

1.3.1 Courses which address the Professional Ethics, Gender, Human Values, Environment and Sustainability

1. Professional Ethics
2. Gender
3. Human Values
4. Environment and Sustainability

Courses addressing Professional Ethics

Course Code	Course Name	Description
AIT 111	Fundamentals of Computers	Introduction to basic computer concepts, hardware, software, and applications. Understand the basic components of computers and their functions. Develop proficiency in common software applications. Covers the history of computers, types of computers, introduction to operating systems, and common applications like word processors, spreadsheets, and presentation software.
AIT 112	Programming in C	Fundamentals of programming using the C language, including syntax and algorithms. Learn basic programming concepts and syntax in C. Develop problem-solving skills through coding exercises. Topics include variables, data types, control structures, functions, arrays, pointers, and file handling in C. Emphasizes hands-on coding and debugging.
AIT 113	Introduction to Web Scripting	Basics of web scripting languages such as HTML, CSS, and JavaScript. Gain foundational skills in web development. Create simple web pages using HTML, CSS, and JavaScript. Includes creating and styling web pages, basic scripting for interactive content, and an introduction to responsive design principles.
MATH 111	Engineering Mathematics - I	Fundamental mathematical techniques and their applications in engineering. Apply mathematical concepts to solve engineering problems. Understand calculus, linear algebra, and differential equations. Focuses on differential calculus, integral calculus, vector algebra, and linear algebra. Applications to real-world engineering problems are discussed.
ENG 111	Comprehension and Communication Skills in English	Development of comprehension and communication skills in the English language. Improve reading, writing, and speaking skills. Enhance academic and professional communication abilities. Emphasizes reading comprehension, essay writing, report writing,

		and oral presentations. Includes grammar and vocabulary building exercises.
AIT 121	Data Structure Through C	Concepts and implementation of data structures using the C programming language. Understand and implement various data structures. Analyze the efficiency of different data structures. Covers arrays, linked lists, stacks, queues, trees, graphs, and hash tables. Focus on algorithms for searching, sorting, and managing data structures.
AIT 122	Introduction to Multimedia	Overview of multimedia systems and applications, including graphics, audio, and video. Explore the components of multimedia systems. Develop skills in multimedia content creation. Introduction to multimedia elements like text, graphics, audio, video, and animation. Tools and software for multimedia creation and editing are discussed.
AIT 123	Electronic Governance	Study of electronic governance, digital administration, and public services. Understand the role of technology in governance. Analyze case studies of e-governance initiatives. Examines e-governance frameworks, digital service delivery, and the impact of ICT on public administration. Case studies from various countries are included.
MATH 121	Engineering Mathematics -II	Advanced mathematical techniques and their applications in engineering. Apply advanced mathematical techniques to complex problems. Understand topics such as vector calculus and numerical methods. Topics include partial differential equations, complex numbers, Fourier series, and numerical methods. Emphasis on solving engineering problems using these techniques.
EI 121	Basic Electronics	Fundamental concepts of electronics and electronic circuits. Learn the principles of electronic components and circuits. Build and analyze basic electronic circuits. Covers semiconductor devices, diodes, transistors, operational amplifiers, and digital circuits. Practical lab sessions for circuit building and testing.
AIT 211	OOP Using Java	Object-oriented programming concepts and practices using Java. Master the fundamentals of object-oriented programming. Develop applications using Java. Topics include classes, objects, inheritance, polymorphism, interfaces, and exception handling. Emphasis on real-world applications and project-based learning.
AIT 212	Relational Database Management System	Design and implementation of relational databases and SQL. Understand database design principles. Develop proficiency in SQL for database management. Topics include database design, normalization, SQL queries, transactions, indexing, and database security.

		Hands-on labs with database management systems like MySQL or PostgreSQL.
AIT 213	UI/UX Designing	Principles and practices of user interface and user experience design. Create effective and user-friendly interfaces. Apply design principles to improve user experience. Covers wireframing, prototyping, usability testing, and design thinking. Use of tools like Sketch, Adobe XD, or Figma for practical design projects.
AIT 214	Website Development Using PHP	Techniques for developing dynamic websites using PHP and MySQL. Develop dynamic web applications. Integrate PHP and MySQL for backend development. Topics include server-side scripting with PHP, form handling, session management, and database connectivity. Emphasis on building functional web applications.
AGRI 211	Fundamentals of Agricultural Economics	Basic economic principles and their application to agriculture. Understand economic concepts relevant to agriculture. Analyze economic factors affecting agricultural production. Topics include supply and demand, price determination, agricultural markets, and policy analysis. Case studies of agricultural economic issues.
EI 212	Basic Instrumentation	Introduction to instrumentation and measurement techniques. Learn the basics of measurement and instrumentation. Apply instrumentation techniques in practical scenarios. Covers sensors, transducers, signal conditioning, and data acquisition. Practical sessions on measuring physical quantities like temperature, pressure, and flow.
SMNR 211	SEMINAR-I	Presentation and discussion of current topics in the field. Develop presentation and public speaking skills. Engage in discussions on current research topics. Students present research findings or recent advancements in their field. Focus on improving presentation skills and critical thinking.
AIT 221	Software Engineering	Concepts, methods, and tools for software development and project management. Understand the software development lifecycle. Apply project management techniques in software projects. Topics include software development methodologies (e.g., Agile, Waterfall), requirements analysis, design patterns, testing, and maintenance. Emphasis on teamwork and project management.
AIT 222	Introduction to .Net Framework and ASP.NET	Basics of the .Net Framework and ASP.NET for web development. Develop web applications using ASP.NET. Understand the features of the .Net Framework. Topics include web forms, MVC architecture, data access, and web services. Practical projects on building web applications using ASP.NET.

AIT 223	Computer Networks	Study of computer network architectures, protocols, and technologies. Understand the principles of networking. Design and implement network solutions. Covers network models (OSI and TCP/IP), LAN/WAN technologies, routing, switching, and network security. Hands-on labs with networking equipment and simulation tools.
AIT 224	Operating System with Unix/Linux	Fundamentals of operating systems with a focus on Unix/Linux. Learn the architecture of Unix/Linux systems. Manage and configure Unix/Linux operating systems. Topics include file systems, process management, memory management, and shell scripting. Practical sessions on system administration tasks.
AIT 225	E-Content Development Using Multimedia	Techniques for developing educational and informational multimedia content. Create engaging multimedia content. Understand the tools and technologies for multimedia development. Covers multimedia authoring tools, content management systems, and interactive e-learning modules. Focus on creating multimedia projects for educational purposes.
AGRI 222	Entrepreneurship Studies and Business Communication	Basics of entrepreneurship and effective business communication. Develop entrepreneurial skills and mindset. Enhance business communication abilities. Topics include business planning, market analysis, financial management, and pitching ideas. Practical exercises in developing business plans and communication strategies.
STAT 221	Statistical Methods	Introduction to statistical techniques and their applications. Apply statistical methods to data analysis. Interpret and present statistical findings. Covers descriptive statistics, probability theory, hypothesis testing, regression analysis, and ANOVA. Emphasis on practical data analysis using statistical software.
SMNR 221	SEMINAR-II	Advanced seminar on current research and developments. Enhance research presentation skills. Engage in advanced discussions on emerging topics. Students present in-depth research on selected topics. Focus on critical analysis and constructive feedback.
AIT 311	Advance ASP.NET	Advanced topics in ASP.NET for web application development. Develop complex web applications. Utilize advanced features of ASP.NET. Topics include advanced MVC, RESTful services, security, and performance optimization. Hands-on projects on developing enterprise-level web applications.
AIT 312	Python Programming	Introduction to programming with Python, including data structures and algorithms. Master Python programming. Apply Python to solve computational

		problems. Covers Python syntax, libraries, data structures (lists, dictionaries), and algorithms (sorting, searching). Projects on data analysis, automation, and web scraping.
AIT 313 (ELECTIVE)	Information Retrieval	Study of techniques and algorithms for retrieving information from databases. Understand information retrieval models. Implement retrieval algorithms and evaluate their performance. Topics include indexing, searching, ranking algorithms, and evaluation metrics. Practical implementation of information retrieval systems.
AIT 313 (ELECTIVE)	Data Warehouse and Data Mining in Agriculture	Techniques for data warehousing and data mining applied to agricultural data. Learn data warehousing concepts. Apply data mining techniques to agricultural datasets. Covers data warehousing architectures, OLAP, data preprocessing, and mining algorithms. Case studies on agricultural data analysis.
AIT 314	E-Content Development Using Advance Multimedia	Advanced methods for creating interactive and dynamic multimedia content. Develop advanced multimedia projects. Utilize interactive elements in multimedia content. Topics include advanced animation, interactive elements, 3D modeling, and virtual reality. Projects on creating immersive multimedia experiences.
AIT 315	Fundamentals of Artificial Intelligence	Introduction to the principles and techniques of artificial intelligence. Understand AI concepts and methodologies. Implement basic AI algorithms. Covers AI history, search algorithms, machine learning basics, and natural language processing. Projects on implementing AI algorithms in practical scenarios.
AGRI 311	Communication Skills and Personality Development	Development of effective communication skills and personal development. Enhance verbal and non-verbal communication skills. Develop personal and professional growth strategies. Focuses on public speaking, interpersonal communication, conflict resolution, and leadership skills. Practical exercises in personality development and self-assessment.
PRJT 311	Project - I	Initial phase of a capstone project, involving research and planning. Conduct preliminary research. Develop a project plan and proposal. Students select a project topic, conduct literature review, and prepare a detailed project proposal. Emphasis on planning and feasibility analysis.
AIT 321	Web Data Management	Techniques and tools for managing and processing web data. Manage large datasets from the web. Implement data management solutions. Topics include web scraping, data cleaning, data storage solutions, and big data technologies. Projects on managing and analyzing web data.

AIT 322	Machine Learning	Introduction to machine learning algorithms and their applications. Understand machine learning principles. Apply algorithms to real-world data. Covers supervised and unsupervised learning, neural networks, and model evaluation. Practical projects on applying machine learning to datasets.
AIT 323	Application Development in Mobile Technology	Development of applications for mobile devices using various platforms. Design and develop mobile apps. Utilize mobile development frameworks and tools. Topics include mobile UI/UX design, platform-specific development (Android, iOS), and cross-platform tools. Hands-on projects on building mobile applications.
AIT 324	Data Analysis with MATLAB/Open Source Platforms	Data analysis techniques using MATLAB and open-source tools. Analyze data using MATLAB and open-source tools. Visualize and interpret data analysis results. Topics include data visualization, statistical analysis, and algorithm development using MATLAB and tools like R or Python. Practical data analysis projects.
AIT 325	Image Processing	Fundamentals of image processing and analysis. Learn image processing techniques. Implement algorithms for image enhancement and analysis. Covers image acquisition, enhancement, segmentation, and compression. Practical projects on applying image processing techniques to real-world images.
AGRI 321 (ELECTIVE)	Operations Research	Techniques of operations research for decision-making and optimization. Apply operations research methods to optimize processes. Solve decision-making problems using quantitative techniques. Topics include linear programming, network flows, queuing theory, and simulation. Case studies on applying OR techniques in agricultural and industrial settings.
AGRI 321 (ELECTIVE)	Crop Simulation Models	Modeling and simulation of crop growth and development. Develop and use crop simulation models. Analyze the impact of different variables on crop growth. Topics include modeling techniques, calibration, validation, and scenario analysis. Practical projects on simulating crop growth under various conditions.
AGRI 321 (ELECTIVE)	Agricultural Marketing, Trade and Prices	Study of marketing, trade, and pricing in the agricultural sector. Understand agricultural market dynamics. Analyze trade and pricing strategies. Covers market structure, price analysis, marketing channels, and international trade policies. Case studies on agricultural marketing strategies.
EI 323	Embedded and IoT system	Design and development of embedded systems and Internet of Things (IoT) devices. Develop IoT applications. Implement embedded systems for various use cases. Topics include microcontrollers,

		sensors, actuators, communication protocols, and IoT platforms. Practical projects on building and programming IoT devices.
PRJT 321	Project - II	Continuation of the capstone project with implementation and testing. Implement project plans. Test and refine project outcomes. Students execute the project plan, develop the project, and conduct testing. Emphasis on iterative development and problem-solving.
EXPL 412	Experiential Learning - I	Hands-on learning experiences in a professional setting. Gain practical experience in a professional environment. Apply classroom knowledge to real-world situations. Students work on real-world projects or internships, applying theoretical knowledge. Focus on skill development and professional growth.
EXPL 413	Experiential Learning - II	Advanced hands-on learning experiences in a professional setting. Build on previous experiential learning. Engage in more complex professional tasks. Continuation of experiential learning with increased responsibility and complexity of tasks. Emphasis on advanced skills and problem-solving.
EXPL 414	Experiential Learning - III	Further advanced hands-on learning experiences in a professional setting. Master professional skills through extensive practical experience. Lead projects and initiatives. Culmination of experiential learning with leadership roles in projects or teams. Focus on mastering professional skills and achieving project goals.
PRJT 411	Project -III	Final phase of the capstone project with presentation and documentation. Complete project implementation. Present and document project results. Students finalize their projects, prepare detailed reports, and present their findings. Emphasis on documentation, presentation skills, and final project evaluation.
PRJT 421	Project cum Internship	Comprehensive project combined with an internship experience. Integrate academic learning with practical work experience. Complete a major project while interning at an organization. Students undertake a major project during an internship, integrating academic knowledge with practical experience. Focus on professional development and project management.

Courses addressing Human Values

Course Code	Course Name	Description
AGRI 213	Fundamentals of Agricultural Extension Education	Introduction to the principles and practices of agricultural extension education. Understand the role of extension services in agriculture. Develop skills to design and implement extension programs. Topics include communication methods, extension teaching methods, and program planning. Practical exercises in conducting extension activities.
PE 221	NCC /NSS / Physical Education	Continued participation in physical education and NCC/NSS activities. Further develop physical and leadership skills. Engage in advanced community service and physical training. Continuation of PE 211 with more advanced training and activities. Emphasis on leadership roles in NCC/NSS and physical endurance.
EXPL 411	Educational Tour	Organized tours to relevant educational and industrial sites. Gain practical insights into the industry. Enhance learning through real-world exposure. Students visit industries, research institutions, and other relevant sites. Focus on understanding practical applications of academic concepts and networking opportunities.
SSD 411	Soft Skills Development	Development of essential soft skills for professional and personal growth. Enhance communication, teamwork, and leadership abilities. Prepare for professional challenges and opportunities. Covers interpersonal communication, teamwork, leadership, time management, and problem-solving skills. Practical exercises and role-playing to develop these skills.

Courses addressing Environment and Sustainability

Course Code	Course Name	Description
AGRI 111	Fundamentals of Agronomy	Introduction to the principles and practices of agronomy. Understand crop production and soil management. Topics include soil fertility, crop rotation, and sustainable agriculture. Practical exercises on crop management and soil testing.
AGRI 112	Introductory Botany	Basics of plant biology and physiology. Study plant structure, function, and growth. Covers plant taxonomy, anatomy, and reproduction. Laboratory sessions on plant identification and physiology experiments.
AGRI 113	Fundamentals of Horticulture	Principles and practices of horticulture. Learn about the cultivation of fruits, vegetables, and ornamental plants. Topics include plant propagation, greenhouse management, and pest control. Practical work in nurseries and greenhouses.
AGRI 121	Environmental Studies and Disaster Management	Study of environmental issues and disaster management strategies. Understand the impact of human activities on the environment. Topics include climate change, pollution, and natural disaster mitigation. Case studies on environmental management.
AGRI 122	Principles of Integrated Pest and Disease Management	Integrated approaches to managing pests and diseases in crops. Learn about biological, chemical, and cultural control methods. Topics include pest identification, lifecycle, and management strategies. Practical exercises on pest management techniques.
AGRI 123	Soil and Water Conservation Engineering	Techniques for conserving soil and water resources. Study erosion control, water harvesting, and soil fertility management. Topics include watershed management, irrigation systems, and soil conservation methods. Practical projects on soil and water conservation.
AGRI 212	Fundamentals of Soil Science	Introduction to soil properties and their impact on plant growth. Study soil composition, classification, and fertility. Topics include soil chemistry, physics, and microbiology. Laboratory sessions on soil sampling and analysis.
AGRI 221	Agricultural Meteorology and Climate Change	Study of weather and climate and their effects on agriculture. Understand meteorological instruments and data analysis. Topics include climate change, weather forecasting, and crop modeling. Practical exercises on weather data collection and analysis.
AGRI 312 (ELECTIVE)	Fundamentals of Crop Physiology	Study of physiological processes in crops. Learn about photosynthesis, respiration, and water relations. Topics include plant growth regulators, stress physiology, and nutrient uptake. Laboratory experiments on crop physiology.

AGRI 312 (ELECTIVE)	Nanotechnology and Precision Farming	Application of nanotechnology in agriculture for precision farming. Understand the use of nanosensors and nanomaterials. Topics include precision agriculture technologies, GPS, and remote sensing. Practical projects on precision farming techniques.
AGRI 312 (ELECTIVE)	Farm Machinery and Power	Study of machinery and power sources used in agriculture. Learn about the operation and maintenance of farm equipment. Topics include tractors, harvesters, and irrigation systems. Practical sessions on machinery operation and safety.
AGRI 313	GIS and Remote Sensing Techniques	Application of Geographic Information Systems (GIS) and remote sensing in agriculture. Learn about mapping and spatial analysis. Topics include satellite imagery, data acquisition, and GIS software. Practical projects on GIS mapping and analysis.
AGRI 322 (ELECTIVE)	Protected Cultivation and Green Technology	Techniques for growing crops in protected environments. Study greenhouse design, management, and sustainable practices. Topics include hydroponics, organic farming, and renewable energy. Practical projects on protected cultivation methods.
AGRI 322 (ELECTIVE)	Bioinformatics Computing	Application of bioinformatics in agricultural research. Understand computational tools and techniques for analyzing biological data. Topics include genome sequencing, data mining, and bioinformatics software. Practical exercises on bioinformatics analysis.