.	**Course Outcomes**
C404.1	Upon the completion of this course the students will be able to Explain the basic concepts of Refrigeration
C404.2	Upon the completion of this course the students will be able to Explain the Vapor compression Refrigeration systems and to solve problems.
C404.3	Upon the completion of this course the students will be able to Discuss the various types of Refrigeration systems
C404.4	Upon the completion of this course the students will be able to Calculate the Psychrometric properties and its use in psychrometric processes
C404.5	Upon the completion of this course the students will be able to Explain the concepts of Air conditioning and to solve problems

Course Name: Renewable Sources ofEnergy
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8072 Renewable Sources ofEnergy	
CO No.	**Course Outcomes**
C405.1	Discuss the importance and Economics of renewable Energy
C405.2	Discuss the method of power generation from Solar Energy
C405.3	Discuss the method of power generation from Wind Energy
C405.4	Explain the method of power generation from Bio Energy
C405.5	Explain the Tidal energy, Wave Energy, OTEC, Hydro energy, Geothermal Energy, Fuel Cells and Hybrid Systems

Course Name: Quality Control and Reliability Engineering
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8098 Quality Control and Reliability Engineering	
CO No.	**Course Outcomes**
C406.1	Summarize the concept of Quality and Process control for variables
C406.2	Apply the process control for attributes
C406.3	Explain the concept of sampling and to solve problems
C406.4	Explain the concept of Life testing
C406.5	Explain the concept Reliability and techniques involved

Course Name: Unconventional Machining Processes
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8073 Unconventional Machining Processes	
CO No.	**Course Outcomes**
C407.1	Explain the need for unconventional machining processes and its classification
C407.2	Compare various thermal energy and electrical energy based unconventional machining processes.
C407.3	Summarize various chemical and electro-chemical energy based unconventionalmachining processes.
C407.4	Explain various nano abrasives based unconventional machining processes.
C407.5	Distinguish various recent trends based unconventional machining processes.

Course Name: Operations Research
Regulation: 2017 **Semester: VII**

Course Code/Course Name: MG8491 Operations Research	
CO No.	**Course Outcomes**
C408.1	To gain the knowledge of Linear, Transportation And Net Work Model
C408.2	Upon completion of this course, the students can able to use the optimization techniquesfor use engineering and Business problems
C408.3	Upon completion of this course, the students can able to use the optimization techniquesfor use Business problems

Course Name: Additive Manufacturing
Regulation: 2017 **Semester: VII**

Course Code/Course Name: MF8071 Additive Manufacturing	
CO No.	**Course Outcomes**
C409.1	On completion of this course, students will learn about a working principle and construction of Additive Manufacturing technologies,
C409.2	On completion of this course, students will learn about potential to support design and manufacturing, in additive manufacturing process.
C409.3	On completion of this course, students will learn about modern development in additive manufacturing process
C409.4	On completion of this course, students will learn about case studies relevant to mass customized manufacturing

Course Name: Total QualityManagement
Regulation: 2017 **Semester: VII**

Course Code/Course Name: GE8077 Total QualityManagement	
CO No.	**Course Outcomes**
C410.1	Describe the dimensional barrier regarding Quality
C410.2	Summarize the Total quality principles.
C410.3	Demonstrate the tools utilization for quality improvement.
C410.4	Discover the new decision of principle in real time projects.
C410.5	Analyze the various types of techniques are used to measure quality.
C410.6	Apply the various quality systems in implementation of Total quality management

Course Name: ROBOTICS
Regulation: 2017 **Semester: VII**

Course Code/Course Name: OIE 751 ROBOTICS	
CO No.	**Course Outcomes**
C411.1	Understand the basics of robot components and its mechanism
C411.2	Illustrate the different types of robot drive systems as well as robot end effectors
C411.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.
C411.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
C411.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.

Course Name: Selection of materials
Regulation: 2017 **Semester: VII**

Course Code/Course Name: :OML753 Selection of materials	
CO No.	**Course Outcomes**
C412.1	Understand different types of availability materials
C412.2	Easy and effective way to select required materials
C412.3	Ability to identify the material properties

Course Name: Simulation and AnalysisLaboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8711 Simulation and AnalysisLaboratory	
CO No.	**Course Outcomes**
C413.1	Upon the completion of this course the students will be able to simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB.
C413.2	Upon the completion of this course the students will be able to analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems.
C413.3	Upon the completion of this course the students will be able to calculate the natural frequency and mode shape analysis of 2D components and beams.

Course Name: Mechatronics Laboratory
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8781 Mechatronics Laboratory	
CO No.	**Course Outcomes**
C414.1	Upon the completion of this course the students will be able to Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.
C414.2	Upon the completion of this course the students will be able to Demonstrate the functioning of control systems with the help of PLC and microcontrollers.

Course Name: Technical Seminar
Regulation: 2017 **Semester: VII**

Course Code/Course Name: ME8712 Technical Seminar	
CO No.	**Course Outcomes**
C415.1	To enrich the communication skills of the student.
C415.2	To enrich the student presentations of technical topics of interest, this course is introduced.
C415.3	Student can able to present Technical papers or recent advances in engineering/technology .

Course Name: Principles of Management
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: MG8591 Principles of Management	
CO No.	**Course Outcomes**
C416.1	Upon completion of the course, students will be able to have clear understanding of managerial function of planning, and have same basic knowledge on international aspect of management
C416.2	Upon completion of the course, students will be able to have clear understanding of managerial function of organizing, and have same basic knowledge on international aspect of management
C416.3	Upon completion of the course, students will be able to have clear understanding of managerial function of staffing, and have same basic knowledge on international aspect of management
C416.4	Upon completion of the course, students will be able to have clear understanding of managerial function of leading and have same basic knowledge on international aspect of management
C416.5	Upon completion of the course, students will be able to have clear understanding of managerial function of controlling and have same basic knowledge on international aspect of management

Course Name: Production Planning andControl
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: IE8693 Production Planning andControl	
CO No.	**Course Outcomes**
C417.1	Upon completion of this course, the students can able to prepare production planning and control activity of work study,
C417.2	Upon completion of this course, the students can able to prepare production planning and control activity of product planning,
C417.3	Upon completion of this course, the students can able to prepare production planning and control activity of production scheduling,
C417.4	Upon completion of this course, the students can able to prepare production planning and control activity of Inventory Control.
C417.5	They can plan manufacturing requirements manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).

Course Name: EntrepreneurshipDevelopment
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: MG8091 EntrepreneurshipDevelopment	
CO No.	**Course Outcomes**
C418.1	Upon completion of the course, students will be able to gain knowledge needed to run a business successfully.
C418.2	Upon completion of the course, students will be able to gain skills neededto run a business successfully.

Course Name: Computer Integrated Manufacturing Systems
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: ME8094 Computer Integrated Manufacturing Systems	
CO No.	**Course Outcomes**
C419.1	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems
C419.2	Summarize the production planning and control and computerized process planning
C419.3	Differentiate the different coding systems used in group technology
C419.4	Explain the concepts of flexible manufacturing system (FMS) and automated guidedvehicle (AGV) system
C419.5	Classification of robots used in industrial applications

Course Name: Vibration and NoiseControl
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: ME8074 Vibration and NoiseControl	
CO No.	**Course Outcomes**
C420.1	Upon the completion of this course the students will be able to Summarize the Basics of Vibration
C420.2	Upon the completion of this course the students will be able to Summarize the Basics of Noise
C420.3	Upon the completion of this course the students will be able to Explain the Sources of Automotive Noise
C420.4	Upon the completion of this course the students will be able to Discuss the Control techniques for vibration
C420.5	Upon the completion of this course the students will be able to Describe the sources and control of Noise

Course Name: Micro Electro MechanicalSystems
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: EE8091 Micro Electro MechanicalSystems	
CO No.	**Course Outcomes**
C421.1	Ability to understand basic science, circuit theory, Electro-magnetic field theorycontrol theory and apply them to electrical engineering problems.
C421.2	Ability to apply basic science, circuit theory, Electro-magnetic field theorycontrol theory and apply them to electrical engineering problems.
C421.3	Ability to understand linear and digital electronic circuits.
C421.4	Ability to analyze, linear and digital electronic circuits.

Course Name: Professional Ethics inEngineering
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: GE8076 Professional Ethics inEngineering	
CO No.	**Course Outcomes**
C422.1	Upon completion of the course, the student should be able to apply ethics in society,
C422.2	Upon completion of the course, the student should be able to discuss theethical issues related to engineering .
C422.3	Upon completion of the course, the student should be able to realize the responsibilities in the society.
C422.4	Upon completion of the course, the student should be able to realize the rights in the society.

Course Name: Project Work
Regulation: 2017 **Semester: VIII**

Course Code/Course Name: ME8811 Project Work	
CO No.	**Course Outcomes**
C423.1	To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same.
C4232.2	To train the students in preparing project reports.
C423.3	To train the students to face reviews and viva voce examination.

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DEPARTMENT OF COMPUTER SCIENCE AND BUSINESS SYSTEMS

Courses and Course Outcomes

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DEPARTMENT OF COMPUTER SCIENCE AND BUSINESS SYSTEMS

Courses and Course Outcomes
Regulation 2017

Course Name:Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name:HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name:Engineering Mathematics- I
Regulation: 2017 **Semester: I**

Course Code/Course Name:MA8151/ Engineering Mathematics- I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	Use to analyze Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's) Trigonometric substitutions and Improper integrals.

C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name:Engineering Physics
Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151/ Engineering Physics	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications.
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fiber optics.
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name:Engineering Chemistry
Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/ Engineering Chemistry	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources.

Course Name:Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8151/ Problem Solving and PythonProgramming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions.
C105.4	Represent compound data using Python lists, tuple, and dictionaries.
C105.5	Read and write data from/to files in Python Programs.

Course Name:Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	Understand and draw different types of projections, curves and scales.
C106.2	Remember the orthographic projection of lines and plane surfaces.
C106.3	Design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Define to prepare isometric and perspective sections of simple solids.
C106.5	Create real-time drawings that support different machine drawing technique apply to different engineering Field.

Course Name:Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8161 / Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.

C107.4	Use Python lists, tuple, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name:Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:BS8161 / Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysis of water quality related parameters..
C108.5	Students will be able to analyze the innovatively and also improve the creative skills that are essential for engineering.

Course Name:Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name:HS8251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Understand strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Remember the convincing job applications and effective reports.
C109.3	Recall their speaking skills to make technical presentations, participate in group discussions. (Remembering)
C109.4	Show their listening skill which will help them comprehend lectures and talks in their areas of specialization. (Remembering)
C109.5	Compare technical texts and write area- specific texts effortlessly. (Understanding)

Course Name:Linear Algebra
Regulation: 2017 **Semester: II**

Course Code/Course Name:MA8252/ Linear Algebra	
CO No.	**Course Outcomes**
C110.1	Evaluate the consistency and solve system of linear equations
C110.2	Analyze the basis and dimension of vector space
C110.3	Apply the matrix of linear transformation and its eigenvalues and eigenvectors
C110.4	Remember the orthonormal basis of inner product space and find least square approximation
C110.5	Remember the eigenvalues of a matrix using numerical techniques and perform matrix decomposition

Course Name:Data Structures Design
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8251 Data Structures Design	
CO No.	**Course Outcomes**
C111.1	Understand the abstract data types.
C111.2	Illustrate Linear and Non-Linear Data Structures
C111.3	Apply lists, queues, and stacks in different applications
C111.4	Apply the Tree Structure for Solving Searching, Indexing and Sorting Techniques.
C111.5	Solve the logical problems in graph implementation.

Course Name:Basic Electrical, Electronics and Measurement Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8255 / Basic Electrical, Electronics and Measurement Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the fundamentals of electronic circuit constructions.
C112.2	Analyze the essentials of electric circuits and analysis.
C112.3	Apply the basic operation of electric machines and transformers
C112.4	Analyze the renewable sources and common domestic loads.
C112.5	Understand the different energy sources, protective devices and their field applications.

Course Name:Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8291 / Environmental Science and Engineering	
CO No.	**Course Outcomes**
C113.1	Understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C113.2	Understand about pollution on the environment.
C113.3	Remember the various natural resources.
C113.4	Understand the impact of social issues on the environment.
C113.5	Remember about human population on the environment.

Course Name:Digital Principles and Computer Organization
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8252/ Digital Principles and Computer Organization	
CO No.	**Course Outcomes**
C114.1	Understanding the Boolean Theorems
C114.2	Remember the combinational circuits using gates for arbitrary functions.
C114.3	Define the BCD adder, encoder and decoder circuits (Remember)
C114.4	Understand the multiplexers
C114.5	Recall the study of Computer architecture (Remember)

Course Name:Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	Explain the fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures. (Remember)
C115.2	Remember the basic machining operations and Make the models using sheet metal works.
C115.3	Select the centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
C115.4	Illustrate out basic home electrical works and appliances and Measure the electrical quantities
C115.5	Summarization on the components, gates, soldering practices.

Course Name: Data Structures Design Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8261/ Data Structures Design Laboratory	
CO No.	**Course Outcomes**
C116.1	Understand the abstract data types and python classes.
C116.2	Illustrate Linear and Non-Linear Data Structures
C116.3	Apply lists, queues, and stacks in different applications
C116.4	Apply the Tree Structure for Solving Searching, Indexing and Sorting Techniques.
C116.5	Solve the logical problems in graph implementation.

Course Name:Discrete Mathematics
Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8351/ Discrete Mathematics	
CO No.	**Course Outcomes**
C201.1	Outline the knowledge student's logical and mathematical maturity and ability to deal with abstraction
C201.2	Remember the computer science courses and application of ideas to solve practical problems
C201.3	Understand the basic concepts of combinatory and graph theory
C201.4	Remember the applications of algebraic structures.
C201.5	Understand the concepts and significance of lattices and Boolean algebra which are widely used in computer science and engineering

Course Name:Fundamentals of Economics
Regulation: 2017 **Semester: III**

Course Code/Course Name:CW8301/ Fundamentals of Economics	
CO No.	**Course Outcomes**
C202.1	Remember the demand curves of households and supply curves of firms with the Principles
C202.2	Analyze the welfare and budget constraints
C202.3	Evaluate the floors and compare income effects
C202.4	Apply the Supply and demand of Money
C202.5	Analyze the Keynesian's process of multiplier theory in macro economics

Course Name:Object Oriented Programming
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8392/ Object Oriented Programming	
CO No.	**Course Outcomes**
C203.1	Develop Java programs using OOP principles

C203.2	Develop Java programs with the concepts inheritance and interfaces
C203.3	Build Java applications using exceptions and I/O streams
C203.4	Develop Java applications with threads and generics classes
C203.5	Develop interactive Java programs using swings

Course Name:Design and Analysis of Algorithms
Regulation: 2017 **Semester: III**

Course Code/Course Name:AD8351/ Design and Analysis of Algorithms	
CO No.	**Course Outcomes**
C204.1	Analyze the recursive algorithms for the given problem
C204.2	Evaluate the divide and conquer strategy.
C204.3	Apply the State Space Approach
C204.4	Analyze the Concepts of Back Tracking
C204.5	Evaluate the randomized and Parallel Algorithm

Course Name:Database Management Systems
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8492 Database Management Systems	
CO No.	**Course Outcomes**
C205.1	Analyze the various data models relational databases
C205.2	Analyze the ER model to Relational model to perform database design and organize the data using Normalization
C205.3	Apply concurrency control & recovery mechanism for database problems.
C205.4	Analyze the various indexing strategies in different database systems
C205.5	Understand how advanced databases differ from traditional databases.

Course Name:Business Communication and Value Science Laboratory I
Regulation: 2017 **Semester: III**

Course Code/Course Name:CW8311/ Business Communication and Value Science Laboratory I	
CO No.	**Course Outcomes**
C206.1	Analyze the students overall communication

C206.2	Analyze and interpersonal skills by engaging them in group activities.
C206.3	Function and emerge the students as professionals
C206.4	Motive the students for the development of basic fluency in English
C206.5	Justify the interpersonal skills so as to effectively

Course Name:Object Oriented Programming Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8383/ Object Oriented Programming Laboratory	
CO No.	**Course Outcomes**
C207.1	Experiment and expose the Object Oriented Programming concepts .
C207.2	Implement the concept of exception handling mechanism.
C207.3	Create and implement a java based multi-threaded application.
C207.4	Create and develop event-driven programming using java programming
C207.5	Build software development skills using java programming for real-world applications

Course Name:Database Management Systems Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8481/ Database Management Systems Laboratory	
CO No.	**Course Outcomes**
C208.1	Apply the data definitions and manipulation commands
C208.2	Design applications to test Nested and Join Queries
C208.3	Implement simple applications that use Views
C208.4	Implement applications that require a Front-end Tool
C208.5	Critically analyze the use of Tables, Views, Functions and Procedures

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Courses and Course Outcomes

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DEPARTMENT OF COMPUTER SCIENCE AND BUSINESS SYSTEMS

Courses and Course Outcomes
Regulation 2017

Course Name: Communicative English
Regulation: 2017 **Semester: I**

Course Code/Course Name: HS8151/ Communicative English	
CO No.	**Course Outcomes**
C101.1	Students will be able to develop the confidence to speak at any level and to talk on any topic by applying communicative strategies.
C101.2	To equip students with the necessary skills in reading and writing which will enable them read their textbooks and additional material with greater comprehension and communicate their understanding fluently in writing.
C101.3	Students will be able to listen to lectures in English and do exercises based on them.
C101.4	Students will be able to speak with ease and communicate their ideas, views related to their branches of specialization.
C101.5	Students will able to infer, imply meanings and critically analyze to evaluate them for ideas as well as for the method of presentation.

Course Name:Engineering Mathematics- I
Regulation: 2017 **Semester: I**

Course Code/Course Name: MA8151/ Engineering Mathematics- I	
CO No.	**Course Outcomes**
C102.1	To understand the concepts of functions, limits and continuity.
C102.2	Use to analyze Differential rules and students will be able to construct the Maxima& Minima of functions.
C102.3	To understand the techniques of integration (Integration by parts & Bernoulli's) Trigonometric substitutions and Improper integrals.

C102.4	To understand the concepts of Double and Triple integrals.
C102.5	Understanding the concept and solving the Homogeneous and simultaneous differential equation.

Course Name:Engineering Physics
Regulation: 2017 **Semester: I**

Course Code/Course Name:PH8151/ Engineering Physics	
CO No.	**Course Outcomes**
C103.1	The students will gain knowledge on the basics of properties of matter and its applications.
C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fiber optics.
C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

Course Name:Engineering Chemistry
Regulation: 2017 **Semester: I**

Course Code/Course Name:CY8151/ Engineering Chemistry	
CO No.	**Course Outcomes**
C104.1	Understand the concept about water technology and its applications.
C104.2	To apply the concepts of surface chemistry on industrial sectors.
C104.3	The students will have adequate knowledge on the concept of phase rule, alloys and its significance to the engineering materials.
C104.4	The students will understand the knowledge about various types of fuels and their manufacturing process.
C104.5	The students will get adequate knowledge on different type of Energy Sources.

Course Name:Problem Solving and Python Programming
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8151/ Problem Solving and PythonProgramming	
CO No.	**Course Outcomes**
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems and functions.
C105.4	Represent compound data using Python lists, tuple, and dictionaries.
C105.5	Read and write data from/to files in Python Programs.

Course Name:Engineering Graphics
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8152/ Engineering Graphics	
CO No.	**Course Outcomes**
C106.1	Understand and draw different types of projections, curves and scales.
C106.2	Remember the orthographic projection of lines and plane surfaces.
C106.3	Design various solids, make sections and develop surfaces in engineering geometric models.
C106.4	Define to prepare isometric and perspective sections of simple solids.
C106.5	Create real-time drawings that support different machine drawing technique apply to different engineering Field.

Course Name:Problem Solving and Python Programming Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:GE8161 / Problem Solving and Python Programming Laboratory	
CO No.	**Course Outcomes**
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.

C107.4	Use Python lists, tuple, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course Name:Physics and Chemistry Laboratory
Regulation: 2017 **Semester: I**

Course Code/Course Name:BS8161 / Physics and Chemistry Laboratory	
CO No.	**Course Outcomes**
C108.1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C108.2	The student will be able to analyze the physical principle involved in various instruments in optics and thermal physics.
C108.3	Students will be able to understand different types of instruments for analyzing compounds.
C108.4	Students will be able to acquire hands-on knowledge in the quantitative chemical analysis of water quality related parameters..
C108.5	Students will be able to analyze the innovatively and also improve the creative skills that are essential for engineering.

Course Name:Technical English
Regulation: 2017 **Semester: II**

Course Code/Course Name:HS8251/ Technical English	
CO No.	**Course Outcomes**
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Foster their ability to write convincing job applications and effective reports.
C109.3	Develop their speaking skills to make technical presentations, participate in group discussions.
C109.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.
C109.5	Read technical texts and write area- specific texts effortlessly.

Course Name:Linear Algebra
Regulation: 2017 **Semester: II**

Course Code/Course Name:MA8252/ Linear Algebra	
CO No.	**Course Outcomes**
C110.1	Evaluate the consistency and solve system of linear equations
C110.2	Analyze the basis and dimension of vector space
C110.3	Apply the matrix of linear transformation and its eigenvalues and eigenvectors
C110.4	Remember the orthonormal basis of inner product space and find least square approximation
C110.5	Remember the eigenvalues of a matrix using numerical techniques and perform matrix decomposition

Course Name:Data Structures Design
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8251 Data Structures Design	
CO No.	**Course Outcomes**
C111.1	Understand the abstract data types.
C111.2	Illustrate Linear and Non-Linear Data Structures
C111.3	Apply lists, queues, and stacks in different applications
C111.4	Apply the Tree Structure for Solving Searching, Indexing and Sorting Techniques.
C111.5	Solve the logical problems in graph implementation.

Course Name:Environmental Science and Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8291 / Environmental Science and Engineering	
CO No.	**Course Outcomes**
C112.1	Understand the natural environment, its relationships with human activities and to know about Biodiversity and its values.
C112.2	Understand about pollution on the environment.
C112.3	Remember the various natural resources.
C112.4	Understand the impact of social issues on the environment.
C112.5	Remember about human population on the environment.

Course Name:Basic Electrical, Electronics and Measurement Engineering
Regulation: 2017 **Semester: II**

Course Code/Course Name:BE8255 / Basic Electrical, Electronics and Measurement Engineering	
CO No.	**Course Outcomes**
C113.1	Understand the fundamentals of electronic circuit constructions.
C113.2	Analyze the essentials of electric circuits and analysis.
C113.3	Apply the basic operation of electric machines and transformers
C113.4	Analyze the renewable sources and common domestic loads.
C113.5	Understand the different energy sources, protective devices and their field applications.

Course Name:Digital Principles and Computer Organization
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8252/ Digital Principles and Computer Organization	
CO No.	**Course Outcomes**
C114.1	Understanding the Boolean Theorems
C114.2	Remember the combinational circuits using gates for arbitrary functions .
C114.3	Define the BCD adder, encoder and decoder circuits (Remember)
C114.4	Understand the multiplexers
C114.5	Recall the study of Computer architecture (Remember)

Course Name:Engineering Practices Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:GE8261/ Engineering Practices Laboratory	
CO No.	**Course Outcomes**
C115.1	Explain the fabricate carpentry components and pipe connections including plumbing works and use welding equipments to join the structures. (Remember)
C115.2	Remember the basic machining operations and Make the models using sheet metal works.

C115.3	Select the centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
C115.4	Illustrate out basic home electrical works and appliances and Measure the electrical quantities
C115.5	Summarization on the components, gates, soldering practices.

Course Name: Data Structures Design Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:AD8261/ Data Structures Design Laboratory	
CO No.	**Course Outcomes**
C116.1	Understand the abstract data types and python classes.
C116.2	Illustrate Linear and Non-Linear Data Structures
C116.3	Apply lists, queues, and stacks in different applications
C116.4	Apply the Tree Structure for Solving Searching, Indexing and Sorting Techniques.
C116.5	Solve the logical problems in graph implementation.

Course Name:Discrete Mathematics
Regulation: 2017 **Semester: III**

Course Code/Course Name:MA8351/ Discrete Mathematics	
CO No.	**Course Outcomes**
C201.1	Outline the knowledge student's logical and mathematical maturity and ability to deal with abstraction
C201.2	Remember the computer science courses and application of ideas to solve practical problems
C201.3	Understand the basic concepts of combinatory and graph theory
C201.4	Remember the applications of algebraic structures.
C201.5	Understand the concepts and significance of lattices and Boolean algebra which are widely used in computer science and engineering

Course Name:Introduction to Operating Systems
Regulation: 2017 **Semester: III**

Course Code/Course Name:AD8301/ Introduction to Operating Systems	
CO No.	**Course Outcomes**
C202.1	Understand the various Scheduling Algorithms.
C202.2	Analyze the various challenges in Multi -Threading models.
C202.3	Create and design deadlock, prevention and avoidance algorithms

C202.4	Compare and contrast various memory management schemes
C202.5	Apply administrative tasks on Linux Servers

Course Name: Fundamentals of Data Science
Regulation: 2017 **Semester: III**

Course Code/Course Name:AD8302/ Fundamentals of Data Science	
CO No.	**Course Outcomes**
C203.1	Apply Python PANDAS Library for Data Pre-processing and Cleansing (Apply)
C203.2	Determine the relationship between Data Dependencies using Statistics (Analysis)
C203.3	Analyze data using primary tools used for Data Science in Python (Analysis)
C203.4	Discover the useful information using Mathematical Statistical Skills (Apply)
C203.5	Apply the knowledge for Data Describing and Visualization using Python Data Visualization Libraries (Apply)

Course Name:Object Oriented Programming
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8392/ Object Oriented Programming	
CO No.	**Course Outcomes**
C204.1	Develop Java programs using OOP principles
C204.2	Develop Java programs with the concepts inheritance and interfaces
C204.3	Build Java applications using exceptions and I/O streams
C204.4	Develop Java applications with threads and generics classes
C204.5	Develop interactive Java programs using swings

Course Name:Design and Analysis of Algorithms
Regulation: 2017 **Semester: III**

Course Code/Course Name:AD8351/ Design and Analysis of Algorithms	
CO No.	**Course Outcomes**
C205.1	Analyze the recursive algorithms for the given problem
C205.2	Evaluate the divide and conquer strategy.
C205.3	Apply the State Space Approach
C205.4	Analyze the Concepts of Back Tracking
C205.5	Evaluate the randomized and Parallel Algorithm

Course Name: Data Science Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:AD8311/ Data Science Laboratory	
CO No.	**Course Outcomes**
C206.1	Understand the Python Programming packages Python, Numpy, Scipy, Matplotlib, Pandas, statmodels, seaborn, plotly, bokeh Language
C206.2	To prepare data for data analysis through understanding its distribution
C206.3	Apply the data processing using NUMPY and PANDAS
C206.4	Analyze the knowledge in plotting using visualization tools
C206.5	Evaluate the classification and Regression Model.

Course Name:Object Oriented Programming Laboratory
Regulation: 2017 **Semester: III**

Course Code/Course Name:CS8383/ Object Oriented Programming Laboratory	
CO No.	**Course Outcomes**
C207.1	Experiment and expose the Object Oriented Programming concepts .
C207.2	Implement the concept of exception handling mechanism.
C207.3	Create and implement a java based multi-threaded application.
C207.4	Create and develop event-driven programming using java programming
C207.5	Build software development skills using java programming for real-world applications

Course Name:Interpersonal Skills/Listening & Speaking
Regulation: 2017 **Semester: III**

Course Code/Course Name:HS8381 Interpersonal Skills/Listening & Speaking	
CO No.	**Course Outcomes**
C208.1	Analyze and respond appropriately.
C208.2	Analyze the students Participation in the group discussions
C208.3	Examine the effective presentations
C208.4	Evaluate the Participants confidence and appropriate in conversations both formal and informal
C208.5	Analyze and respond to formal and informal talk

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DEPARTMENT OF AERONAUTICAL ENGINEERING

Courses and Course Outcomes

M.E.AERONAUTICAL ENGINEERING

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DEPARTMENT OF AERONAUTICAL ENGINEERING

Courses and Course Outcomes - Regulation 2017

Course Name:Advanced Mathematical Methods
Regulation: 2017 **Semester: I**

Course Code/Course Name: MA5151/ Advanced Mathematical Methods	
CO No.	**Course Outcomes**
PC101.1	Application of Laplace and Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations.
PC101.2	Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines
PC101.3	Construct conformal mappings between various domains and use of conformal mapping in studying problems in physics and engineering particularly to fluid flow and heat flow problems
PC101.4	Understand tensor algebra and its applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors.
PC101.5	Competently use tensor analysis as a tool in the field of applied sciences and related fields.

Course Name: Aerodynamics
Regulation: 2017 **Semester: I**

Course Code/Course Name: AO5151/Aerodynamics	
CO No.	**Course Outcomes**
PC102.1	Knowledge to understand the basic flow equations and fundamentals of aerodynamics.
PC102.2	Knowledge to understand the incompressible flow theory applicable to aerodynamics.
PC102.3	Knowledge to understand the compressible flow theory applicable to aerodynamics.
PC102.4	Knowledge about the performance of airfoil, wings and airplane configurations in transonic flow regime.

PC102.5	Knowledge to understand the basics of Boundary layer theory and about flow measurement techniques.

Course Name:Aircraft Structural Mechanics
Regulation: 2017 **Semester: I**

Course Code/Course Name:AO5101/ Aircraft Structural Mechanics	
CO No.	**Course Outcomes**
PC103.1	Knowledge to understand loads acting an aircraft.
PC103.2	Knowledge to identify & resolve the structural design & its limitations.
PC103.3	Knowledge to improvise distribution their loads on aircraft member with safer limits.
PC103.4	Knowledge to understand the design of low weight to high strength panel member.
PC103.5	Knowledge to analyze the aircraft real structural components such as wings and fuselage.

Course Name: Aerospace Propulsion
Regulation: 2017 **Semester: I**

Course Code/Course Name:AO5102 / Aerospace Propulsion	
CO No.	**Course Outcomes**
PC104.1	Knowledge to understand and analyze the performance of the aircraft engines.
PC104.2	Knowledge to understand and analyze the performance of the aircraft propellers.
PC104.3	Knowledge to understand and analyze the performance of inlets, combustors and nozzles used in aircraft gas turbine engines.
PC104.4	Knowledge to understand and analyze the performance compressors, fans and turbines used in aircraft gas turbine engines.
PC104.5	Knowledge to understand the basics of spacecraft powerplants.

Course Name: Theory of Vibrations
Regulation: 2017 **Semester: I**

Course Code/Course Name:AO5103/ Theory of Vibrations	
CO No.	**Course Outcomes**
PC105.1	Understanding of single degree vibrating systems.
PC105.2	Understanding of multi-degree vibrating systems.

PC105.3	Knowledge to analyze the vibrations of elastic bodies.
PC105.4	Knowledge about the various eigen value methods and dynamic response of large systems
PC105.5	Knowledge about the aero elasticity problems like aileron reversal, flutter and wing divergence.

Course Name :AIRCRAFT DESIGN
Regulation: 2017 **Semester: I**

Course Code/Course Name: AO5002 / AIRCRAFT DESIGN	
CO No.	**Course Outcomes**
PC106.1	Get the knowledge of aircraft basics and understand the stages involved in aircraft design
PC106.2	Initiate the preliminary design of an aircraft starting from data collection to satisfy mission specifications and understand the procedure involved in weight estimation
PC106.3	Understand the procedure involved in selection and location of powerplant
PC106.4	To get familiarized with the design of wing, fuselage and tail plane
PC106.5	Initiate the design of landing gear and component or process to meet requirements the aircraft systems

Course Name: AERODYNAMICS LABORATORY
Regulation: 2017 **Semester: I**

Course Code/Course Name:AO5161/ AERODYNAMICS LABORATORY	
CO No.	**Course Outcomes**
PC107.1	Ability to perform Flow testing on given shape
PC107.2	Ability to use the fundamental dynamic principle in aircraft application
PC107.3	Understand pressure distribution on any shape
PC107.4	Understand the losses due to stream lines
PC107.5	Perform flow visualization techniques

Course Name: Technical Seminar – I
Regulation: 2017 **Semester: I**

Course Code/Course Name AO5111 /Technical Seminar – I	
CO No.	**Course Outcomes**
PC108.1	Students will be able to show competence in identifying relevant information, defining and explaining topics under discussion
PC108.2	Students will be able to judge when to speak and how much to say, speak clearly and audibly in a manner appropriate to the subject.

PC108.3	Students will be able to demonstrate that they have paid close attention to what others say and can respond constructively.
PC108.4	Students will be able to develop persuasive speech, present information in a compelling, well-structured, and logical sequence.
PC108.5	Students will be able to demonstrate their understanding of discussions and spark further discussion.

Course Name: Flight Mechanics
Regulation: 2017 **Semester: II**

Course Code/Course Name:AO5251/ Flight Mechanics	
CO No.	**Course Outcomes**
PC201.1	Knowledge to understand the basic principles of flight.
PC201.2	Knowledge to understand the performance of aircrafts in level, climbing and gliding fights.
PC201.3	Knowledge to understand the performance of aircrafts in accelerated fights.
PC201.4	Knowledge to understand the flight longitudinal stability and control.
PC201.5	Knowledge to understand the flight lateral, directional stability and control.

Course Name: Finite Element Methods
Regulation: 2017 **Semester: II**

Course Code/Course Name: AO5252 / Finite Element Methods	
CO No.	**Course Outcomes**
PC202.1	Knowledge to understand the various approximate methods and about the basic concepts of FEM.
PC202.2	Knowledge to understand and analyze the problems on bar and beam elements at various loading conditions.
PC202.3	Perform analysis on Plane stress, plane strain and axisymmetric problems.
PC202.4	Knowledge about the modeling of 2D and 3D structures using iso-parametric elements.
PC202.5	Apply the concepts of solution of simultaneous equations governing static, dynamics and stability problems in software.

Course Name: Computational Fluid Dynamics for Aerospace Applications
Regulation: 2017 **Semester: II**

Course Code/Course Name:AO5253 / Computational Fluid Dynamics For Aerospace Applications	
CO No.	**Course Outcomes**
PC203.1	Knowledge about the basic governing equations of CFD and about finding the numerical solutions to the simple gas dynamic problems.
PC203.2	Knowledge about the Mesh and Mesh generation techniques.
PC203.3	Knowledge about the small perturbation flows and relaxation techniques.
PC203.4	Knowledge about the time dependent methods.
PC203.5	Knowledge about the panel methods and its application to incompressible, compressible, subsonic and supersonic flows.

Course Name: Composite Materials And Structures
Regulation: 2017 **Semester: II**

Course Code/Course Name: AO5254 /Composite Materials And Structures	
CO No.	**Course Outcomes**
PC204.1	Knowledge about the basics of composite materials and its application in aircraft industry and about the Micromechanics approach.
PC204.2	Knowledge about the Macro mechanics of composite materials .
PC204.3	Knowledge to analyse the various types of laminated composites.
PC204.4	Knowledge about the open and closed mould processes to fabricate the composite material.
PC204.5	Understand the failure theories of composite and about various Non-Destructive Techniques to test the composite materials.

Course Name: Industrial Aerodynamics
Regulation: 2017 **Semester: II**

Course Code/Course Name:AO5007 / Industrial Aerodynamics	
CO No.	**Course Outcomes**
PE205.1	Knowledge about the atmospheric winds and atmospheric boundary layer.
PE205.2	Knowledge about the horizontal and vertical axis wind turbine design and to analyze their aerodynamic performances.
PE205.3	Knowledge about the vehicle aerodynamics and to analyze their aerodynamic performances.
PE205.4	Knowledge about the various forces and pressure distribution pattern on buildings.
PE205.5	Knowledge about the flow induced vibrations.

Course Name: Advanced Propulsion Systems
Regulation: 2017 **Semester: II**

Course Code/Course Name: AO5073/ Advanced Propulsion Systems	
CO No.	**Course Outcomes**
PE206.1	Knowledge about the design and operation of air breathing engines.
PE206.2	Knowledge about the design and operation of Ramjets and air augmented rockets.
PE206.3	Knowledge about the design and operation of Scramjet propulsion systems.
PE206.4	Knowledge about the design and operation of Nuclear Propulsion systems.
PE206.5	Knowledge about the design and operation of Electric and Ion propulsion systems.

Course Name: STRUCTURES LABORATORY
Regulation: 2017 **Semester: II**

Course Code/Course Name: AO5261/ STRUCTURES LABORATORY	
CO No.	Course Outcomes
PC207.1	Ability to perform Bending
PC207.2	Ability to perform Torsion
PC207.3	Ability to perform Shear
PC207.4	Ability to perform Vibration test on metabolic
PC207.5	Ability to fabricate composite laminates

Course Name: CFD/FEA Laboratory
Regulation: 2017 **Semester: II**

Course Code/Course Name:AO5211 / CFD/FEA Laboratory	
CO No.	Course Outcomes
PC208.1	Students will understand the principles of fluid dynamics and algorithms of CFD modeling
PC208.2	Students will be able to employ commercial codes to develop CFD models and interpret the results into the physical process
PC208.3	Understanding the underlying principles of CFD analysis and finite difference methods
PC208.4	Understand the numerical models in flow modeling
PC208.5	The student will demonstrate the ability to use modern CFD software tools to get accurate solution.

Course Name: Experimental Aerodynamics
Regulation: 2017 **Semester: III**

Course Code/Course Name: AO5012 /Experimental Aerodynamics	
CO No.	**Course Outcomes**
PE301.1	To understand about the basic measurement techniques in fluid mechanics.
PE301.2	Knowledge about the various types of wind tunnels and wind tunnel calibration and flow measurement techniques.
PE301.3	Knowledge about the various flow visualization techniques.
PE301.4	Knowledge about the techniques used to measure the pressure, velocity and temperature while conducting wind tunnel experiments.
PE301.5	Knowledge about the data acquisition technique and to analyze the uncertainty in the results.

Course Name: Propeller Aerodynamics
Regulation: 2017 **Semester: III**

Course Code/Course Name: AO5015 /Propeller Aerodynamics	
CO No.	**Course Outcomes**
PE302.1	Knowledge about the aircrew design and theory to analyze the aircrew performance.
PE302.2	Knowledge about the axial momentum theory to analyze the propeller performance.
PE302.3	Knowledge about the blade element theory to analyze the performance of the propeller.
PE302.4	Knowledge about the vortex theory to study the propeller performance.
PE302.5	Knowledge about the experimental and simulation approach to investigate the performance of the propeller.

Course Name: Project Work Phase I
Regulation: 2017 **Semester: III**

Course Code/Course Name: AO5312 -Project Work Phase I	
CO No.	Course Outcomes
PC303.1	Exhibit a sound technical knowledge of selecting project topic
PC303.2	Engage in problem identification and formulation
PC303.3	Provide solutions to complex engineering problems utilizing a systematic approach.
PC303.4	Manage an engineering project
PC303.5	Expose the knowledge, skills and attitudes of a professional engineer.

Course Name: Technical Seminar - II
Regulation: 2017 **Semester: III**

Course Code/Course Name: AO5311-Technical Seminar - II	
CO No.	Course Outcomes
PC304.1	Demonstrate depth of understanding, use of primary and secondary sources; demonstrate complexity, insight, cogency, independent thought, relevance, and persuasiveness.
PC304.2	Demonstrate breadth of reading, show independence and flexibility of thought, help discussions to move forward, show intellectual leadership and effective time management.
PC304.3	Build on discussion fruitfully, supporting and connecting with other discussants.
PC304.4	Demonstrate use of appropriate methodologies, test the strength of their thesis statement, and show insight into a topic, appropriate signposting, and clarity of purpose.
PC304.5	Opportunities for developing ideas through creative work.

Course Name: Project Work Phase II
Regulation: 2017 **Semester: IV**

Course Code/Course Name: AO5411 / Project Work Phase II	
CO No.	Course Outcomes
PC401.1	Demonstrate a sound technical knowledge of their selected project topic
PC402.2	Undertake problem identification, formulation and solution
PC403.3	Design engineering solutions to complex problems utilizing a systems approach.
PC404.4	Conduct an engineering project
PC404.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.E – COMMUNICATION SYSTEMS

Courses and Course Outcomes

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.E – COMMUNICATION SYSTEMS

Courses and Course Outcomes

Course Name: APPLIED MATHEMATICS FOR COMMUNICATION ENGINEERS
Regulation: 2017 **Semester: I**

Course Code/Course Name:MA5154/ APPLIED MATHEMATICS FOR COMMUNICATION ENGINEERS	
CO No.	Course Outcomes
CO1	Understand the concepts on vector spaces, linear transformation, inner product spaces, eigenvalues and generalized eigenvectors.
CO2	Apply various methods in linear algebra to solve system of linear equations.
CO3	Develop a fundamental understanding of linear programming models, able to develop a linear programming model from problem description, apply the simplex method for solving linear programming problems.
CO4	Conceptualize the principle of optimality and sub-optimization, formulation and computational procedure of dynamic programming.
CO5	Able to use discrete time Markov chains to model computer systems.

Course Name: ADVANCED RADIATION SYSTEMS
Regulation: 2017 **Semester: I**

Course Code/Course Name: CU5191/ ADVANCED RADIATION SYSTEMS	
CO No.	Course Outcomes
CO1	Understand the basic concept of Antenna.
CO2	Design antenna for various applications
CO3	Design mono pole, dipole and patch antenna
CO4	Understand the array structure of antenna
CO5	Able to design modern antennas

Course Name: ADVANCED DIGITAL COMMUNICATION TECHNIQUES
Regulation: 2017 **Semester: I**

Course Code/Course Name:CU5151/ ADVANCED DIGITAL COMMUNICATION TECHNIQUES	
CO No.	Course Outcomes
CO1	Understand the basics of signal-space analysis and digital transmission.
CO2	Develop the ability to understand the concepts of signal space analysis for coherent and non- coherent receivers.
CO3	Conceptually appreciate different equalization techniques
CO4	Understand different block codes and convolutional codes.
CO5	Comprehend the generation of ofdm signals and the techniques of multiuser detection.

Course Name: ADVANCED DIGITAL SIGNAL PROCESSING
Regulation: 2017 **Semester: I**

Course Code/Course Name:AP5152 / ADVANCED DIGITAL SIGNAL PROCESSING	
CO No.	Course Outcomes
CO1	To Formulate time domain and frequency domain description of Wide Sense Stationary process
CO2	To apply spectrum estimation algorithms in signal processing
CO3	To evaluate linear estimation and prediction algorithms in signal processing
CO4	To design and implement Adaptive Filters in signal processing
CO5	To evaluate multirate signal processing algorithms for applications signal processing

Course Name: OPTICAL NETWORKS
Regulation: 2017 **Semester: I**

Course Code/Course Name: CU5192/ OPTICAL NETWORKS	
CO No.	Course Outcomes
CO1	Understand Optical system components like optical amplifiers, wavelength converters.
CO2	Understand the development in Optical Network Architectures.
CO3	Understand the concept of Packet switching
CO4	Understand the Network design perspectives.
CO5	Understand the different Optical Network management techniques and functions

Course Name: REAL TIME EMBEDDED SYSTEMS
Regulation: 2017 **Semester: I**

Course Code/Course Name: CU5092/ REAL TIME EMBEDDED SYSTEMS	
CO No.	Course Outcomes
CO1	Understand the basic concepts of ARM processors
CO2	Understand the computing platform and design analysis of ARM processors
CO3	Understand the concepts of Operating systems in ARM
CO4	Understand the concept of embedded networks
CO5	Understand case studies related to embedded systems

Course Name: COMMUNICATION SYSTEMS LABORATORY
Regulation: 2017 **Semester: I**

Course Code/Course Name: CU5161/ COMMUNICATION SYSTEMS LABORATORY	
CO No.	Course Outcomes
CO1	Measure and analyze various transmission line parameters.
CO2	Design Microstrip patch antennas.
CO3	Implement the adaptive filtering algorithms
CO4	To generate and detect digital communication signals of various modulation techniques using MATLAB.
CO5	Evaluate cellular mobile communication technology and propagation model.

Course Name: ADVANCED WIRELESS COMMUNICATIONS SYSTEM
Regulation: 2017 **Semester: II**

Course Code/Course Name:CU5291/ADVANCED WIRELESS COMMUNICATIONS SYSTEM	
CO No.	Course Outcomes
CO1	Explain about aspects of information theory
CO2	Analyze MIMO system.
CO3	Discuss millimeter wave communication.
CO4	Demonstrate software defined radio
CO5	Demonstrate cognitive radio.

Course Name: VLSI FOR WIRELESS COMMUNICATION
Regulation: 2017 **Semester: II**

Course Code/Course Name: **CU5073/VLSI FOR WIRELESS COMMUNICATIONSYSTEM**	
CO No.	Course Outcomes
CO1	Explain about the need for VLSI in wireless communication
CO2	Design low noise amplifiers
CO3	Design and analyze mixers
CO4	Evaluate frequency synthesizers
CO5	Design and analyze power amplifiers

Course Name: MIC AND RF SYSTEM DESIGN
Regulation: 2017 **Semester: II**

Course Code/Course Name:CU5201 / MIC AND RF SYSTEM DESIGN	
CO No.	Course Outcomes
CO1	Explain about transceiver specifications and architectures
CO2	Capability to design RF circuits
CO3	Analyze feedback systems and amplifiers
CO4	To be able to analyze RF circuits
CO5	Explain about MIC components

Course Name: ELECTRO MAGNETIC INTERFERENCE AND COMPATIBILITY
Regulation: 2017 **Semester: II**

Course Code/Course Name:CU5292/ ELECTRO MAGNETIC INTERFERENCE AND COMPATIBILITY	
CO No.	Course Outcomes
CO1	Explain about of basic theory electro magnetic interference
CO2	Understand about various coupling mechanism coupling mechanism
CO3	Understand about different EMI mitigation techniques
CO4	Study about different EMI standards
CO5	Understand about various test methods and instrumentation

Course Name: ADVANCED DIGITAL IMAGE PROCESSING
Regulation: 2017 **Semester: II**

Course Code/Course Name: DS5291/ADVANCED DIGITAL IMAGE PROCESSING	
CO No.	Course Outcomes
CO1	Explain the fundamentals digital image processing
CO2	Describe image various segmentation techniques
CO3	Describe image feature extraction techniques for image analysis
CO4	Discuss the concepts of image registration and fusion
CO5	Explain 3D image visualization

Course Name: BROADBAND ACCESS TECHNOLOGIES
Regulation: 2017 **Semester: II**

Course Code/Course Name: EL5071 / BROADBAND ACCESS TECHNOLOGIES	
CO No.	Course Outcomes
CO1	Explain about fundamentals of broadband access technologies
CO2	Understand about digital subscriber lines
CO3	Understand and explain about cable modem
CO4	Explain about fiber access technologies
CO5	Understand various broad band wireless techniques

Course Name: RF SYSTEM DESIGN LABORATORY
Regulation: 2017 **Semester: II**

Course Code/Course Name:CU5211/ RF SYSTEM DESIGN LABORATORY	
CO No.	Course Outcomes
CO1	Apply knowledge to identify a suitable RF architecture's
CO2	Systematically design an RF system
CO3	Comprehensively record and report the measured data
CO4	Capable of analyzing, interpreting the experimentally measured data and produce the meaningful conclusions
CO5	Design and develop microstrip filters

Course Name: TERM PAPER WRITING AND SEMINAR
Regulation: 2017 **Semester: II**

Course Code/Course Name:CP5281/TERM PAPER WRITING AND SEMINAR	
CO No.	Course Outcomes
CO1	Develop scientific and technical reading and writing skills
CO2	Understand and construct research articles
CO3	Gather information from a variety of sources and place it in logically developed ideas

Course Name: MILLIMETER WAVE COMMUNICATIONS
Regulation: 2017 **Semester: III**

Course Code/Course Name:CU5301/ MILLIMETER WAVE COMMUNICATIONS	
CO No.	Course Outcomes
CO1	Explain about millimeter wave characteristics
CO2	Understand about millimeter wave devices and circuits
CO3	Understand different types of millimeter wave communication systems
CO4	Explain about mm wave MIMO systems
CO5	Discuss about various antennas for mm wave systems

Course Name: MULTIMEDIA COMPRESSION TECHNIQUES
Regulation: 2017 **Semester: III**

Course Code/Course Name:MU5091/MULTIMEDIA COMPRESSION TECHNIQUES	
CO No.	Course Outcomes
CO1	Understand and explain about fundamentals of compression
CO2	Explain about text compression algorithms
CO3	Discuss about image compression standards
CO4	Explain about audio compression techniques
CO5	Discuss about video compression

Course Name:NETWORK MANAGEMENT
Regulation: 2017 **Semester: III**

Course Code/Course Name: NE5071 / NETWORK MANAGEMENT	
CO No.	Course Outcomes
CO1	Diagnose problems computer networks
CO2	Make minor repairs to computer networks using appropriate diagnostics software
CO3	Demonstrate how to correctly maintain LAN computer systems
CO4	Maintain the network by performing routine maintenance tasks
CO5	Apply network management tools

Course Name:Project Work Phase I
Regulation: 2017 **Semester: III**

Course Code/Course Name: CU5311 / Project Work Phase I	
CO No.	Course Outcomes
CO1	Discover potential research areas in the field of electronics and communication systems
CO2	Conduct a survey of several available literature in the preferred field of study
CO3	Compare and contrast the several existing solutions for research challenge
CO4	Formulate and propose a plan for creating a solution for the research plan identified
CO5	To report and present the findings of the study conducted in the preferred domain

Course Name:Project Work Phase II
Regulation: 2017 **Semester: IV**

Course Code/Course Name: CU5411 / Project Work Phase II	
CO No.	Course Outcomes
CO1	Discover potential research areas in the field of electronics and communication systems
CO2	Conduct a survey of several available literature in the preferred field of study
CO3	Compare and contrast the several existing solutions for research challenge
CO4	Formulate and propose a plan for creating a solution for the research plan identified
CO5	To report and present the findings of the study conducted in the preferred domain

NEHRU INSTITUTE OF ENGINEERING AND TECHNOLOGY
T. M. Palayam, Coimbatore-641 105

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NBA Accredited UG Courses: AERO, CSE, MECH

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

MBA - MASTER OF BUSINESS ADMINISTRATION

Courses and Course Outcomes

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DEPARTMENT OF MANAGEMENT STUDIES – MBA

Course Name: ECONOMIC ANALYSIS FOR BUSINESS
Regulation: 2017 **Semester: I**

Course Code/Course Name: BA5101 / ECONOMIC ANALYSIS FOR BUSINESS	
CO No.	**Course Outcomes**
C101.1	To be familiar with principles of micro economics.
C101.2	To be familiar with principles of macro economics.
C101.3	Students would become familiar with application of economic principles.
C101.4	To understand the functions of both product and input markets.
C101.5	To understand the functioning of the economy.

Course Name: PRINCIPLES OF MANAGEMENT

Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5102 / PRINCIPLES OF MANAGEMENT	
CO No.	**Course Outcomes**
C102.1	The students should be able to describe and discuss the elements of effective management
C102.2	To apply the planning processes
C102.3	To describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication.
C102.4	Students can able to communicate effectively through oral presentation.
C102.5	To understand the control process.

Course Name: ACCOUNTING FOR MANAGEMENT
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5103 / ACCOUNTING FOR MANAGEMENT	
CO No.	**Course Outcomes**
C103.1	The students can able to Possess a managerial outlook at accounts.
C103.2	To gain knowledge on basics of management accounts.
C103.3	Students will understand the statutory books and company accounts.
C103.4	To solve the financial problems.
C103.5	Students can analyze the financial performance of the company

Course Name: LEGAL ASPECTS OF BUSINESS
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5104 / LEGAL ASPECTS OF BUSINESS	
CO No.	**Course Outcomes**
C104.1	To establish legal insights in the business practices.
C104.2	To learn Business practices
C104.3	Students can able to attain the knowledge about various laws.
C104.4	To know about company law and industrial law.
C104.5	To create awareness about cyber laws.

Course Name: ORGANIZATIONAL BEHAVIOUR
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5105 / ORGANIZATIONAL BEHAVIOUR	
CO No.	**Course Outcomes**
C105.1	Students can able to understand about human behavior in the organization.
C105.2	To learn about managing individual performance.
C105.3	Students will be able to manage group performance.
C105.4	To know the importance of leadership.
C105.5	To understand the concept of group dynamics.

Course Name: STATISTICS FOR MANAGEMENT
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5106 / STATISTICS FOR MANAGEMENT	
CO No.	**Course Outcomes**
C106.1	To apply the concepts in decision making.
C106.2	Students can make decisions in subjective conditions.
C106.3	To be aware about various distribution tests.
C106.4	Students know about parametric test.
C106.5	Students know about non-parametric test.

Course Name: TOTAL QUALITY MANAGEMENT
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5107 / TOTAL QUALITY MANAGEMENT	
CO No.	**Course Outcomes**
C107.1	Helps to apply quality philosophies.
C107.2	Students learn the tools to facilitate continuous improvement
C107.3	Helps to understand about customer delight.
C107.4	To know about the tools and techniques in quality management.
C107.5	Students know the importance of statistical control process.

Course Name: SPOKEN AND WRITTEN COMMUNICATION
Regulation : 2017 **Semester: I**

Course Code/Course Name: BA5111 / SPOKEN AND WRITTEN COMMUNICATION	
CO No.	**Course Outcomes**
C108.1	Get into the habit of writing regularly.
C108.2	Express themselves in different genres of writing from creative to critical tofactual writing.
C108.3	Identify their area of strengths and weaknesses in writing.
C108.4	Speak confidently with any speakers of English, including native speakers.
C108.5	Speak effortlessly in different contexts – informal and formal.

Course Name: APPLIED OPERATIONS RESEARCH
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5201 / APPLIED OPERATIONS RESEARCH	
CO No.	**Course Outcomes**
C209.1	To facilitate quantitative solutions in business.
C209.2	To know decision making under conditions of certainty.
C209.3	Helpful for decision making under conditions of risk.
C209.4	Helpful for decision making under conditions of uncertainty.
C209.5	Students will know about various game theories.

Course Name: BUSINESS RESEARCH METHODS
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5202 / BUSINESS RESEARCH METHODS	
CO No.	**Course Outcomes**
C210.1	Students would become acquainted with the scientific methodology in business domain.
C210.2	Students would also become analytically skillful.
C210.3	Students would become familiar with the nuances of scientific communications.
C210.4	Students can able to know the format of report writing.
C20.5	Students will gain knowledge about the analytical tools.

Course Name: FINANCIAL MANAGEMENT
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5203 / FINANCIAL MANAGEMENT	
CO No.	**Course Outcomes**
C211.1	Students understand the techniques of managing finance in an organization.
C211.2	Students understood the operational nuances of a financial manager
C211.3	Students understand the techniques of making decisions related to financefunction
C211.4	Students understand the types of shares and dividend policy
C211.5	Students gains knowledge about Indian capital market and long term sources offunds

Course Name: HUMAN RESOURCE MANAGEMENT
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5204 / HUMAN RESOURCE MANAGEMENT	
CO No.	**Course Outcomes**
C212.1	Students will gain knowledge about managing Human Resource.
C212.2	Students will gain skills in recruitment and selection.
C212.3	HRM needed to be successful as a human resources professional
C212.4	To familiarize about organizational functions.
C212.5	To learn about compensation benefits.

Course Name: INFORMATION MANAGEMENT
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5205 / INFORMATION MANAGEMENT	
CO No.	**Course Outcomes**
C213.1	Gains knowledge on effective applications of information systems in business .
C213.2	Students familiarize about DBMS.
C213.3	Students understand about security control.
C213.4	Students focus on e-learning.
C213.5	Students understand about flow diagrams.

Course Name: OPERATIONS MANAGEMENT
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5206 / OPERATIONS MANAGEMENT	
CO No.	**Course Outcomes**
C214.1	Understanding of the strategic decisions.
C214.2	Understanding of the operational decisions.
C214.3	To understand about manufacturing organizations.
C214.4	To know about service organizations.
C214.5	To understand the role of operations management function in anorganization.

Course Name: MARKETING MANAGEMENT
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5207/MARKETING MANAGEMENT	
CO No.	**Course Outcomes**
C215.1	To gain knowledge of analytical skills in solving marketing related problems .
C215.2	To understand about marketing management process.
C215.3	To analyse buyer behaviour.
C215.4	To aware about marketing strategy.
C215.5	Helpful for conducting marketing research.

Course Name: DATA ANALYSIS AND BUSINESS MODELING
Regulation : 2017 **Semester: II**

Course Code/Course Name: BA5211 / DATA ANALYSIS AND BUSINESS MODELING	
CO No.	**Course Outcomes**
C216.1	Gains knowledge of spreadsheets.
C216.2	Gains knowledge of data analysis software for business modeling.

Course Name: INTERNATIONAL BUSINESS MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5301 / INTERNATIONAL BUSINESS MANAGEMENT	
CO No.	**Course Outcomes**
C301.1	Students would be familiar with global business environment.
C301.2	Students would be familiar with global strategic management practices.
C301.3	To get acquainted with functional domain practices.
C301.4	Students would be familiar with conflicts situations.
C301.5	Students They would be familiar with ethical issues in global business.

Course Name: STRATEGIC MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name:BA5302 / STRATEGIC MANAGEMENT	
CO No.	**Course Outcomes**
C302.1	Creates knowledge and understanding of management concepts, principles and skills from people, finance, marketing and organisational perspectives.
C302.2	Students can develop appropriate organisational policies within a changing context.
C302.3	Students can develop appropriate organizational strategies within a changing context.
C302.4	To meet stakeholder interests in information systems to learn from failure key tools and techniques for the analysis and design of information systems.
C302.5	To understand human and organisational as well as technical aspects.

Course Name: CUSTOMER RELATIONSHIP MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5003 / CUSTOMER RELATIONSHIP MANAGEMENT	
CO No.	**Course Outcomes**
C303.1	Students understand to use strategic customer acquisition.
C303.2	Knowledge on strategic customer retention techniques in CRM.
C303.3	Students understand the elements of CRM.
C303.4	To develop the process of CRM.
C303.5	To understand the trends in CRM.

Course Name: INTEGRATED MARKETING COMMUNICATION
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5004 / INTEGRATED MARKETING COMMUNICATION	
CO No.	**Course Outcomes**
C304.1	Students gain insight into the importance of advertising.
C304.2	Develop Insight into the importance of sales promotion campaigns.
C304.3	Learns about Planning in relation to consumer decision making processes.
C304.4	Objective setting in relation to consumer decision making processes.
C304.5	To know about the advertisement media.

Course Name: SERVICES MARKETING
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5006 / SERVICES MARKETING	
CO No.	**Course Outcomes**
C306.1	Students will be able to apply the concepts of services marketing in promoting services.
C306.2	Students know the opportunities in service marketing.
C306.3	Students know varying service strategies.
C306.4	Students know the promotion strategies.
C306.5	Students know service design.

Course Name: CORPORATE FINANCE
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5009 / CORPORATE FINANCE	
CO No.	**Course Outcomes**
C309.1	To become a good ethical corporate manager
C309.2	To Understand the nuances involved in short term corporate financing
C309.3	To Understand the basics problems of industrial finance in India
C309.4	Students gain knowledge on investment decisions and approaches
C309.5	Students gain knowledge on SEBI guidelines to corporate governance

Course Name: MERCHANT BANKING AND FINANCIAL SERVICES
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5011 / MERCHANT BANKING AND FINANCIAL SERVICES	
CO No.	**Course Outcomes**
C311.1	To gain good knowledge on merchant banking activities
C311.2	To Understand the modes of issuing securities
C311.3	Acquired financial evaluation techniques
C311.4	To gain Knowledge on fund based services
C311.5	To gain Knowledge on fund based financial services

Course Name: SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5012 / SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	
CO No.	**Course Outcomes**
C312.1	To Become a good investment analyst
C312.2	To Understand the nuances of stock market operations
C312.3	To Understand the techniques involved in deciding upon purchases or sale ofsecurities
C312.4	To gain Knowledge on financial markets
C312.5	To increase the knowledge on portfolio management.

Course Name: ENTREPRENEURSHIP DEVELOPMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5014 / ENTREPRENEURSHIP DEVELOPMENT	
CO No.	**Course Outcomes**
C314.1	Students will gain knowledge needed to run a business.
C314.2	Students will gain skills needed to run a business.
C314.3	Helpful for preparing business plan.
C314.4	Helpful for launching small business.
C314.5	To know about entrepreneurial competence.

Course Name: LABOUR LEGISLATIONS
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5016 / LABOUR LEGISLATIONS	
CO No.	**Course Outcomes**
C316.1	To appreciate the application of labour laws.
C316.2	To know legal Provision relating to Wages

C316.3	To understand legal Provision relating to Working Conditions and Labour Welfare
C316.4	To know legal Provision relating to Industrial Relations
C316.5	To know Legal Provision relating to Social Security

Course Name: STRATEGIC HUMAN RESOURCE MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5019 / STRATEGIC HUMAN RESOURCE MANAGEMENT	
CO No.	**Course Outcomes**
C319.1	Students will have a better understanding of the tools.
C319.2	Students will have a better understanding of the techniques used by organizations.
C319.3	Able to meet current challenges.
C319.4	The students are aware about employee coaching.
C319.5	Students have knowledge about employee counseling.

Course Name: LOGISTICS MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5025 / LOGISTICS MANAGEMENT	
CO No.	**Course Outcomes**
C325.1	To enable an efficient method of moving products with optimization of time and cost.
C325.2	Students are aware about distribution channels.
C325.3	Students knew about outsourcing logistics.
C325.4	Students can identify and understand current trends in logistics.
C325.5	Students know the cost for transportation.

Course Name: PROJECT MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5028 / PROJECT MANAGEMENT	
CO No.	**Course Outcomes**
C328.1	To apply project management principles in business situations.
C328.2	Students can optimize resource utilization.
C328.3	Students do time optimization in business functions.
C328.4	Students known about the scheduling
C328.5	It is very much helpful for resource allocation.

Course Name: SUPPLY CHAIN MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5030 / SUPPLY CHAIN MANAGEMENT	
CO No.	**Course Outcomes**
C330.1	Students have the ability to build a competitive supply chain.
C330.2	Students procure the ability to manage a competitive supply chain.
C330.3	Students understand the Strategies, models, techniques and information technology are used.
C330.4	To analyse supply chain network.

Course Name: SUPPLY CHAIN CONCEPTS AND PLANNING
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5051 / SUPPLY CHAIN CONCEPTS AND PLANNING	
CO No.	**Course Outcomes**
C351.1	The students will be able to Identify the concepts of supply chain.

C351.2	To Analyze supply chain dynamics
C351.3	To Analyze various issues of supply chain performance
C351.4	To know about sales and operational planning
C351.5	To know about rescheduling.

Course Name: SUPPLY CHAIN INVENTORY MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5053 / SUPPLY CHAIN INVENTORY MANAGEMENT	
CO No.	**Course Outcomes**
C353.1	The students can confidently approach their supply chain inventory issues
C353.2	Students can use different tools appropriately to solve the problems
C353.3	To know about Inventory models
C353.4	Helpful in optimizing Inventory
C353.5	To know the recent trends in inventory management system

Course Name: WAREHOUSE MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5055 / WAREHOUSE MANAGEMENT	
CO No.	**Course Outcomes**
C355.1	The students can confidently approach their supply chain inventory issues
C355.2	To understand the basic concepts in inventory
C355.3	To understand various inventory control techniques
C355.4	Helpful in material Handling
C355.5	To know modern warehousing methods

Course Name: AIR CARGO MANAGEMENT
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5058 / AIR CARGO MANAGEMENT	
CO No.	**Course Outcomes**
C358.1	The students can know the basics concepts of airports and aircrafts
C358.2	To know various participants in air cargo transportation
C358.3	Students will come to know about roles of the customs
C358.4	Helpful to know about cargo village.
C358.5	To gain knowledge about labelling

Course Name: EXIM MANAGEMENT

Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5060 / EXIM MANAGEMENT	
CO No.	**Course Outcomes**
C360.1	The students will be able to comprehend the importance of EXIM management
C360.2	The students would be aware about the formalities of export and import industry
C360.3	To understand about importance of Documentation
C360.4	To know about payment methods
C360.5	To understand about custom clearances

Course Name: FUNDAMENTALS OF SHIPPING
Regulation : 2017 **Semester: III**

Course Code/Course Name: BA5061 / FUNDAMENTALS OF SHIPPING	
CO No.	**Course Outcomes**
C361.1	The students would be acquainted with the basics of shipping management

C361.2	To know about liner operations
C361.3	The students will learn the skills needed for shipping industry
C361.4	To know about Liquid Bulk shipping business
C361.5	To understand about shipping industry

Course Name: PROJECT WORK
Regulation : 2017 **Semester: III**

Course Code/Course Name: **BA5411 / PROJECT WORK**	
CO No.	**Course Outcomes**
C411.1	The students are familiarize to the basic concepts of management
C411.2	Students understand how an organization functions.
C411.3	Students are understands that complexity and wide variety of issues managers face in today's business firms.
C411.4	Students can apply their domain knowledge in his research projects
C411.5	They are able to prepare a research report by using statistical tools.