

Criteria-1

1.3.1 Highlighting components of Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

Note: Colour Coding Instructions

1. **Professional Ethics**-Florescence
2. **Human Values**- Blue
3. **Environment and Sustainability**-Green
4. **Gender**-Pink
5. **Professional Ethics and Human Values**-Orange
6. Environment Sustainability and Professional Ethics - Underline with Blue
7. Professional Ethics and Gender Equality -Underline with Green
8. Gender and Human values -Underline with Red



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Department of Aeronautical Engineering

B.Tech in Aeronautical Engineering

Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

Note: ES- Environment & Sustainability

PE- Professional Ethics

GE- Gender Equality

HV- Human Values

Date: 17/10/2020

Prepared by: PAC

Approved by: DAC

B.Tech Aeronautical: MLR 20

S. No	Course Code	Course Name	ES	PE	GE	HV
1.	A5BS01	Calculus and Applications				
2.	A5BS09	Engineering Physics				
3.	A5ME01	Engineering Mechanics		√		
4.	A5ME02	Engineering Graphics		√		
5.	ASBS10	Engineering Physics Lab		√		
6.	A5ME03	Engineering Workshop and Manufacturing Practices		√		
7.	A5MC01	Seminar-I		√		√
8.	A5BS03	Integral Calculus and Numerical Techniques				
9.	A5BS13	Engineering Chemistry	√			
10.	A5CS01	Programming for problem solving		√		
11.	A5HS01	English		√		
12.	A5CS02	Programming for problem solving Lab		√		
13.	A5BS14	Engineering Chemistry Lab		√		√
14.	A5HS02	English Language and Communication Skills Lab		√		√
15.	A5MC02	Seminar-II		√		√


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S. No	Course Code	Course Name	ES	PE	GE	HV
16.	A5AE04	Introduction to Aerospace Engineering		✓		
17.	A5AE05	Mechanics of Solids		✓		
18.	A5AE06	Mechanics of Fluids				
19.	A5AE07	Engineering Thermodynamics		✓		
20.	A5EE70	Basic Electrical and Electronics Engineering		✓		
21.	A5AE08	Mechanics of Solids and Fluids Lab		✓		
22.	A5EE71	Basic Electrical and Electronics Engineering Lab		✓		
23.	A5AE09	Computer Aided Aircraft Modelling		✓		
24.	A5MC03	Environmental Studies	✓			
25.	A5BS06	Vector calculus and probability statistics				
26.	A5AE11	Aerodynamics-I	✓	✓		
27.	A5AE12	Aerospace Vehicle Structures -I		✓		
28.	A5AE13	Airplane Performance		✓		
29.	A5AE14	Aerodynamics Lab				
30.	A5EC01	Introduction to IOT				✓
31.	A5AE16	Aircraft Interior Design Lab			✓	
32.	A5ME40	Python Lab				
33.	A5HS03	Gender Sensitization			✓	
34.	A5AE17	Aerospace Vehicle Structures-II		✓		
35.	A5AE18	Aerodynamics-II		✓		
36.	A5AE19	Aircraft Stability and Control		✓		
37.	A5AE20	Aerospace Propulsion - I		✓		
38.	A5AE21	Propulsion and Flight simulation Lab		✓		
39.	A5AE22	Aerospace Vehicle Structures Lab				✓
40.	A5AE33	Aircraft Design Lab		✓		

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S. No	Course Code	Course Name	ES	PE	GE	HV
41.	A5AE34	Mini project		✓		
42.	A5HS08	Human Values and Professional Ethics		✓		✓
43.	A5AE24	Aircraft Production Technology				
44.	A5AE25	Aerospace Propulsion - II		✓		
45.	A5AE26	Aircraft Production Technology Lab		✓		
46.	A5AE27	Computational Structural Analysis Lab				
47.	A5HS04	Advanced English Communication Skills Lab		✓		
48.	A5AE28	Independent Study		✓		
49.	A5AE29	Composite Materials and Structures		✓		
50.	A5AE30	Computational Fluid dynamics				
51.	A5AE31	Computational Analysis of Composite and Structures Lab				
52.	A5AE32	Computational Fluid dynamics Lab				
53.	A5AE35	Major Project Phase-I		✓		✓
54.	A5AE36	Major Project Phase-II		✓		✓
55.	A5AE37	Vibration and Structural Dynamics				
56.	A5AE38	Experimental Stress Analysis				
57.	A5AE39	Fatigue and Fracture Mechanics				
58.	A5AE40	Non-Destructive Testing				
59.	A5AE45	Wind Tunnel Techniques				
60.	A5AE46	Aero Elasticity				
61.	A5AE47	Space Mechanics				
62.	A5AE48	Industrial Aerodynamics	✓			
63.	A5AE53	Fundamentals of Combustion				
64.	A5AE54	Rocket and Missiles				
65.	A5AE55	Heat Transfer				

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S. No	Course Code	Course Name	ES	PE	GE	HV
66.	A5AE56	Helicopter Engineering		✓		
67.	A5ME57	Computer Integrated Manufacturing		✓		
68.	A5AE58	3D Printing				
69.	A5AE59	Avionics				
70.	A5AE60	Air Traffic Control and Aerodrome Design				
71.	A5AE41	Finite Element Analysis				
72.	A5AE42	Design of UAV Systems		✓		
73.	A5AE43	Mechanisms and Machine Design		✓		
74.	A5AE44	Geometric Dimensions and Tolerance		✓		
75.	A5AE49	Airframe Maintenance and Repair				
76.	A5AE50	Aircraft systems and Instruments				
77.	A5AE51	Flight Scheduling and Operations				
78.	A5AE52	Aero Engine Repair and Maintenance				
79.	A5AE62	Fundamentals of Avionics				
80.	A5AE65	Non-Destructive Testing Methods		✓		
81.	A5AE67	Unmanned Aerial Vehicles		✓		
82.	A5AE68	Fundamentals of Wind Power Technology	✓	✓		


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Criteria-1

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Note: Colour Coding Instructions

1. Professional Ethics - **Florescence**
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4. Gender - **Pink**
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6. Ethics and Environment and Sustainability - Underline with Blue


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Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

ES - Environment and Sustainability

PE - Professional Ethics

GE - Gender Equality

HV - Human Values

Course CODE	Course NAME	ES	PE	GE	HV	
ASAI19	Machine Learning	✓				Machine Learning have extreme potential to revolutionize everyday leading humanity into an era of greater efficiency and productivity. The methods are used in satellite data processing, weather and climate prediction and forecasting.
ASCS15	Computer Networks		✓			Computer networks enable communication for every business, entertainment, and research purpose and ensure professional Ethics. The internet, online search, email, audio and video sharing, online commerce, live-streaming, and social networks all exist because of computer networks which should be used in positive manner.
ASMC04	Gender Specialization			✓		This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.
ASIT16	Natural Language Processing	✓	✓			Human language, NLP programming automates the translation process between computers and humans by manipulating unstructured data (words) in the context of a specific task (conversation). An important goal of NLP is to help the computer to comprehend the intent as well as the meaning of a human being's written or spoken words.
ASOS05	Deep Learning	✓				Deep Learning is a machine learning technique that constructs artificial neural networks to mimic the structure and function of the human brain.
ASAI22	Augmented and Virtual Reality		✓		✓	Virtual Reality is the technology that provides almost real and/or believable experiences in a synthetic or virtual way, while Augmented Reality enhances the real world by superimposing computer-generated information on top of it.
ASAI12	Computer Vision		✓			Computer vision is the field of computer science that focuses on creating digital systems that can process, analyze, and make sense of visual data (images or videos) in the same way that humans do. Genetic algorithms are applied in various optimization and search problems involving fuzzy systems. Genetic algorithms usually perform well on discrete data, whereas neural networks usually perform efficiently on continuous data. Genetic algorithms can fetch new patterns, while neural networks use training data to classify a network.
ASAI08	GENETIC ALGORITHMS AND FUZZY LOGIC		✓		✓	

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ES Environment and Sustainability

PE Professional Ethics

GE Gender Equality

HV Human Values

Course name	Course code	ES	PE	GE	HV	
ASCY16	Computer Security	✓				Cybersecurity is the body of technologies, processes, and practices designed to protect networks, computers skill development, and data from attack, damage, and unauthorized access. This course teach professionals to spot vulnerabilities, fend off attacks, and immediately respond to emergencies.
ASCY15	Computer Networks		✓			Computer networks enable communication for every business, entertainment, and research purpose and ensure professional Ethics. The Internet, online search, email, audio and video sharing, online commerce, live-streaming, and social networks all exist because of computer networks which should be used in positive manner.
ASCY25	Computer Forensics			✓		Computer forensics can save your organization money: computer forensics is to identify, collect, preserve, and analyze data in a way that preserves the integrity of the evidence collected so it can be used effectively in a legal case.
ASHSD3	GENDER SENSITIZATION			✓		This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality. for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context by which they can impart human values
ASHSD2	ENGLISH LANGUAGE AND COMMUN				✓	
ASMAC5	HUMAN VALUES AND PROFESSIONAL ETHICS				✓	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings. To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence.
ASMAC3	ENVIRONMENTAL STUDIES	✓				Environmental studies helps to maintain ecological balance through basic operating knowledge of environmental systems and processes. It helps gain skills to analyse the various environment systems and the effect of human activities on them.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
Courses addressing Gender/Environment and Sustainability/Human Values and
Professional Ethics

MLR 20

Note: **ES-Environment & Sustainability**
PE- Professional Ethics
GE-Gender Equality
HV- Human Values

S.No	Course Name	Course Code	ES	PE	GE	HV
1.	Data Structures	A5CS03	✓	✓		
2.	Data Base Management Systems	A5CS05		✓		
3.	Python Programming	A5IT03		✓		
4.	Data Structures Lab	A5CS04		✓		
5.	Data Base Management Systems Lab	A5CS06		✓		
6.	Environmental Science	A5MC03	✓			
7.	Gender Sanitation	A5MC04			✓	
8.	Business Economics and Financial Analysis	A5HS06				✓
9.	Object Oriented Programming	A5IT01		✓		
10.	Advanced Data Structures	A5CS09		✓		
11.	Advanced Data Structures Lab	A5CS10		✓		
12.	Object Oriented Programming Lab	A5IT02		✓		
13.	Web Technologies	A5CS11		✓		
14.	Automata and Compiler Design	A5CS13		✓		


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S.No	Course Name	Course Code	ES	PE	GE	HV
15.	Operating Systems	A5CS13		✓		
16.	Web Technologies Lab	A5CS12		✓		
17.	Linux Programming Lab	A5IT07		✓		
18.	Human Values and Professional Ethics	A5MC05				✓
19.	Software Engineering	A5CS14		✓		
20.	Machine Learning	A5AI19		✓		
21.	Network Simulation Lab	A5CS16		✓		
22.	Machine Learning Lab	A5AI20		✓		
23.	Big Data Analytics	A5CS17		✓		
24.	Big Data Analytics Lab	A5CS18		✓		
25.	Data Mining	A5CS19		✓		
26.	Introduction to Data Analytics	A5CS22		✓		
27.	Artificial intelligence	A5AI03		✓		
28.	Cloud Computing	A5CS23		✓		
29.	Agile and DevOps	A5IT16		✓		


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**DEPARTMENT OF COMPUTER SCIENCE AND
INFORMATION TECHNOLOGY**

**1.3.1 Courses addressing Gender/Environment and Sustainability/Human Values and
Professional Ethics**

Regulation: MLR20

Date: 04-10-2021

Prepared by: PAC

Approved by: DAC

Note: ES-Environment & Sustainability
PE- Professional Ethics
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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
1.	Computer organization and architecture	A5IT06				✓	Analyze basic components and understand the Architecture and organization of a computer. Demonstrate key skills of constructing cost-effective computer systems. Apply register transfer and micro programmed control operations. Analyze memory and I/O systems.
2.	Object oriented programming	A5IT01		✓			Use object-oriented programming concepts to solve real world problems. Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally). Use multithreading concepts to develop inter process communication. Develop java application to interact with database by using relevant software component (JDBC Driver). Solve real world problems using Collections.
3.	Object oriented programming lab	A5IT02		✓			Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity. Understand the use of different exception handling.

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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
							mechanisms and concept of multithreading for robust and efficient application development. Understand and implement concepts on file streams and operations in java programming for agiven application programs. Develop java application to interact with database by using relevant software component (JDBC Driver).
4.	Cloud Essentials	A5IT08		✓			Inculcate the concepts of distributed computing. Familiarize the concepts of cloud computing and services. Explains cloud platform and types of cloud. Explains resource management in cloud
5.	Linux programming lab	A5IT07		✓			Apply the basic commands to handle the Linux Environment. Use the Shell/C scripting constructs to modify the file system content. Implement the process management concepts using C language. Design Client-Server Applications using Sockets and TCP/UDP protocols.
6.	Mobile Application Development lab	A5IT09				✓	Identify various concepts of mobile programming that make it unique from programming for other platforms. Critique mobile applications on their design pros and cons. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces. Program mobile applications for the Android operating system that use basic and advanced phone features and deploy applications to the Android marketplace for distribution.
7.	Python programming	A5IT03		✓			Python, a dynamic object-oriented programming language that can be used for many kinds of software development projects. It offers strong support for integration with other computer languages and tools, comes with extensive standard libraries, and the basic principles of the language can be learned in a few

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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
							days. Many programmers new to Python report substantial productivity gains and feel the language encourages the development of higher quality, more maintainable code.
8.	Web Technologies lab	A5CT02		✓			The World Wide Web continues to provide a foundation for the development of a broad range of increasingly influential and strategic technologies, supporting a large variety of applications and services, both in the private and public sectors. There is a growing need for management and decision makers to gain a clearer understanding of the application development process, from planning through to deployment and maintenance. This module will give you an insight into architectures, protocols, standards, languages, tools, and techniques; an understanding of approaches to more dynamic and mobile content; and demonstrate how you can analyze requirements, plan, design, implement and test a range of web applications.
9.	Social Network Analysis	A5IT12				✓	Understand the components of the social network. Model and visualize the need of social network. Understand the impact of social networks on society. Understand the evolution of the social network. Know the applications in real time systems.


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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
10.	Automata And Compiler Design	ASIT04				✓	This course deals with the basic techniques of Compiler Construction and tools that can be used to perform Syntax-directed translation of a high-level programming language into an executable code. This will provide deeper insights into the more advanced semantics aspects of programming languages, code generation, machine independent optimizations, dynamic memory allocation, types and their inferences, object orientation.
11.	Web Technologies and frameworks	ASIT01		✓			Validate a Form using JavaScript. Create and Validate XML documents using DTD and Schema. Create dynamic web pages using PHP. Write Business logic by using Servlet and Connect to database using JDBC. Create and web application using JSP and know the basics of Struts framework.
12.	Agile and DevOps	ASIT15				✓	Compare and contrast the differences between Agile and other project management methodologies. Identifies the key concepts and current state of DevOps towards Agile development. Acquire an insight towards DevOps misconceptions and Patterns. Understand and implement DevOps principles for CI/CD. Implement the effective delivery of Four pillars of Effective DevOps.
13.	Ad-hoc Sensor Networks	ASIT16				✓	Describes the concepts of adhoc wireless networks. Analyze different routing protocols of mobile adhoc networks. Apply the energy management policies in routing algorithms. Implement protocols for location based QoS. Design and simulate sensor networks and evaluate performance.


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14.	E-Commerce	A5IT17				✓	Become familiar with state-of-the-art Electronic Model, Payment Mechanisms. Understand the basic principle of E-Government, Securities, Supply Chain Mechanisms. Evaluate and observe various online businesses Management. Provide guiding principles behind the design and strategy of the customer web interface. Understand the traditional and new communication/marketing approaches that create competitive advantage in the New Economy.
15.	Network Administration	A5IT19				✓	Network administration involves a wide array of operational tasks that help a network to run smoothly and efficiently. Without network administration, it would be difficult for all but the smallest networks to maintain network operations.
16.	UX Design	A5CT03		✓			UX design is the process of designing (digital or physical) products that are useful, easy to use, and delightful to interact with. It's about enhancing the experience that people have while interacting with your product and making sure they find value in what you're providing.
17.	Information Retrieval Systems	A5IT20		✓			Information Retrieval (IR) can be defined as a software program that deals with the organization, storage, retrieval, and evaluation of information from document repositories, particularly textual information
18.	Advanced Databases	A5CT04		✓			Advanced database systems try to meet the requirements of present-day database applications by offering advanced functionality in terms of data modeling, multimedia data type support, data integration capabilities, query languages, system features, and interfaces to other worlds.


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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
19.	Big Data	A5IT27		✓			Big data refers to data that is so large, fast, or complex that it's difficult or impossible to process using traditional methods. The act of accessing and storing large amounts of information for analytics has been around for a long time.
20.	Python programming lab	A5IT05		✓			Scripting languages are typically used for "gluing" applications together. Scripting languages are often type less and usually provide methods for higher level of programming and more rapid development of applications than typical system programming languages.
21.	Human Computer Interaction	A5IT11				✓	Concepts, human information processing (cognition, perception, movement, culture, communication, human diversity, motivation for computer interaction, human performance models, etc.), user interface
22.	Object Oriented Analysis and Design	A5IT13		✓			In this, the system requirements are determined, the classes are identified and the relationships among classes are identified. The three analysis techniques that are used in conjunction with each other for object-oriented analysis are object modelling, dynamic modelling, and functional modelling.
23.	Angular JS	A5IT14		✓			The World Wide Web continues to provide a foundation for the development of a broad range of increasingly influential and strategic technologies, supporting a large variety of applications and services, both in the private and public sectors. There is a growing need for management and decision makers to gain a clearer understanding of the application development process, from planning through to


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S.No	Course Name	Course Code	ES	PE	GE	HV	Justification
							deployment and maintenance.
24.	Soft Computing	A5IT18		✓			Learning basic neural networks, fuzzy systems, and optimization algorithms concepts and their relations. Also provide knowledge of Neuron model, and Applications of NN to discuss their work.
25.	Fundamentals Of Data structures	A5IT21		✓			Evaluate algorithms in terms of time and memory complexity. Formulate new solutions for problems or improve existing code using data structures and algorithms. Implement basic data structures such as arrays, linked lists, stacks and queues. Solve problem involving graphs, trees, and heaps. Apply Algorithms for solving problems like sorting, searching, and hashing. Implement advanced data structures such as B-Trees, Red-Black, and AVL-Trees
26.	Introduction To Machine Language	A5IT22		✓			Develop and apply basic classification algorithms to classify multivariate data and finding relationships between data variables.
27.	Basics Of Python Programming	A5IT23		✓			Scripting languages are typically used for "gluing" applications together. Scripting languages are often type less and usually provide methods for higher level of programming and more rapid development of applications than typical system programming languages.
28.	Introduction To Artificial Intelligence	A5IT24		✓			The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.
29.	Software Testing Fundamentals	A5IT25	✓				It is testing conducted on a complete, integrated system to

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							evaluate the system's compliance with its specified requirements. ... Performance Testings testing that is performed, to determine how fast some aspect of a system performs under a particular workload.
30.	Introduction To Multimedia Application Development	ASIT26				✓	Mobile application development is the set of processes and procedures involved in writing software for small, wireless computing devices, such as smartphones and other hand-held devices.


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Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

PE Professional Ethics

GE Gender Equality

HV Human Values

S.No	Course name	Course code	ES	PE	GE	HV	
1	ASAI19	Machine Learning	✓				Machine Learning have extreme potential to revolutionize everyday leading humanity into an era of greater sufficiency and productivity. The methods are used in satellite data processing, weather and climate prediction and forecasting.
2	ASCS19	Computer Networks		✓			Computer networks enable communication for every business, entertainment, and research purpose and ensure professional ethics. The internet, online search, email, audio and video sharing, online commerce, live-streaming, and social networks all exist because of computer networks which should be used in positive manner.
3	ASIS03	Gender Sensitization			✓		This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to engage students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.
4	ASIS02	English Language and Communication Skills Lab				✓	English Language forms a support the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalized context by which they can impart human values.
5	ASCS23	Cloud Computing		✓			Cloud computing is used by many businesses, whose employees and customers could access their data with a variety of internet-connected devices. The Cloud Computing and Virtualization specialization prepares students to understand the emerging technologies of Cloud Computing and Virtualization, their principles, modeling, analysis, design, deployment, and industry-oriented applications ensuring Professional ethics.
6	ASIS23	HUMAN VALUES AND PROFESSIONAL ETHICS				✓	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings. To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on a correct understanding of the human reality and the rest of Existence.

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Criteria-1

1.3.1 Highlighting components of Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

Note :Colour Coding Instructions

1. Professional Ethics-Florescence
2. Human Values- Blue
3. Environment and Sustainability-Green
4. Gender-Orange
5. Ethics and Environment and Sustainability- Pink
6. Professional Ethics and Human values - Underline with blue
7. Gender, Professional Ethics and Human values- Underline with red



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Department of Electronics and Communication Engineering

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender Equality, Human Values, and Environment & Sustainability into the Course Curriculum.

Regulation: MLR20

Date: 13-03-2020

Prepared by: PAC

Approved by: DAC

S.No	Course Code	Course Name	ES	PE	GE	HV	Justification
1	ASHS11	Applied Chemistry	✓				Student will be able to illustrate the types of hard and soft water, treatment of drinking and industrial water.
2	ASCSS01	Programming for Problem Solving	✓				Student will be able to understand how to write programs to solve real world problems
3	ASHS01	English	✓				Students will be able to employ suitable vocabulary in written and oral contexts.
4	ASCSS02	Programming for Problem Solving Lab	✓				Student will be able to Develop programs using decision making and looping constructs.
5	ASBS12	Applied Chemistry Lab				✓	Student will be able to Synthesis, separation and Identification of different organic and inorganic compounds
6	ASHS02	English Language and Communication Skills Lab			✓	✓	Student will be able to Apply the engineering and management principles one's own work as a member and leader in a team, to manage projects and in multidisciplinary environments.
7	ASMEC01	Seminar-1	✓				Explore an appreciation of the self in relation to its larger diverse social and academic contexts and apply principles of ethics and respect in interaction with others.
8	ASME02	Engineering Graphics	✓				Student will be able to develop the drawings as per industry requirements.
9	ASBS10	Engineering Physics Lab	✓				Student will be able to write a technical report which communicates scientific information in a clear and concise manner.
10	ASLE04	Electrical Circuits Lab	✓				Students will be able to understand the usage of typical electrical measuring instruments as well as the basic characteristics of transformers and electrical machines
11	ASME04	Engineering Workshop	✓				Student will be able to Identify and apply suitable tools for machining processes including turning, facing, thread cutting and tapping.
12	ASMC02	Seminar-2	✓				Student will be able to Explore an appreciation of the self in relation to its larger diverse social and academic contexts and apply principles of ethics and respect in interaction with others.

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13	ASEC02	Electronic Devices and circuits	✓		Students will be able to impart the knowledge of construction, principle of operation and working of various semiconductor devices
14	ASCS03	Data Structures	✓		Students can able to analyze searching and sorting techniques based on time and space complexity, which helps to solve real-time problems
15	ASEC03	Signals and Systems	✓		This is the basis of all control and signal processing engineering. Students can be able to allow you to take a real world machine, process (the system) and create a mathematical model, at which we apply stimuli and analyze it's response (stimuli and response being signals).
16	ASEC04	Electronic Measurements and Instrumentation	✓		Students can able to apply knowledge of electronic instruments for measurement of electrical quantities. Use the instruments in laboratory and real life.
17	ASEC05	Probability Theory and Stochastic Processes	✓		Stochastic processes provides a method of quantitative study through the mathematical model, it plays an important role in the modern discipline of operations research
18	ASEC06	Electronics Devices and Circuit Lab	✓		Student will be able to learn to build circuits on bread boards, and observe the waveforms on CRO. Then students can able to do micro and mini projects using electronic components.
19	ASCS04	Data Structures Lab	✓		Student will be able to understand how to write programs logically to solve real world problems
20	ASEC07	Basic Simulation Lab	✓		Student will be able to understand how to write programs to understand the concepts related signals and systems, which help them to do micro and mini projects in communication & signal Processing domain
21	ASMC04	Gender sensitization		✓	Men and Women students and professionals will be better equipped to work and live together as equals.
22	ASEC08	Digital System Design	✓		Students can to design and analyze sequential circuits and to use standard sequential functions to build more complex circuits in real time applications
23	ASEC09	Analog and Digital Communication	✓		Students can able to understand the concept of modulation, transceivers and constellation diagrams of different techniques in mobile and wireless communication
24	ASEC10	Analog Circuits	✓		Students can able to understand the various amplifiers and Oscillators, which motivated them to build electronic circuits for real-time problems
25	ASEC11	Electromagnetic and Transmission Lines	✓		Students can able to understand the concept of Maxwell equations and transmission lines, which motivated them to design and develop antennas for real-time applications
26	ASEC12	Analog Circuits Lab	✓		Students can able to construct various amplifiers and Oscillators on bread board, which motivated them to test different electronic circuits for real-time problems
27	ASEC13	Digital System Design Lab	✓		Students can able to construct various combinational and Sequential boards on bread board, which motivated them to understand digital circuits for real-time problems
28	ASEC14	Analog and Digital Communications Lab	✓		Students can able to construct various modulation techniques on bread board, which motivated them to understand signal processing in communication related problems.

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29	ASMG03	Environmental Studies	✓			Student will be able to distinguish between resources of renewable and non renewable origin and justify the need for conservation of natural resources.
30	ASEC15	Linear and Digital Integrated Circuit Applications	✓			Students can able understand the concepts of clippers, clippers, multivibrators and OPamps, which motivate them to do the projects in mini and major projects
31	ASEC16	Antennas and Wave propagation	✓	✓		Students can able to understand the concept of antenna arrays and wave propagation, which motivated them to design and develop antennas for non-radiative and radiative applications
32	ASEC17	Microprocessors and Microcontrollers	✓			Students can able to understand the concept of processors and controllers, which motivated them to develop embedded projects for real-time applications
33	ASEC18	Microprocessors and Microcontrollers Lab	✓			Students can able to write the programs in embedded C language related to processors and controllers, which motivated them to develop embedded projects for real-time applications
34	ASEC19	Analog & Digital IC Applications Lab	✓			Students can able to build the circuits on clippers, clippers, multivibrators and OPamps, which motivate them to do the projects in mini and major projects
35	AS1T01	Object Oriented Programming Lab	✓			Students can able to write programs in Java, which build them confidence in writing programs for different logics in real-time
36	ASEC28	Mini Projects*	✓	✓	✓	Student will be able to design engineering solutions to complex problems utilizing a systems approach.
37	ASEC21	Digital Signal Processing	✓			This is the basis of advanced control and signal processing engineering. Students can be able It will allow you to take a real world machine, process (the system) and create a mathematical model, at which we apply stimuli and analyze it's response (stimuli and response being signals).
38	ASEC22	Microwave Engineering	✓			Students can able to test different antenna design applications in microwave test bench
39	ASEC23	Digital Signal Processing Lab	✓			Students can apply digital and analog filters in different signal processing techniques in real-time applications
40	ASEC24	Antennas and Microwave Lab	✓			Students can able to perform different antenna measurements and parameters for testing.
41	ASHS04	Advanced English Communication Skills Lab	✓			Student will be able to Participate in debates, group discussions.
42	ASEC25	Independent Study/ MDOCS	✓			Student will be able to Communicate with engineers and the community at large in written an oral forms to Design engineering solutions to complex problems utilizing a systems approach
43	ASEC26	Embedded System Design	✓			Students can to design mini and major level projects in real-time using embedded system design concepts
44	ASEC27	VLSI Design	✓			Students can understand the fabrication steps of different electronic components, which motivate to design IC Components
45	ASEC28	Computer Networks	✓			Students can understand the hierarchy to develop networking , which motivate to

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46	ASEC29	Embedded & IoT Lab	✓			understand process flow in Adhoc and mobile networks
47	ASEC30	VLSI Design Lab	✓			Students can able to do write programs in embedded C, which motivate them to do real-time IoT applications
48	ASEC31	Major Project Stage-I	✓	✓	✓	Students can able to build different Sequential and combinational circuits in Cadence tool and Verilog programming tool, which motivate them to do real-time IoT applications
49	ASEC32	Major Project Stage-II	✓	✓	✓	During the project phase student will be able to Design engineering solutions to complex problems utilizing a systems approach. Any gender can lead the team during the project phase. During the project phase a student has to be respect and follow the road map drawn by the team lead.
50	ASEC30	Solar Energy and Applications	✓			Students can understand the concepts of solar heating systems, liquid based solar heating systems for buildings, which motivate them to understand the utilization of natural resources
51	ASEC34	Human Values and Professional Ethics	✓		✓	Ability to develop appropriate technologies and management patterns to create harmony in professional and personal life.
52	ASEC35	Management Science	✓		✓	Knowledge on management theories and practice. Understand the processes, functions etc in Human Resources Management.

Note: ES- Environment & Sustainability
 PE- Professional Ethics
 GE- Gender Equality
 HV- Human Values

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Criteria-1

1.3.1 Highlighting components of Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

Note: Colour Coding Instructions

1. Professional Ethics-**Florescence**
2. Human Values- **Blue**
3. Environment and Sustainability-**Green**
4. Gender-**Pink**
5. Professional Ethics and Human Values-**Orange**
6. Ethics and Environment and Sustainability-Underline with Blue



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Department Of Electrical And Electronics Engineering

Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

Note: ES- Environment & Sustainability
PE- Professional Ethics
GE- Gender Equality
HV- Human Values

Regulation: MLR 20

Prepared by: PAC

Program : B.Tech

Approved by: DAC

S.No	Course Code	Name of the Course	ES	PE	GE	HV
1	A5MC01	Seminar-I				
2	A5HS01	English		✓		
3	A5HS02	English Language and Communication Skills Lab				✓
4	A5MC02	Seminar-II			✓	
5	A5HS03	Gender sensitization		✓		
6	A5MC03	Environmental Studies			✓	
7	A5EE31	Wind and Solar Energy Systems	✓			
8	A5EE20	Mini Project	✓			
9	A5MC05	Human Values and Professional Ethics		✓		
10	A5HS04	Advanced English Communication skills Lab		✓		✓
11	A5EE24	Independent Study			✓	
12	A5EE29	Major Project Phase-I		✓		
13	A5EE63	Energy Storage Systems		✓		
14	A5EE30	Major Project Phase-II	✓			
				✓		


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Underline with blue

Academic Regulations
Course Structure & Detailed Syllabus

CHOICE BASED CREDIT SYSTEM

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INFORMATION TECHNOLOGY

Bachelor of Technology (B.Tech)

For the batches admitted from the A.Y. 2020-21



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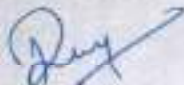
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Hyderabad - 500043, Telangana State

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VISION OF THE DEPARTMENT

To build IT Department with commitment towards continuous improvement that adapts swiftly to 21st century challenges by developing professionals with robust technical and research backgrounds.

MISSION OF THE DEPARTMENT

M1: To provide quality Teaching Learning environment and make students proficient in both theoretical and applied foundations of Information Technology.

M2: Create highly skilled IT engineers, capable of doing research and also develop solutions for the betterment of the nation.

M3: Instill professional and ethical values among students.

M4: To develop entrepreneurial skills in students and also motivate them towards pursuing higher studies.

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S):

PEO I: Be successfully employed as a Software Engineer in the field of Information Technology.

PEO II: Be a successful entrepreneur and assume leadership position, responsibility within an organization.

PEO III: Progress through advanced degree or certificate programs in engineering, business, and other professionally related fields.


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DEPARTMENT OF INFORMATION TECHNOLOGY
Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics

MLR 20

Date: 15-07-2020

Prepared by: PAC

Approved by: DAC

Note: ES-Environment & Sustainability
PE- Professional Ethics
GE-Gender Equality
HV- Human Values

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
1.	Computer organization and architecture	A5IT06		✓			Analyze basic components and understand the Architecture and organization of a computer. Demonstrate key skills of constructing cost-effective computer systems. Apply register transfer and micro programmed control operations. Analyze memory and I/O systems.	
2.	Object oriented programming	A5IT01		✓			Use object-oriented programming concepts to solve real world problems. Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally). Use multithreading concepts to develop inter process communication. Develop java application to interact with database by using relevant software component (JDBC Driver). Solve real world problems using Collections.	
3.	Object oriented programming lab	A5IT02		✓			Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity. Understand the use of different	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
							exception handling mechanisms and concept of multithreading for robust and efficient application development. Understand and implement concepts on file streams and operations in java programming for a given application programs. Develop java application to interact with database by using relevant software component (JDBC Driver).	
4.	Cloud Essentials	A5IT08		✓			Inculcate the concepts of distributed computing. Familiarize the concepts of cloud computing and services. Explains cloud platform and types of cloud. Explains resource management in cloud	
5.	Linux programming lab	A5IT07		✓			Apply the basic commands to handle the Linux Environment. Use the Shell/C scripting constructs to modify the file system content. Implement the process management concepts using C language. Design Client-Server Applications using Sockets and TCP/UDP protocols.	
6.	Mobile Application Development lab	A5IT09		✓			Identify various concepts of mobile programming that make it unique from programming for other platforms. Critique mobile applications on their design pros and cons. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces. Program mobile applications for the Android operating system that use basic and advanced phone features and deploy applications to the Android marketplace for distribution.	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
7.	Python programming	A5IT03		✓			Python, a dynamic object-oriented programming language that can be used for many kinds of software development projects. It offers strong support for integration with other computer languages and tools, comes with extensive standard libraries, and the basic principles of the language can be learned in a few days. Many Programmers new to Python report substantial productivity gains and feel the language encourages the development of higher quality, more maintainable code.	
8.	Python programming lab	A5IT05		✓			Scripting languages are typically used for "gluing" applications together. Scripting languages are often type less and usually provide methods for higher level of programming and more rapid development of applications than typical system programming languages.	
9.	Social network analysis	A5IT12	✓				Understand the components of the social network. Model and visualize the need of social network. Understand the impact of social networks on society. Understand the evolution of the social network. Know the applications in real time systems.	
10.	Natural Language Processing	A5IT16		✓			Natural language processing strives to build machines that understand and respond to text or voice data—and respond with text or speech of their own—in much the same way humans do.	
11.	Agile and DevOps	A5IT15		✓			Compare and contrast the differences between Agile and other project management Methodologies. Identifies the key concepts and current state	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
							of DevOps towards Agile development. Acquire an insight towards DevOps misconceptions and Patterns. Understand and implement DevOps principles for CI/CD Implement the effective delivery of Four pillars of Effective DevOps	
12.	Ad-hoc Sensor Networks	A5IT16	✓				Describes the concepts of adhoc wireless networks. Analyze different routing protocols of mobile adhoc networks. Apply the energy management policies in routing algorithms. Implement protocols for location based QoS. Design and simulate sensor networks and evaluate performance.	
13.	E-Commerce	A5IT17		✓			Become familiar with state-of-the-art Electronic Model, Payment Mechanisms. Understand the basic principle of E-Government, Securities, Supply Chain Mechanisms. Evaluate and observe various online businesses management. Provide guiding principles behind the design and strategy of the customer web interface. Understand the traditional and new communication/marketing approaches that create competitive advantage in the new economy.	
14.	Network Administration	A5IT19	✓				Network administration involves a wide array of operational tasks that help a network to run smoothly and efficiently. Without network administration, it would be difficult for all but the smallest networks to maintain network operations.	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
15.	Information Retrieval Systems	A5IT20		✓			Information Retrieval (IR) can be defined as a software program that deals with the organization, storage, retrieval, and evaluation of information from document repositories, particularly textual information.	
16.	Automata and Compiler Design	A5IT04		✓			This course deals with the basic techniques of Compiler Construction and tools that can be used to perform Syntax - directed translation of a high - level programming language into an executable code. This will provide deeper insights into the more advanced semantics aspects of programming languages, code generation, machine independent optimizations, dynamic memory allocation, types and their inferences, object orientation.	
17.	Cloud Essentials Lab	A5IT10		✓			Cloud Essentials is an entry-level, vendor-neutral cloud certification that evaluates administrators on the following knowledge: Characteristics of cloud services from a business perspective. Business value of cloud computing.	
18.	Object Oriented Analysis and Design	A5IT13		✓			Advanced object-oriented software development. Use of the unified modeling language as a design tool will be emphasized.	
19.	Angular JS	A5IT14		✓			The World Wide Web continues to provide a foundation for the development of a broad range of increasingly influential and strategic technologies, supporting a large variety of applications and services, both in the private and public sectors. There is a growing need for management and	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
							decision makers to gain a clearer understanding of the application development process, from planning through to deployment and maintenance.	
20.	Soft Computing	A5IT18		✓			Learning basic neural networks, fuzzy systems, and optimization algorithms concepts and their relations. Also provide knowledge of Neuron model, and applications of NN to discuss their work.	
21.	Fundamentals of Data Structures	A5IT21		✓			Evaluate algorithms in terms of time and memory complexity. Formulate new solutions for problems or improve existing code using data structures and algorithms. Implement basic data structures such as arrays, linked lists, stacks and queues. Solve problem involving graphs, trees, and heaps. Apply Algorithms for solving problems like sorting, searching, and hashing. Implement advanced data structures such as B-Trees, Red-Black, and AVL-Trees	
22.	Introduction to Machine Learning	A5IT22		✓			Develop and apply basic classification algorithms to classify multivariate data and finding relationships between data variables.	
23.	Basics of Python Programming	A5IT23		✓			Scripting languages are typically used for "gluing" applications together. Scripting languages are often type less and usually provide methods for higher level of programming and more rapid development of applications than typical system programming languages.	

S.No	Course Name	Course Code	ES	PE	GE	HV	Justification	Link
24.	Human Computer Interaction	A5IT11				✓	Concepts, human information processing (cognition, perception, movement, culture, communication, human diversity, motivation for computer interaction, human performance models, etc.), user interface design principles, information presentation, visual, auditory, and tactile displays, speech communication, data entry, controls, tools and feedback, human factors in computer programming, workspace design, environmental and legal considerations.	


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DEPARTMENT OF

MASTER OF BUSINESS ADMINISTRATION

DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

Courses addressing Gender/Environment and Sustainability/Human Values and Professional Ethics in to the Curriculum

Note: ES: Environment and Sustainability

PE: Professional Ethics

GE: Gender Equality

HV: Human Values

S.No	Course	Course Code	ES	PE	GE	HV	Justification
1	Business Law & Regulations	C10006		✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life and Business after end of the course completed. The institution has conducted workshops , Seminars to aware about Business regulations and Law
2	Cyber Security And Cyber laws	C10030		✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life after end of the course completed. The institution has conducted workshops , Seminars to aware about Business regulations and Law
3	Industrial relations and labor law	C30044		✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life after end of the course completed. The institution has conducted workshops , Seminars to aware about Business regulations and Law
4	Indian Ethos and Business ethics	C30006		✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life after end of the course completed. The institution has conducted workshops , Seminars to aware about Business regulations and Law
5	Legal & Business Environment	C30002		✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life after end of the course completed. The institution has conducted workshops , Seminars to aware about Business regulations and Law

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6	Cyber Security	C20053	✓			This study focus on Professional ethics there by students are understanding importance Personal and Social values in their Professional life after end of the course completed. The institution has conducted workshops , Seminars to aware about Cyber security
7	Corporate Governance & Strategy	C30023	✓			This study focus on Professional ethics there by students are understanding importance Personal and social values in their Professional life after end of the course completed. . The institution has conducted workshops , Seminars to aware about
8	Corporate Governance and Ethics	C20021	✓			This study focus on Professional ethics there by students are understanding importance Personal and Social values in their Professional life after end of the course completed. . The institution has conducted workshops , Seminars to aware about
9	Management of Industrial relations and labour law	C20039	✓			This study focus on Professional ethics there by students are understanding importance Personal and values in their Professional life after end of the course completed. . The institution has conducted workshops , Seminars to aware about
10	Environmental Sciences	C20051	✓			The course deals with the subjects on environment relevant matters like Pollution Control, Hazardous waste management, Toxic materials control, Water supply-related problems and other main areas in this field. The course helps to reduce the effects of ozone depletion, global warming, automobile emissions and acid rain. They are also concerned in the protection of wildlife.
11	Disaster Management	C20050	✓			The course deals with the subjects on environment relevant matters like Pollution Control, Hazardous waste management, Toxic materials control, Water supply-related problems and other main areas in this field. The course helps to reduce the effects of ozone depletion, global warming, automobile emissions and acid rain. They are also concerned in the protection of wildlife.
	Disaster Management	C30026				
	Entrepreneurship	C30014	✓	✓		This course focuses Gender equality it addresses the male and female entrepreneur s problems and Prospectus, and challenges and providing the necessary skill set in lifelong

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						learning.
12	Women entrepreneurship Entrepreneurship ✓	C30043			✓	Gender Equality: This course focuses Gender equality it addresses the women entrepreneur problems and Prospectus and providing the necessary skill set in lifelong learning.
13	Management and Organisational behavior	C30001			✓	Human values: Young professional budding Managers should have knowledge on Basics of Management concepts and behavior process of group and individual in the organization. After completed his courses he can able to understand and analyze the Managers roles and responsibilities, Planning organizing Decision making Controlling Leadership and Motivation, individual and group behavior process. Department has conducted workshops, seminars ,case studies , group discussions to boosting the students Knowledge.
14	Personality Development	C30020			✓	Human values : Recognize the need for and have the preparation and ability to Engage in independent and life- long learning with human values in the broadest context of technological Change. The institution has conducted workshops , Seminars to aware about
15	Psychology	C30047			✓	Human values : Recognize the need for and have the preparation and ability to Engage in independent and life- long learning with human values in the broadest context of technological Change. The institution has conducted workshops , Seminars to aware about

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Department of Mechanical Engineering

B.Tech in Mechanical Engineering

1.3.1 Justification on courses addressing Gender Equality, Environment and Sustainability, Human Values and Professional Ethics

ES - Environment and Sustainability
GE - Gender Equality

PE - Professional Ethics
HV - Human Values

Regulation: MLR 20

Date: 07-10-2020

Prepared by: PAC

Approved by: DAC

The justification on courses addressing Gender Equality, Environment and Sustainability, Human Values and Professional Ethics is presented below:

Course Code	Course name	ES	PE	GE	HV	Justification
A5BS01	Calculus and Applications	--	--	--	--	--
A5BS09	Engineering Physics	--	--	--	--	--
A5ME01	Engineering Mechanics	--	--	--	--	--
A5ME02	Engineering Graphics	--	--	--	--	--
A5ME03	Engineering Workshop and Manufacturing Practices	--	--	--	--	--
A5BS10	Engineering Physics Lab	--	--	--	--	--
A5MC01	Seminar-I		✓			In educational institutions at all levels, the main objectives are not only to impart efficient knowledge to the students in terms of academic concepts, make use of modern and innovative teaching-learning processes and up-grade the system of education, but also to indoctrinate moral values, and professional ethics through seminars.
A5BS03	Integral Calculus and Numerical Techniques	--	--	--	--	--
A5BS13	Engineering Chemistry	--	--	--	--	--
A5HS01	English		✓			In this era of Globalization English language has attained a new meaning. Besides academic usage, it has grown as a world language and local adaptations like Chinglish

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Course Code	Course name	ES	PE	GE	HV	Justification
						and Hinglish have become popular. English itself is being enriched day by day incorporating new words from different languages spoken across the world for developing professional ethics
A5CS01	Programming for Problem Solving	--	✓	--	--	Ethics include among their goals: stimulating moral obligation, developing problem solving skills and tolerating or reducing ambiguity. Ethics perhaps cannot be taught but can be learned by example
A5CS02	Programming for Problem Solving Lab	--	✓	--	--	Ethics include among their goals: stimulating moral obligation, developing problem solving skills and tolerating or reducing ambiguity. Ethics perhaps cannot be taught but can be learned by example
A5HS02	English Language and Communications skills Lab	--	✓	--	--	In this era of Globalization English language has attained a new meaning. Besides academic usage, it has grown as a world language and local adaptations like Chinglish and Hinglish have become popular. English itself is being enriched day by day incorporating new words from different languages spoken across the world for developing professional ethics
A5BS14	Engineering Chemistry Lab	--	--	--	--	--
A5MC02	Seminar-II	--	✓	--	--	In educational institutions at all levels, the main objectives are not only to impart efficient knowledge to the students in terms of academic concepts, make use of modern and innovative teaching-learning processes and up-grade the system of education, but also to indoctrinate moral values , and professional ethics through seminars.

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Course Code	Course name	ES	PE	GE	HV	Justification
A5BS06	Vector Calculus and Probability Statistics	--	--	--	--	--
A5ME06	Strength of Materials	--	--	--	--	--
A5ME07	Material Science and Metallurgy	--	--	--	--	--
A5ME09	Thermodynamics	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME10	Manufacturing Processes	--	--	--	--	--
A5ME11	Manufacturing Processes Lab	--	--	--	--	--
A5ME12	Machine Drawing and Computer Graphics Lab	--	--	--	--	--
A5ME08	Strength of Materials and Metallurgy Lab	--	--	--	--	--
A5MC03	Environmental Studies	✓	--	--	--	Environmental sustainability and ethics is important as human should serve nature now. In current age, every natural resources is polluted causing natural disasters.
A5EE70	Basic Electrical and Electronics Engineering	--	--	--	--	--
A5ME13	Theory of Machines - I	--	--	--	--	--
A5ME14	Thermal Engineering-I	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME15	Fluid Mechanics and Hydraulic Machines	--	--	--	--	--
A5ME17	Design of Machine Members - I	--	--	--	--	--
A5ME16	Fluid Mechanics and Hydraulic Machines Lab	--	--	--	--	--
A5EE71	Basic Electrical and Electronics Engineering Lab	--	--	--	--	--
A5ME40	Python Lab	--	✓	--	--	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

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Course Code	Course name	ES	PE	GE	HV	Justification
A5HS03	Gender Sensitization	--	--	✓	✓	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice to impart gender equality and human values .
A5ME19	Metrology and Machine Tools	--	--	--	--	--
A5ME21	Thermal Engineering -II	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME23	Theory of Machines - II	--	--	--	--	--
A5ME24	Design of Machine Members -II	--	--	--	--	--
A5ME20	Metrology and Machine Tools Lab	--	--	--	--	--
A5ME22	Thermal Engineering Lab	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5HS04	Advanced English Communication Skills Lab	--	✓	--	--	In this era of Globalization English language has attained a new meaning. Besides academic usage, it has grown as a world language and local adaptations like Chinglish and Hinglish have become popular. English itself is being enriched day by day incorporating new words from different languages spoken across the world for developing professional ethics
A5ME25	Mini Project	--	✓	--	✓	Recognize the need for and have the preparation and ability to engage an independent and life long learning with human values in the broadest context of technological change to impart professional ethics and human values .
A5HS08	Human Values and Professional Ethics	--	✓	--	✓	Ethics and Values together lay the foundation for sustainability. While they are sometimes used

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Course Code	Course name	ES	PE	GE	HV	Justification
						synonymously, they are different, wherein ethics are the set of rules that govern the behaviour of a person, established by a group or culture. Values refer to the beliefs for which a person has an enduring preference
A5ME26	CAD/CAM	--	--	--	--	--
A5ME28	Heat Transfer	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME30	Automation in Manufacturing	--	--	--	--	--
A5ME27	CAD/CAM Lab	--	--	--	--	--
A5ME29	Heat Transfer Lab	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME31	Independent Study	--	--	--	--	--
A5HS12	Constitution of India	--	--	--	--	--
A5ME32	Finite Element Method	--	--	--	--	--
A5ME34	Instrumentation and Control Systems	--	--	--	--	--
A5ME33	Computer Aided Engineering and Production Drawing Practice Lab	--	--	--	--	--
A5ME35	Instrumentation and Control Systems Lab	--	--	--	--	--
A5ME36	Major Project Phase 1	--	✓	--	✓	Recognize the need for and have the preparation and ability to engage an independent and lifelong learning with human values in the broadest context of technological change for enhancing professional ethics and human values
A5ME37	Major Project Phase 2	--	✓	--	✓	Recognize the need for and have the preparation and ability to engage an independent and lifelong learning with human

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Course Code	Course name	ES	PE	GE	HV	Justification
						values in the broadest context of technological change for enhancing professional ethics and human values
A5ME41	Composite Materials	--	--	--	--	--
A5ME42	Nanotechnology	--	--	--	--	--
A5ME43	Tribology	--	--	--	--	--
A5ME44	Industrial Safety Engineering	--	--	--	--	--
A5ME45	Automobile Engineering	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME46	Power Plant Engineering	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME47	Refrigeration and Air Conditioning	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects
A5ME48	Computational Fluid Dynamics	--	--	--	--	--
A5ME49	Unconventional Machining Processes	--	--	--	--	--
A5ME50	Flexible Manufacturing Systems	--	--	--	--	--
A5ME51	Production Planning and Control	--	--	--	--	--
A5ME52	Additive Manufacturing	--	--	--	--	--
A5ME53	Fracture Mechanics	--	--	--	--	--
A5ME54	Machine Dynamics & Vibrations	--	--	--	--	--
A5ME55	Machine Tool Design	--	--	--	--	--
A5ME56	Design for Manufacturing and Assembly	--	--	--	--	--
A5ME57	Industry 4.0	--	✓	--	✓	Recognize the need for and have the preparation and ability to engage an independent and life long learning with human values

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Course Code	Course name	ES	PE	GE	HV	Justification
						in the broadest context of technological change for imparting professional ethics and human values
A5ME58	Mechatronics	--	--	--	--	--
A5ME59	Industrial Robotics	--	--	--	--	--
A5ME60	Product Life Cycle Management	--	--	--	--	--
A5ME61	Industrial Management	--	--	--	--	--
A5ME62	Operations Research	--	--	--	--	--
A5ME63	Total Quality Management	--	--	--	--	--
A5ME64	Optimisation Techniques	--	--	--	--	--
A5ME72	Fundamentals of Engineering Materials	--	--	--	--	--
A5ME73	Fundamentals of Mechatronics	--	--	--	--	--
A5ME75	Basics of Robotics	--	--	--	--	--
A5ME76	Fundamentals of Operation Research	--	--	--	--	--
A5ME78	Renewable Energy Sources	✓	--	--	--	Environmental problems related to energy utilization can be discussed in terms of renewable energy resources through thermal aspects

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