ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES – TIRUPATI
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course Name	**Course Outcomes**	
Functional English (15A52101)	CO1	Have improved communication in listening, speaking, reading and writing skills in general.
	CO2	Have developed their oral communication and fluency in group discussions and interviews.
	CO3	Have improved awareness of English in science and technology context.
	CO4	Have achieved familiarity with a variety of technical reports.
Mathematics – I (15A54101)	CO1	The students become familiar with the application of differential, integral and vector calculus, ordinary differential equations and Laplace transforms to engineering problems.
	CO2	The students attain the abilities to use mathematical knowledge to analyze and solve problems in engineering applications.
Computer Programming (15A05101)	CO1	Able to design the flowchart and algorithm for real world problems
	CO2	Able to learn and understand new programming languages
	CO3	Able to construct modular and readable programs
	CO4	Able to write C programs for real world problems using simple and compound data types
	CO5	Adapt programming experience and language knowledge to other programming language contexts
	CO6	Employee good programming style, standards and practices during program development
Engineering Physics (15A56101)	CO1	The different realms of physics and their applications in both scientific and technological systems are achieved through the study of physical optics, lasers and fibre optics.
	CO2	The important properties of crystals like the presence of long-range order and periodicity, structure determination using X-ray diffraction are focused along with defects in crystals and ultrasonic non-destructive techniques.
	CO3	The discrepancies between the classical estimates and laboratory observations of physical properties exhibited by materials would be lifted through the understanding of quantum picture of subatomic world.
	CO4	The electronic and magnetic properties of materials were successfully explained by free electron theory and focused on the basis for the band theory.
	CO5	The properties and device applications of semiconducting and magnetic materials are illustrated.
Engineering Drawing (15A03101)	CO1	Explain about Engineering Drawing and Graphics
	CO2	Illustrate about Projects of Points and Lines
	CO3	Describe about Planes and Solid Projections
English Language Communication Skills Lab (15A52102)	CO1	Becoming active participants in the learning process and acquiring proficiency in spoken English of the students
	CO2	Speaking with clarity and confidence thereby enhancing employability skills of the students
Engineering Physics Lab (15A56102)	CO1	Experiments to determine laser sources, power of the prism
	CO2	Numerical aperture, half-effect are calculated
	CO3	Determine viscosity, calorific value of fuel
Computer Programming Lab (15A05102)	CO1	Mastering C programming and solving various problems
	CO2	Provide computer basics an c programming with data structures
English for Professional Communication (15A52201)	CO1	Have acquired ability to participate effectively in group discussions.
	CO2	Have developed ability in writing in various contexts.
	CO3	Have acquired a proper level of competence for employability.
Mathematics – II	CO1	The student gains the knowledge to tackle the engineering problems using the

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(15A54201)		concepts of Fourier series, various transforms and partial differential equations.
Data Structures (15A05201)	CO1	Study variety of advanced abstract data type ADT and data structures and their Implementations.
	CO2	Identify and apply the suitable data structure for the given real world problem
Engineering Chemistry (15A51101)	CO1	Differentiate between hard and soft water. Understand the disadvantages of using hard water domestically and industrially. Select and apply suitable treatments domestically and industrially.
	CO2	Understand the electrochemical sources of energy Understand industrially based polymers, various engineering materials.
Environmental Studies (15A01101)	CO1	Students will get the sufficient information that will clarify modern environmental concepts like equitable use of natural resources, more sustainable life styles etc.
	CO2	Students will realize the need to change their approach so as to perceive our own environmental issues correctly, using practical approach based on observation and self learning.
	CO3	Students become conversant with the fact that there is a need to create a concern for our environment that will trigger pro-environmental action; including simple activities we can do in our daily life to protect it.
	CO4	By studying environmental sciences, students is exposed to the environment that enables one to find out solution of various environmental problems encountered on and often.
Data Structures Lab (15A05202)	CO1	Apply problem solving techniques to find solutions to problems
	CO2	Able to identify the appropriate data structure for a given problem or application.
	CO3	Improve logical skills
Engineering Chemistry Lab (15A51102)	CO1	Would be confident in handling energy storage systems and would be able combat chemical corrosion
	CO2	Would have acquired the practical skill to handle the analytical methods with confidence.
	CO3	Would feel comfortable to think of design materials with the requisite properties
	CO4	Would be in a position to technically address the water related problems.
Engineering & IT Workshop (15A99201)	CO1	Identify various hardware components of a system
	CO2	Assemble the computer.
	CO3	Use various Microsoft tools.
Mathematics III (15A54301)	CO1	The student will be able to analyze engineering problems using the concepts of Matrices and Numerical methods.
Database Management Systems (15A05301)	CO1	Demonstrate the basic elements of a relational database management system
	CO2	Ability to identify the data models for relevant problems.
	CO3	Ability to design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data.
	CO4	Apply normalization for the development of application software.
Discrete Mathematics (15A05302)	CO1	Able to apply mathematical concepts and logical reasoning to solve problems in different fields of Computer science and information technology.
	CO2	Able to apply the concepts in courses like Computer Organization, DBMS, Analysis of Algorithms, Theoretical Computer Science, Cryptography, Artificial Intelligence
Basic Electrical and Electronics Engineering (15A99301)	CO1	Acquires knowledge on basics of Electrical Circuits, Network theorems, two port networks, DC generators & motors, Transformers, Induction motors and Alternators.
Digital Logic Design (15A04306)	CO1	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.
	CO2	To understand and examine the structure of various number systems about application in digital design.
	CO3	The ability to understand, analyze and design various combinational and sequential circuits.
	CO4	Ability to identify basic requirements for a design application and propose a cost effective solution. The ability and prevent various hazards and timing problems in a digital design.

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	CO5	To develop skill to build, and troubleshoot digital circuits.
Managerial Economics and Financial Analysis (15A52301)	CO1	Determine the objectives, nature, scope, role & responsibilities of a manager of a business undertaking.
	CO2	Predict the demand for a product or product mix of a company & to analyze various factors influencing demand elasticity.
	CO3	Forecast & compute the future sales level of a product by using various quantitative & qualitative techniques and with help of past sales data.
Probability and Statistics (15A54401)	CO1	Analyze the problems of engineering & industry using the techniques of testing of hypothesis, Statistical Quality Control and Queuing theory and draw appropriate inferences.
Software Engineering (15A05401)	CO1	Define and develop a software project from requirement gathering to implementation.
	CO2	Ability to code and test the software
	CO3	Ability to plan, Estimate and Maintain software systems
Computer Organization (15A05402)	CO1	Ability to use memory and I/O devices effectively
	CO2	Able to explore the hardware requirements for cache memory and virtual memory
	CO3	Ability to design algorithms to exploit pipelining and multiprocessors
Microprocessors & Interfacing (15A04407)	CO1	Program the 8086 Microprocessor
	CO2	Interface the 8086 microprocosser with various devices and program
Object Oriented Programming using Java (15A05403)	CO1	Ability to solve problems using object oriented approach and implement them using Java
	CO2	Ability to write Efficient programs with multitasking ability and handle exceptions
	CO3	Create user friendly interface
Formal Languages and Automata Theory (15A05404)	CO1	Construct finite state diagrams while solving problems of computer science
	CO2	Find solutions to the problems using turing machines
	CO3	Design of new grammar and language
Operating Systems (15A05501)	CO1	Able to use operating systems effectively.
	CO2	Write System and application programs to exploit operating system functionality.
	CO3	Add functionality to the exiting operating systems
	CO4	Design new operating systems
Computer Networks (15A05502)	CO1	Ability to choose the transmission media depending on the requirements.
	CO2	Ability to design new protocols for computer network.
	CO3	Ability to configure a computer network logically
Object Oriented Analysis and Design (15A05503)	CO1	Ability to find solutions to the complex problems using object oriented approach
	CO2	Represent classes, responsibilities and states using UML notation
	CO3	Identify classes and responsibilities of the problem domain
Principles of Programming Languages (15A05504)	CO1	Ability to select appropriate programming language for problem solving
	CO2	Ability to design new programming language.
Software Testing (15A05505)	CO1	Understand the basic testing procedures.
	CO2	Able to support in generating test cases and test suites.
	CO3	Able to test the applications manually by applying different testing methods and automation tools.
	CO4	Apply tools to resolve the problems in Real time environment.
Introduction to Big Data (15A05506)	CO1	To gain knowledge about working of Hadoop File System.
	CO2	Ability to analyze Big Data using different tools.

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Social Values & Ethics (Audit Course) (15A99501)	CO1	Identify the source and function of values.
	CO2	Demonstrate an understanding if the importance of values, ethics, and social responsibility for the self and for contemporary society
	CO3	Reflect on how values shape personal and community ethics and decision-making
Compiler Design (15A05601)	CO1	Able to design a compiler for a simple programming language
	CO2	Able to use the tools related to compiler design effectively and efficiently
	CO3	Ability to write optimized code
Data Warehousing & Mining (15A05602)	CO1	Understand the basic concepts of data warehouse and data Mining
	CO2	Apply pre-processing techniques for data cleansing
	CO3	Analyze and evaluate performance of algorithms for Association Rules
	CO4	Analyze Classification and Clustering algorithms
Design Patterns (15A05603)	CO1	Know the underlying object oriented principles of design patterns.
	CO2	Understand the context in which the pattern can be applied.
	CO3	Understand how the application of a pattern affects the system quality and its tradeoffs.
Design and Analysis of Algorithms (15A05604)	CO1	Analyze the complexity of the algorithms
	CO2	Use techniques divide and conquer, greedy, dynamic programming, backtracking, branch and bound to solve the problems.
	CO3	Identify and analyze criteria and specifications appropriate to new problems, and choose the appropriate algorithmic design technique for their solution.
	CO4	Able to prove that a certain problem is NP-Complete.
Web and Internet Technologies (15A05605)	CO1	Ability to create dynamic and interactive web sites
	CO2	Gain knowledge of client side scripting using java sript and DHTML.
	CO3	Demonstrate understanding of what is XML and how to parse and use XML data
	CO4	Able to do server side programming with Java Servelets, JSP and PHP.
	CO5	Able to design rich client presentation using AJAX
Artificial Intelligence (15A05606)	CO1	Select a search algorithm for a problem and estimate its time and space complexities.
	CO2	Possess the skill for representing knowledge using the appropriate technique for a given problem
	CO3	Possess the ability to apply AI techniques to solve problems of game playing, expert systems, machine learning and natural language processing.
Management Science (15A52601)	CO1	Know the principles and applications of management knowledge and exposure to the latest developments in the field. This helps to take effective and efficient management decisions on physical and human resources of an organization. Beside the knowledge of Management Science facilitates for his/her personal and professional development.
Grid & Cloud Computing (15A05701)	CO1	Apply the security models in the grid and the cloud environment.
	CO2	Use the grid and cloud tool kits.
	CO3	Apply the concept of virtualization.
	CO4	Apply grid computing techniques to solve large scale scientific problems
Information Security (15A05702)	CO1	Protect the network from both internal and external attacks
	CO2	Design of new security approaches
	CO3	Ability to choose the appropriate security algorithm based on the requirements.
Mobile Application Development (15A05703)	CO1	Create data sharing with different applications and sending and intercepting SMS.
	CO2	Develop applications using services and publishing android applications.
	CO3	To demonstrate their skills of using Android software development tools

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Machine Learning (15A05706)	CO1	Ability to understand what is learning and why it is essential to the design of intelligent machines.
	CO2	Ability to design and implement various machine learning algorithms in a wide range of real-world applications.
	CO3	Acquire knowledge deep learning and be able to implement deep learning models for language, vision, speech, decision making, and more
Real Time Systems (15A05709)	CO1	Characterize real-time systems and describe their functions
	CO2	Analyze, design and implement a real-time system
	CO3	Apply formal methods to the analysis and design of real-time systems
	CO4	Apply formal methods for scheduling real-time systems
	CO5	Characterize and describe reliability and fault tolerance issues and approaches.
Data Analytics (15A05801)	CO1	Ability to work with different data types.
	CO2	Ability to solve various problems related to businesses.
	CO3	Ability to effectively utilize the time and involve in collaborative tasks.
Mobile Computing (15A05802)	CO1	Students able to use mobile computing more effectively
	CO2	Students gain understanding of the current topics in MANETs and WSNs, both from an industry and research point of views.
	CO3	Acquire skills to design and implement a basic mobile ad hoc or wireless sensor network via simulations.
Innovations and IT Management (15A05803)	CO1	Ability to do Business over the Internet.
	CO2	Ability to solve Business problems by applying analytics.
	CO3	Ability to use ICT to participate in Democratic process.
Building Large Scale Software Systems (15A05804)	CO1	Student able to understand coupling and cohesion
	CO2	Student able to design large c and c++ programs using Linux kernel
	CO3	Student able to understand how to design Linux kernel
	CO4	Ability to solve various problems related to Object Oriented Software using patterns
Enabling Technologies for Data Science Analytics IoT (15A05805)	CO1	Able to understand the application areas of IoT
	CO2	Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
	CO3	Able to understand building blocks of Internet of Things and characteristics.
Cyber Security (15A05806)	CO1	Analyze threats and risks within context of the cyber security architecture
	CO2	Appraise cyber security incidents to apply appropriate response
	CO3	Evaluate decision making outcomes of cyber security scenarios