VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY
(AUTONOMOUS)
(Approved by AICTE - New Delhi & Affiliated to JNTUGV, Vizianagaram)
Beside VSEZ, Duvvada, Vadlapudi Post, Gajuwaka, Visakhapatnam - 530 049.

VR22 - Regulation

COURSE OUTCOMES

(B. Tech. & MCA)

JYOTHULA SUDHAKAR

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Course Outcomes of VR22 Regulation

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VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF CIVIL ENGINEERING
VR22 B.Tech - Civil Engineering Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	01	B.Tech - Civil Engineering	1000221101	Linear Algebra and Ordinary Differential Equations	CO1	Apply the concepts of rank, eigen values and eigenvectors of a matrix and finding inverse of a matrix and powers of a matrix.
						CO2	Analysethe solution of a system of linear equations and find it.
						CO3	Inspect the analytical method for solving differential equations and applications.
						CO4	Apply differential equations in real life problems.
2	VR22	01	B.Tech - Civil Engineering	1000221108	Engineering Chemistry	CO1	Measure of water quality parameters.
						CO2	Analyze different forms of energy sources.
						CO3	Inspect corrosive environments and protection of precious metal.
						CO4	Identify different polymers and their functionalities. acquire knowledge on various engineering materials
3	VR22	01	B.Tech - Civil Engineering	1001221100	Basic Engineering Materials	CO1	Describe the properties of Rocks and minerals.
						CO2	Understand the manufacturing and functions of bricks, tiles and glass.
						CO3	Understand the functions of paint, varnish and wood as construction materials
						CO4	Identify the functional role of ingredients of cement.
4	VR22	01	B.Tech - Civil Engineering	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
5	VR22	01	B.Tech - Civil Engineering	1003221100	Engineering Mechanics	CO1	Study the force systems for equilibrium conditions and able to draw Free Body Diagram and Solve related problems
						CO2	Evaluate the frictional forces between contact surfaces.
						CO3	Able to differentiate between centroid and centre of gravity and determine Centroid, centre of gravity and second moment of area for composite sections.
						CO4	Analyse the motion and calculate trajectory characteristics.
6	VR22	01	B.Tech - Civil Engineering	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)

7	VR22	01	B.Tech - Civil Engineering	1000221113	Engineering Chemistry Laboratory	CO1	Analyze and develop experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable Instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
8	VR22	01	B.Tech - Civil Engineering	1003221110	Engineering Workshop	CO1	Identify the different types tools and work benches used in Engineering workshop.
						CO2	Explain the principles of house wiring and develop a switch system.
						CO3	Design and fabricate the various fittings required for engineering applications
						CO4	Select the right material for the given purpose, and develop the fabrication method to obtain the component.
9	VR22	01	B.Tech - Civil Engineering	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.
10	VR22	01	B.Tech - Civil Engineering	1000221201	Partial Differential Equations and Vector Calculus	CO1	Evaluate differential operators and the solutions of first order and some second order partial differential equations.
						CO2	Apply numerical methods to solve partial differential equations.
						CO3	Compute curl and divergence of a vector field and evaluatescalar potential.
						CO4	Evaluate line integrals, surface integrals and volume integrals and apply greens theorem for plane, gauss divergence theorem, stokes theorem.
11	VR22	01	B.Tech - Civil Engineering	1000221204	Engineering Physics	CO1	Recognize various planes in a crystal and describe the structure determination using x-rays.
						CO2	Apply the knowledge of ultrasonic to understand non-destructive testing and analyse acoustic properties of typically used materials in buildings.
						CO3	Interpret the relation between heat, work, and entropy with thermodynamic laws.
						CO4	Understand the classification nanostructured materials.

12	VR22	01	B.Tech - Civil Engineering	1005221200	Introduction to C Programming	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
13	VR22	01	B.Tech - Civil Engineering	1001221200	Surveying and Geomatics	CO1	Use various types of surveying instruments along with understanding of basic concepts of surveying.
						CO2	Decide the suitable method of levelling and find the elevations followed by contour mapping.
						CO3	Calculate the heights, elevations of the far object and also calculate the areas and volumes of any irregular areas.
						CO4	Setting out of a simple and compound curve with various methods and uses total station and GIS.
14	VR22	01	B.Tech - Civil Engineering	1001221210	Surveying Labotratory	CO1	Use various types of surveying instruments along with understanding of basic concepts of surveying.
						CO2	Decide the suitable method of levelling and find the elevations followed by contour mapping.
						CO3	Calculate the heights, elevations of the far object and also calculate the areas and volumes of any irregular areas.
						CO4	Setting out of a simple and compound curve with various methods and uses total station and GIS.
15	VR22	01	B.Tech - Civil Engineering	1000221211	Engineering Physics Laboratory	CO1	Demonstrate the photoelectric effect and determination of Planck constant and lattice constant.
						CO2	Analyze the anode current in ultrasonic interferometer and estimate velocity of ultrasonic waves in liquid.
						CO3	Study the characteristics of optical fibers and Lasers.
						CO4	Analyze thermodynamic properties using see beck effect and lee's method.
16	VR22	01	B.Tech - Civil Engineering	1005221210	C Programming Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.

17	VR22	01	B.Tech - Civil Engineering	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different Positions.
						CO4	Draw isometric views of simple objects.
18	VR22	01	B.Tech - Civil Engineering	1000221170	Engineering Exploration Lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
VR22 B.Tech - Electrical and Electronics Engineering Course Outcomes

SNO	Regulation	Program Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221100	Differential Equations and Laplace Transforms	CO1	Understand the mean value theorems and evaluate maxima and minima of functions of two variables without constraints.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Understand Laplace transform technique to solve initial and boundary value problems arising in engineering stream.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221105	Applied Chemistry	CO1	Identification of different polymers and their functionalities.
						CO2	Determination of structure to many compounds and apply the basic knowledge in construction of cell and its applications.
						CO3	Analysis of corrosive environments and protection of precious metal.
						CO4	Adoption of different green methodologies for preparation of advanced materials.
3	VR22	02	B.Tech - Electrical and Eletronics Engineering	1005221100	Problem Solving and Programmming using C	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
4	VR22	02	B.Tech - Electrical and Eletronics Engineering	1003221100	Engineering Mechanics	CO1	Study the force systems for equilibrium conditions and able to draw Free Body Diagram and Solve related problems.
						CO2	Evaluate the frictional forces between contact surfaces.
						CO3	Able to differentiate between centroid and centre of gravity and determine Centroid, centre of gravity and second moment of area for composite sections.
						CO4	Analyse the motion and calculate trajectory characteristics.
5	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221106	Solid State Physics	CO1	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation and summarize the importance of free electrons in determining the properties of metals.
						CO2	Gain the knowledge of semiconductor bonding, semiconductor carrier properties.
						CO3	Explain the basics of magnetic materials and superconductors to synthesize new materials as per needs of engineering applications.
						CO4	Identify and improve the dielectric materials for insulating, mechanical and communication applications.
6	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221111	Solid State Physics Lab	CO1	Demonstrate the electric polarization in dielectric material and estimation of Planck constant and lattice constant.
						CO2	Analyze the voltage vs. current characteristics of PN, Zener diode and solar cell.
						CO3	Study the characteristics of thermistor and LCR circuits.
						CO4	Identify the type of semiconductor and estimation of carrier concentration.
7	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221110	Applied Chemistry Lab	CO1	Analyze & generate experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.

8	VR22	02	B.Tech - Electrical and Eletronics Engineering	1005221110	Problem Solving and Programmming using C Lab	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
9	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221121	Constituion of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.
10	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221200	Numerial Methods and Transforms	CO1	Compute approximate roots of an equation by using different numerical methods.
						CO2	Explain difference operators and find the relation among operators and apply forward and backward formulas for compute interpolating polynomial.
						CO3	Applydifferent numerical methods to solve integrations and ordinary differential equations.
						CO4	Formulate any periodic function in terms of sine and cosine Simplify a non-periodic function as integral representation.
11	VR22	02	B.Tech - Electrical and Eletronics Engineering	1002221200	Network Theory	CO1	To Interpret basic laws of circuit elements, types of energy sources.
						CO2	Apply Network theorems to determine electrical quantities.
						CO3	Analyze dot convention and mutual inductance of coupled circuits.
						CO4	Evaluate Average and RMS values of various periodic functions.
12	VR22	02	B.Tech - Electrical and Eletronics Engineering	1002221201	Basic Electonics Devices	CO1	Distinguish the characteristics of different diodes and choose appropriate diode for an application based on the operation.
						CO2	Distinguish the characteristics of BJT and FET.
						CO3	Design different biasing and stabilization circuits and apply compensation techniques for a transistor.
						CO4	Analyze the merits and demerits of positive and negative feedback and the role of feedback in oscillators and amplifiers.
13	VR22	02	B.Tech - Electrical and Eletronics Engineering	1003221200	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different Positions.
						CO4	Draw isometric views of simple objects.
14	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221107	Technical English Communcation	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)

15	VR22	02	B.Tech - Electrical and Eletronics Engineering	1003221110	Engineering Workshop	CO1	Identify the different types tools and work benches used in Engineering workshop.
						CO2	Explain the principles of House wiring and develop a switch system.
						CO3	Design and fabricate the various fittings required for engineering applications.
						CO4	Select the right material for the given purpose, and develop the fabrication method to obtain the component.
16	VR22	02	B.Tech - Electrical and Eletronics Engineering	1002221210	Basic Electonics Devices Lab	CO1	Distinguish the characteristics of different diodes and choose appropriate diode for an application based on the operation.
						CO2	Distinguish the characteristics of different transistors.
						CO3	learn operation and characteristics of Transistor CE Characteristics.
						CO4	Analyze the concepts of Voltage Series Amplifier and RC Phase Shift Oscillator.
17	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221112	Technical English Communcation Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
18	VR22	02	B.Tech - Electrical and Eletronics Engineering	1000221170	Engineering Exploration Lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF MECHANICAL ENGINEERING
VR22 B.Tech - Mechanical Engineering Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	03	B.Tech - Mechanical Engineering	1000221100	Differential Equations and Laplace Transforms	CO1	Understand the mean value theorems and evaluate maxima and minima of functions of two variables without constraints.
						CO2	Explain different analytical methods to solve higher order linear differential equations.
						CO3	Apply Laplace transform technique to solve initial and boundary value problems arising in engineering stream.
						CO4	Evaluate solution of first order linear partial differential equations.
2	VR22	03	B.Tech - Mechanical Engineering	1000221108	Engineering Chemistry	CO1	Measure of water quality parameters.
						CO2	Analyze different forms of energy sources.
						CO3	Inspect corrosive environments and protection of precious metal.
						CO4	Identify different polymers and their functionalities, acquire knowledge on various Engineering materials.
3	VR22	03	B.Tech. - Mechanical Engineering	1003221100	Engineering Mechanics	CO1	Study the force systems for equilibrium conditions and able to draw free body diagram and Solve related problems.
						CO2	Evaluate the frictional forces between contact surfaces.
						CO3	Able to differentiate between centroid and centre of gravity and determine centroid, centre of gravity and second moment of area for composite sections.
						CO4	Analyse the motion and calculate trajectory characteristics.
4	VR22	03	B.Tech. - Mechanical Engineering	1003221101	Materials Science and Metallurgy	CO1	Demonstrate the properties of metals/alloys with respect to crystal structure, grain size and understand the necessity of alloying.
						CO2	Generalized concept of phase & phase diagram & explain the basic terminologies associated with metallurgy.
						CO3	Illustrate and suggest the heat treatment process & strengthening mechanisms. Significance of properties Vs microstructure.
						CO4	Identify the features and recommend appropriate materials viz. ferrous alloys, non-ferrous alloys and composite materials for suitable application.
5	VR22	03	B.Tech. - Mechanical Engineering	1002221100	Basic Electrical and Electronics Engineering	CO1	Apply Ohms law and kirchhoff's laws and solve electrical circuits.
						CO2	Describe the constructional features and operating principle of single-phase AC transformer.
						CO3	Outline the constructional details and operating principles of AC machines and calculate the efficiency identify the characteristics, losses and efficiency of a three-phase induction motor.
						CO4	Identify the structure, operation and characteristics and applications of measuring instruments and semiconductor devices.
6	VR22	03	B.Tech. - Mechanical Engineering	1000221113	Engineering Chemistry Lab	CO1	Analyze and develop experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable Instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
7	VR22	03	B.Tech. - Mechanical Engineering	1002221110	Basic Electrical and Electronics Engineering Lab	CO1	To apply the basic electrical laws and analysis of circuits.
						CO2	To discuss the principle of operation and construction details of transformer.
						CO3	To relate the principle of operation and construction details of and AC rotating machines.
						CO4	To classify the measuring instruments and study the principle of operation.
8	VR22	03	B.Tech. - Mechanical Engineering	1003221102	Engineering Workshop	CO1	Identify the different types tools and work benches used in Engineering workshop.
						CO2	Explain the principles of House wiring and develop a switch system.
						CO3	Design and fabricate the various fittings required for engineering applications.
						CO4	Select the right material for the given purpose, and develop the fabrication method to obtain the component.
9	VR22	03	B.Tech. - Mechanical Engineering	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like supreme court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

10	VR22	03	B.Tech. - Mechanical Engineering	1000221104	Linear Algebra and Vector Valculus	CO1	Understand to solve the system of Linear equations by direct and iteration methods.
						CO2	Compute Eigen values and Eigen vectors of a matrix and study the nature of Quadratic form.
						CO3	Apply Multiple integration techniques for evaluating areas and volume bounded by region.
						CO4	Explain Gradient, divergence and curl operations in vector and scalar fields and apply Green's, Gauss and Stoke's theorem as the generalization of fundamental theorem of integral calculus.
11	VR22	03	B.Tech. - Mechanical Engineering	1000221204	Engineering Physics	CO1	Recognize various planes in a crystal and describe the structure determination using x-rays.
						CO2	Apply the knowledge of Ultrasonic to understand non-destructive testing and analyse acoustic properties of typically used materials in buildings.
						CO3	Interpret the relation between heat, work, and entropy with thermodynamic laws.
						CO4	Understand the classification nanostructured materials.
12	VR22	03	B.Tech. - Mechanical Engineering	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
13	VR22	03	B.Tech. - Mechanical Engineering	1005221200	Introduction to C Programming	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
14	VR22	03	B.Tech. - Mechanical Engineering	1003221200	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves .
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
15	VR22	03	B.Tech. - Mechanical Engineering	1000221211	Engineering Physics Lab	CO1	Demonstrate the photoelectric effect and determination of Planck constant. and lattice constant
						CO2	Analyze the anode current in ultrasonic interferometer and estimate velocity of ultrasonic waves in liquid.
						CO3	Study the characteristics of optical fibers and Lasers.
						CO4	Analyze thermodynamic properties using see beck effect and Lee's method.
16	VR22	03	B.Tech. - Mechanical Engineering	1000221112	Technical English Communication Lab	CO1	Read, understand and interpret material on environment, science and technology, tourism, energy sources, social awareness.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
17	VR22	03	B.Tech. - Mechanical Engineering	1005221210	C Programming Lab	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
18	VR22	03	B.Tech. - Mechanical Engineering	1000221170	Engineering Exploration	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
VR22 B.Tech - Electronics and Communication Engineering Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	04	B.Tech - Electronics and Communication Engineering	1000221100	Differential Equations and Laplace Transforms	CO1	Understand the mean value theorems and evaluate maxima and minima of functions of two variables without constraints.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Understand Laplace transform technique to solve initial and boundary value problems arising in engineering stream.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	04	B.Tech - Electronics and Communication Engineering	1000221104	Linear Algebra and Vector Calculus	CO1	Understand to solve the system of Linear equations by direct and iteration methods.
						CO2	Compute eigen values and eigen vectors of a matrix and study the nature of quadratic form.
						CO3	Apply multiple integration techniques for evaluating areas and volume bounded by region.
						CO4	Explain gradient, divergence and curl operations in vector and scalar fields and apply green's, gauss and stoke's theorem as the generalization of fundamental theorem of integral calculus.
3	VR22	04	B.Tech - Electronics and Communication Engineering	1000221105	Applied Chemistry	CO1	Identification of different polymers and their functionalities.
						CO2	Determination of structure to many compounds and apply the basic knowledge in construction of cell and its applications.
						CO3	Analysis of corrosive environments and protection of precious metal.
						CO4	Adoption of different green methodologies for preparation of advanced materials.
4	VR22	04	B.Tech - Electronics and Communication Engineering	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and
						CO2	Learn the principle of orthographic projections. draw orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
5	VR22	04	B.Tech - Electronics and Communication Engineering	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	04	B.Tech - Electronics and Communication Engineering	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
7	VR22	04	B.Tech - Electronics and Communication Engineering	1000221110	Applied Chemistry lab	CO1	Analyze & generate experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
8	VR22	04	B.Tech - Electronics and Communication Engineering	1004221110	Basic Electronic Workshop	CO1	Demonstrate the passive and active components.
						CO2	Analyse different Signal sources and measuring instruments.
						CO3	Apply different types of relays in communication systems.
						CO4	Design different electronic circuits using soldering.
9	VR22	04	B.Tech - Electronics and Communication Engineering	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.
10	VR22	04	B.Tech - Electronics and Communication Engineering	1000221203	Numerical Methods and Complex	CO1	Compute approximate roots of an equation by using different numerical methods.
						CO2	Explain difference operators and find the relation among operators and apply forward and backward formulas for compute interpolating polynomial and Apply different numerical methods to solve integrations .and ordinary differential equations
						CO3	Understand continuity and analyticity of various complex valued functions and evaluate complex integration.
						CO4	Construct Taylor's series and Laurent's series for complex function in annular region and Compute complex integration by residue theorem.

11	VR22	04	B.Tech - Electronics and Communication Engineering	1000221106	Solid State Physics	CO1	Apply the knowledge of basic quantum mechanics, to set up onedimensional. Schrodinger's wave equation and summarize the importance of free electrons in determining the properties of metals.
						CO2	Gain the knowledge of semiconductor bonding, semiconductor carrier properties.
						CO3	Explain the basics of magnetic materials and superconductors to synthesize new materials as per needs of engineering applications.
						CO4	Identify and improve the dielectric materials for insulating,mechanical and communicationapplications.
12	VR22	04	B.Tech - Electronics and Communication Engineering	1002221202	Network Analysis	CO1	To Interpret basic laws of circuit elements, types of energy sources.
						CO2	Apply network theorems to determine electrical quantities.
						CO3	Analyze two port networks to determine network parameters.
						CO4	Evaluate natural and forced response of RL, RC and RLC circuits.
13	VR22	04	B.Tech - Electronics and Communication Engineering	1000221107	Technical English Communcation	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
14	VR22	04	B.Tech - Electronics and Communication Engineering	1005221204	Data Structures	CO1	Apply the C language concepts: pointers, structures, unions and recursion to solve the problems.
						CO2	Implement standard data structures like stack, queue, list, trees and graphs.
						CO3	Choose appropriate data structure while building new applications.
						CO4	Explain the need for data structuring techniques.
15	VR22	04	B.Tech - Electronics and Communication Engineering	1000221112	Technical English Communcation Lab	CO1	Read, understand and interpret material on environment, science and
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
							Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
16	VR22	04	B.Tech - Electronics and Communication Engineering	1000221111	Solid State Physics Lab	CO1	Demonstrate the electric polarization in dielectric material and estimation of Planck constant and lattice constant.
						CO2	Analyze the voltage vs. current characteristics of PN, zener diode and solar cell.
						CO3	Study the characteristics of thermistor and LCR circuits.
						CO4	Identify the type of semiconductor and estimation of carrier concentration.
17	VR22	04	B.Tech - Electronics and Communication Engineering	1005221213	Data Structures Lab	CO1	Implement the programs on arrays and linked lists.
						CO2	Implement standard data structures like stacks and queue.
						CO3	Analyze the time and space efficiency of the data structure be capable to identity the appropriate data structure for given problem.
						CO4	Have practical knowledge on the application of data structures.
18	VR22	04	B.Tech - Electronics and Communication Engineering	1000221170	Engineering Exploration	CO1	Explain the role of an engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VR22 B.Tech - Computer Science and Engineering Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	05	B.Tech - Computer Science and Engineering	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	05	B.Tech - Computer Science and Engineering	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	05	B.Tech - Computer Science and Engineering	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
4	VR22	05	B.Tech - Computer Science and Engineering	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different Positions.
						CO4	Draw isometric views of simple objects.
5	VR22	05	B.Tech - Computer Science and Engineering	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	05	B.Tech - Computer Science and Engineering	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
7	VR22	05	B.Tech - Computer Science and Engineering	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
8	VR22	05	B.Tech - Computer Science and Engineering	1000221170	Engineering Exploration Lab	CO1	Explain the role of an engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
9	VR22	05	B.Tech - Computer Science and Engineering	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of Linear equations.
						CO2	Apply direct methods to solve the system of Linear equations and understand the decomposition technique.
						CO3	Compute eigen values and eigen vectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.
10	VR22	05	B.Tech - Computer Science and Engineering	1000221205	Biochemistry	CO1	Define the cells, their structure and function, and different types of cells and the basis for the Classification of living organisms.
						CO2	Explain biomolecules, structure and function, and their role in a living organism. How biomolecules are useful in Industry
						CO3	Demonstrate the biology concept and its uses with different technologies for producing medicines and other biological equipment.
						CO4	Illustrate genes and genetic materials (DNA & RNA) present in living organisms and how they replicate, transfer & preserve vital information in living organisms.

11	VR22	05	B.Tech - Computer Science and Engineering	1005221201	Programming in Modern C++	CO1	Articulate the principles of object-oriented programming and outline the essential features and elements of the C++ programming language.
						CO2	Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism.
						CO3	Apply virtual and pure virtual function in complex programming situations.
						CO4	To use template classes and the STL library in C++ and to incorporate exception handling in object oriented concepts.
12	VR22	05	B.Tech - Computer Science and Engineering	1005221202	Computer Organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design Arithmetic Logic unit by analyzing performance issues.
						CO4	Compare various Memory organizations.
13	VR22	05	B.Tech - Computer Science and Engineering	1005221203	Web Design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
14	VR22	05	B.Tech - Computer Science and Engineering	1005221211	Programming in C++ Lab	CO1	Create simple programs using classes and objects in c++ and implement object oriented programs in c++.
						CO2	Implement object oriented programs using templates and exception handling mechanisms.
						CO3	Implement programs using STL.
15	VR22	05	B.Tech - Computer Science and Engineering	1000221212	Biochemistry Lab	CO1	Analyze & generate experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
16	VR22	05	B.Tech - Computer Science and Engineering	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
17	VR22	05	B.Tech - Computer Science and Engineering	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
18	VR22	05	B.Tech - Computer Science and Engineering	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF INFORMATION TECHNOLOGY
VR22 B.Tech - Information Technology Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	12	B. Tech - Information Technology	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations
2	VR22	12	B. Tech - Information Technology	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	12	B. Tech - Information Technology	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
4	VR22	12	B. Tech - Information Technology	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different Positions.
						CO4	Draw isometric views of simple objects.
5	VR22	12	B. Tech - Information Technology	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	12	B. Tech - Information Technology	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
7	VR22	12	B. Tech - Information Technology	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
8	VR22	12	B. Tech - Information Technology	1000221170	Engineering Exploration Lab	CO1	Explain the role of an engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
9	VR22	12	B. Tech - Information Technology	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of Linear equations.
						CO2	Apply direct methods to solve the system of Linear equations and understand the decomposition technique.
						CO3	Compute eigen values and eigen vectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.
10	VR22	12	B. Tech - Information Technology	1000221205	Biochemistry	CO1	Define the cells, their structure and function, and different types of cells and the basis for the Classification of living organisms.
						CO2	Explain biomolecules, structure and function, and their role in a living organism. How biomolecules are useful in Industry
						CO3	Demonstrate the biology concept and its uses with different technologies for producing medicines and other biological equipment.
						CO4	Illustrate genes and genetic materials (DNA & RNA) present in living organisms and how they replicate, transfer & preserve vital information in living organisms.

11	VR22	12	B. Tech - Information Technology	1005221201	Programming in Modern C++	CO1	Articulate the principles of object-oriented programming and outline the essential features and elements of the C++ programming language.
						CO2	Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism.
						CO3	Apply virtual and pure virtual function in complex programming situations.
						CO4	To use template classes and the STL library in C++ and to incorporate exception handling in object oriented concepts.
12	VR22	12	B. Tech - Information Technology	1005221202	Computer Organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design arithmetic logic unit by analyzing performance issues.
						CO4	Compare various memory organizations.
13	VR22	12	B. Tech - Information Technology	1005221203	Web Design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
14	VR22	12	B. Tech - Information Technology	1005221211	Programming in C++ Lab	CO1	Create simple programs using classes and objects in c++ and implement object oriented programs in c++.
						CO2	Implement object oriented programs using templates and exception handling mechanisms.
						CO3	Implement programs using STL .
15	VR22	12	B. Tech - Information Technology	1000221212	Biochemistry Lab	CO1	Analyze & generate experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
16	VR22	12	B. Tech - Information Technology	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
17	VR22	12	B. Tech - Information Technology	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
18	VR22	12	B. Tech - Information Technology	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like supreme court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING
VR22 B.Tech - Electronics and Computer Engineering Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	19	B. Tech - Electronics and Computer Engineering	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
2	VR22	19	B. Tech - Electronics and Computer Engineering	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	19	B. Tech - Electronics and Computer Engineering	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
4	VR22	19	B. Tech - Electronics and Computer Engineering	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
5	VR22	19	B. Tech - Electronics and Computer Engineering	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
6	VR22	19	B. Tech - Electronics and Computer Engineering	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
7	VR22	19	B. Tech - Electronics and Computer Engineering	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
8	VR22	19	B. Tech - Electronics and Computer Engineering	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
9	VR22	19	B. Tech - Electronics and Computer Engineering	1000221170	Engineering Exploration Lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
10	VR22	19	B. Tech - Electronics and Computer Engineering	1005221203	Web Design	CO1	Understand the web applications and HTML & CSS.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.

11	VR22	19	B. Tech - Electronics and Computer Engineering	1000221205	Biochemistry	CO1	Define the cells, their structure and function, and Different types of cells and the basis for the Classification of living organisms.
						CO2	Explain biomolecules, structure and function, and their role in a living organism. How biomolecules are useful in Industry.
						CO3	Demonstrate the biology concept and its uses with different technologies for producing medicines and other biological equipment.
						CO4	Illustrate genes and genetic materials (DNA & RNA) present in living organisms and how they replicate, transfer & preserve vital information in living organisms.
12	VR22	19	B. Tech - Electronics and Computer Engineering	1002221202	Network Analysis	CO1	Utilize the basic laws and networks theorems to determine the parameters of the electrical circuits.
						CO2	Explain phasor diagrams for R-L, R-C and R-L-C circuits. Determine various powers of A.C. circuits and series, parallel resonant circuits.
						CO3	Analyze two port networks and evaluate various parameters of two port networks.
						CO4	Analyze natural and forced response of electrical circuits. Determine transient and steady state response of RL, RC and RLC circuits.
13	VR22	19	B. Tech - Electronics and Computer Engineering	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of linear equations.
						CO2	Apply direct methods to solve the system of linear equations and understand the decomposition technique.
						CO3	Compute eigenvalues and eigenvectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.
14	VR22	19	B. Tech - Electronics and Computer Engineering	1054221200	Object Oriented Programming through JAVA	CO1	Able to realize the concept of object oriented programming & java programming constructs.
						CO2	Able to describe the basic concepts of java such as operators, classes, objects, inheritance, packages, rumeration and various keywords.
						CO3	Apply the concept of exception handling and input/ output operations.
						CO4	Able to design the applications of java & java applet.
						CO5	Able to analyze & design the concept of event handling and abstract window toolkit.
15	VR22	19	B. Tech - Electronics and Computer Engineering	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
16	VR22	19	B. Tech - Electronics and Computer Engineering	1000221212	Biochemistry Lab	CO1	Analyze & generate experimental skills.
						CO2	Enhance the thinking capabilities pertaining modern trends in engineering & technology.
						CO3	Select and use a suitable instrumental technique for the quantitative estimation and analyze the data obtained.
						CO4	Learn safety rules during the practice of laboratory investigation.
17	VR22	19	B. Tech - Electronics and Computer Engineering	1054221210	Object Oriented Programming Through JAVA Lab	CO1	Use the Java programming language for various programming technologies.
						CO2	Develop software in the Java programming language.
						CO3	Evaluate user requirements for software functionality required to decide whether the java programming language can meet user requirements.
						CO4	Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem.
18	VR22	19	B. Tech - Electronics and Computer Engineering	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VR22 B.Tech - CSE - Artificial Intelligence Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221109	Applied physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221107	Technical english communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
4	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1003221102	Engineering drawing	CO1	Understand the use of drawing instruments to construct the polygons and
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines..
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
5	VR22	43	B.Tech - Computer Science and Engineering - Artificial	1005221100	Problem solving and programming using C	CO1	Write compile and debug Programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221112	Technical english communication lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
7	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221114	Applied physics lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
8	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1005221110	Problem solving and programming using C lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
9	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221170	Engineering exploration lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
10	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221103	Linear algebra and tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of linear equations.
						CO2	Apply direct methods to solve the system of linear equations and understand the decomposition technique.
						CO3	Compute eigenvalues and eigenvectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.

11	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221202	Statistics for data science-I	CO1	Analyze statistical data using measures of centraltendency, dispersion and location.
						CO2	Recognize discrete and continuous variables and evaluate the properties of random experiments.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designingand selecting a sample from a population.
12	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1005221201	Programming in modern C++	CO1	Articulate the principles of object-oriented programming and Outline the essential features and elements of the C++ programming language.
						CO2	Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism.
						CO3	Apply virtual and pure virtual function in complex programming situations.
						CO4	To use template classes and the STL library in C++ and to incorporate exception handling in object oriented concepts.
13	VR22	43	B.Tech Computer Science and Engineering - Artificial Intelligence	1005221202	Computer organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design Arithmetic Logic unit by analyzing performance issues.
						CO4	Compare various Memory organizations.
14	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1005221203	Web design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
15	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1005221211	Programming in C++ lab	CO1	Create simple programs using classes and objects in c++ and implement object oriented programs in c++.
						CO2	Implement object oriented programs using templates and exception handling mechanisms.
						CO3	Implement programs using STL.
16	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221210	R programming lab	CO1	Analyze statistical data using measures of central tendency, dispersion and location.
						CO2	Recognize common probability distributions for discrete and continuous variables.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designing and selecting a sample from a population.
17	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1005221212	Web design lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
18	VR22	43	B.Tech - Computer Science and Engineering - Artificial Intelligence	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VR22 B.Tech - CSE - Data Science Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
4	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves .
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
5	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT. (Individual/Team)
7	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
8	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.

9	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221170	Engineering Exploration Lab	CO1	Explain the role of an engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and Software Programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
10	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of linear equations.
						CO2	Apply direct methods to solve the system of Linear equations and understand the decomposition technique.
						CO3	Compute eigenvalues and eigenvectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.
11	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221202	Statistics for Data Science-I	CO1	Analyze statistical data using measures of centraltendency, dispersion and location.
						CO2	Recognize discrete and continuous variables and evaluate the properties of random experiments.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designingand selecting a sample from a population.
12	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221201	Programming in Modern C++	CO1	Articulate the principles of object-oriented programming and outline.
						CO2	Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism.
						CO3	Apply virtual and pure virtual function in complex programming situations.
						CO4	To use template classes and the STL library in C++ and to incorporate exception handling in object oriented concepts.
13	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221202	Computer Organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design Arithmetic Logic unit by analyzing performance issues
						CO4	Compare various Memory organizations.
14	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221203	Web Design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
15	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221211	Programming in C++ Lab	CO1	Create simple programs using classes and objects in c++ and implement object oriented programs in c++.
						CO2	Implement object oriented programs using templates and exception handling mechanisms.
						CO3	Implement programs using STL.

16	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1000221210	R Programming Lab	CO1	Analyze statistical data using measures of central tendency, dispersion and location.
						CO2	Recognize common probability distributions for discrete and continuous variables.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designing and selecting a sample from a population.
17	VR22	44	B.Tech - Computer Science and Engineering - Data Science	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications
18	VR22	44	B.Tech Computer Science and Engineering - Data Science	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VR22 B.Tech - CSE - Cyber Security Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger's wave equation.
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
3	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
4	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and
						CO2	Learn the principle of orthographic projections. Draw Orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
5	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
6	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
7	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
8	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
9	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221170	Engineering Exploration Lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
10	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrix and consistency to solve the system of Linear equations.
						CO2	Apply direct methods to solve the system of Linear equations and understand the decomposition technique.
						CO3	Compute eigenvalues and eigenvectors of a real matrix and study the nature of quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.

11	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221206	Probability and Statistics	CO1	Explain the notion of random variable and evaluate the expected value and probability of random variables.
						CO2	Apply Binomial, Poisson, Normal, gamma and weibull distributions for real data to compute probabilities, theoretical frequencies
						CO3	Evaluate the confidence levels and maximum error for large and small samples, Apply the concept of hypothesis testing for large and small samples in real life situations to draw the inferences and estimate the goodness of fit.
						CO4	Examine correlation for the bi-variate data and fit the different curves using principle of least squares and to predict the regression analysis.
12	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221201	Programming in Modern C++	CO1	Articulate the principles of object-oriented programming and Outline the essential features and elements of the C++ programming language.
						CO2	Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism.
						CO3	Apply virtual and pure virtual function in complex programming situations.
						CO4	To use template classes and the STL library in C++ and to incorporate exception handling in object oriented concepts.
13	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221202	Computer Organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design Arithmetic Logic unit by analyzing performance issues
						CO4	Compare various Memory organizations.
14	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221203	Web Design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
15	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221211	Programming in C++ Lab	CO1	Create simple programs using classes and objects in c++ and implement object oriented programs in c++.
						CO2	Implement object oriented programs using templates and exception handling mechanisms.
						CO3	Implement programs using STL.
16	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221210	R Programming Lab	CO1	Analyze statistical data using measures of central tendency, dispersion and location.
						CO2	Recognize common probability distributions for discrete and continuous variables.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designing and selecting a sample from a population.
17	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
18	VR22	46	B.Tech - Computer Science and Engineering - Cyber Security	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
VR22 B.Tech - Artificial Intelligence and Data Science Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Name	CO	Course Outcome: After the completion of the course student will be able to
1	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221102	Calculus	CO1	Apply various methods to solve 1st order differential equations.
						CO2	Understand different analytical methods to solve higher order linear differential equations.
						CO3	Apply single and Multiple integration techniques to calculate arc length, areas and volume bounded by region.
						CO4	Understand solution of first order linear partial differential equations.
2	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221103	Linear Algebra and Tensors	CO1	Understand the concept of the rank of the matrixand consistency to solve the system of Linear equations.
						CO2	Apply direct methods to solve the system of Linearequations and understand the decomposition technique.
						CO3	Compute eigenvalues and eigenvectors of a realmatrix and study the nature of Quadratic form.
						CO4	Understand the concept of the linear transform in vector space and make use of orthogonality in inner product.
3	VR22	54	B.Tech - Artificial Intelligence and Data Science	1005221100	Problem Solving and Programming using C	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
4	VR22	54	B.Tech - Artificial Intelligence and Data Science	1003221102	Engineering Drawing	CO1	Understand the use of drawing instruments to construct the polygons and curves.
						CO2	Learn the principle of orthographic projections. Draw orthographic projections of points, lines.
						CO3	Draw the various types of planes and solids its views in different positions.
						CO4	Draw isometric views of simple objects.
5	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221109	Applied Physics	CO1	Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
						CO2	Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
						CO3	Apply the knowledge of basic quantum mechanics, to set up one dimensional Schrodinger"s wave equation
						CO4	Gain the knowledge of semiconductor bonding, semiconductor carrier properties and describe the concepts of logic gates.
6	VR22	54	B.Tech - Artificial Intelligence and Data Science	1005221110	Problem Solving and Programming using C Lab	CO1	Write compile and debug programs in C language.
						CO2	Use operators, data types and write programs.
						CO3	Select the best loop construct for a given problem.
						CO4	Design and implement C programs.
7	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221114	Applied Physics Lab	CO1	Apply theoretical knowledge to understand the working principles of laboratory experiments realted to optics.
						CO2	Compute the required parameters using suitable formulas in lasers and fiber optics.
						CO3	Adopt the experimental procedure to perform experiments on semiconducting materials.
						CO4	Design and comprehend basic logic gates.
8	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221170	Engineering Exploration Lab	CO1	Explain the role of an Engineer as a problem solver.
						CO2	Identify multi-disciplinary approach required in solving an engineering problem.
						CO3	Build simple systems using engineering design process with mechanisms.
						CO4	Understand the interface between hardware and software programming.
						CO5	Demonstrate data acquisition and analysis skills using a tool.
						CO6	Use basics of engineering project management skills in doing projects and by practicing ethical principle.
9	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221202	Statistics for Data Science-I	CO1	Analyze statistical data using measures of centraltendency, dispersion and location.
						CO2	Recognize discrete and continuous variables and evaluate the properties of random experiments.
						CO3	Apply discrete and continuous probabilitydistributions to solve statistical problems.
						CO4	Apply the different sampling methods for designingand selecting a sample from a population.
10	VR22	54	B.Tech - Artificial Intelligence and Data Science	1054221200	Object Oriented Programming through Java	CO1	Able to realize the concept of object oriented programming & java programming constructs.
						CO2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords.
						CO3	Apply the concept of exception handling and Input/ Output operations.
						CO4	Able to design the applications of java & java applet.

11	VR22	54	B.Tech - Artificial Intelligence and Data Science	1005221202	Computer Organization	CO1	Apply the concepts of basic functional units to demonstrate the working of computational system.
						CO2	Analyze the design issues in the development of processor and other components to articulate improvement in computer design.
						CO3	Design arithmetic logic unit by analyzing performance issues.
						CO4	Compare various memory organizations.
12	VR22	54	B.Tech - Artificial Intelligence and Data Science	1005221203	Web Design	CO1	Understand the web applications and HTML.
						CO2	Describe the basic concepts of HTML & CSS to design web pages and web site.
						CO3	Describe the basic concepts client side scripting importance.
						CO4	Understand server-side scripting with PHP language.
13	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221107	Technical English Communication	CO1	Read, understand and interpret material on social media, inventors, human values health and nutrition and new age entrepreneurs.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team)
14	VR22	54	B.Tech - Artificial Intelligence and Data Science	1054221210	Object Oriented Programming through Java Lab	CO1	Use the java programming language for various programming technologies.
						CO2	Develop software in the java programming language.
						CO3	Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements.
						CO4	Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem.
15	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221112	Technical English Communication Lab	CO1	Analyze the functions of language and grammar in spoken and written forms.
						CO2	Write effectively on various domains.
						CO3	Prepare and exhibit oral presentation skills by using ICT. (Individual/Team)
16	VR22	54	B.Tech - Artificial Intelligence and Data Science	1005221212	Web Design Lab	CO1	Understand the usage and designing of web pages using HTML & CSS.
						CO2	Able to design the user interactive pages and web page layouts.
						CO3	Analyze a given problem and apply requisite appropriate tools for designing interactive web applications.
17	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221210	R Programming Lab	CO1	Analyze statistical data using measures of centraltendency, dispersion and location.
						CO2	Recognize common probability distributions for discrete and continuous variables.
						CO3	Apply discrete and continuous probability distributions to solve statistical problems.
						CO4	Apply the different sampling methods for designingand selecting a sample from a population.
18	VR22	54	B.Tech - Artificial Intelligence and Data Science	1000221121	Constitution of India	CO1	Understand the importance of constitution, fundamental rights and duties.
						CO2	Understand the structure of executive, legislature and judiciary.
						CO3	Understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
						CO4	Understand the central and state relation financial and administrative.

VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY (A)
DEPARTMENT OF MCA
VR22 - Master of Computer Applications - Course Outcomes

SNO	Regulation	Programme Code	Programme Name	Course Code	Course Code	Cos	Course Outcome: After the completion of the course student will be able to
1	VR22	1F-00	MCA-Master of Computer Applications	4098221100	Operating Systems	CO1	Understand the basic organization of computer and different instruction formats and addressing modes.
						CO2	Analyze the concept of pipelining, segment registers and pin diagram of CPU.
						CO3	Understand and analyze various issues related to memory hierarchy.
						CO4	Evaluate various modes of data transfer between CPU and I/O devices.
						CO5	Examine various inter connection structures of multi processors.
2	VR22	1F-00	MCA-Master of Computer Applications	4098221101	C Programming and Data Structures	CO1	Implement basic programs by using C concepts.
						CO2	Select the data structures that efficiently model the information in a problem.
						CO3	Assess efficiency trade-offs among different data structure implementations or combinations.
						CO4	Implement and know the application of algorithms for sorting and pattern matching.
3	VR22	1F-00	MCA-Master of Computer Applications	4098221102	Object Oriented Programming through Java	CO1	Describe the uses OOP concepts.
						CO2	Apply OOP concepts to solve real world problems.
						CO3	Distinguish the concept of packages and interfaces.
						CO4	Demonstrate the exception handing, multithread applications with synchronization.
						CO5	Design the GUI based applications using AWT and Swings.
						CO6	Discuss the Collection Framework.
4	VR22	1F-00	MCA-Master of Computer Applications	4098221103	Professional Communication and Soft Skills	CO1	Read, understand and interpret material on Environment, Science and Technology, tourism, Energy Sources, Social Awareness.
						CO2	Analyze the functions of language and grammar in spoken and written forms.
						CO3	Write effectively on various domains.
						CO4	Prepare and exhibit oral presentation skills by using ICT.(Individual/Team).
5	VR22	1F-00	MCA-Master of Computer Applications	4098221104	Mathematical and Satistical Foundations	CO1	Apply the basic rules and theorems of probability theory such as Baye's Theorem, determine probabilities that help to solve engineering problems and to determine the expectation and variance of a random variable from its distribution.
						CO2	Perform and analyze of sampling, means, proportions, variances and estimates the maximum likelihood based on population parameters.
						CO3	Learn how to formulate and test hypotheses about sample means, variances and proportions and to draw conclusions based on the results of statistical tests.
						CO4	Design various ciphers using number theory. Apply graph theory for real time problems like network routing problem.

6	VR22	1F-00	MCA-Master of Computer Applications	4098221110	Operating Systems and Linux Lab	CO1	Implement various CPU scheduling algorithms and compare results.
						CO2	Implement various disk scheduling algorithms and compare results.
						CO3	Implement page replace algorithms.
						CO4	Implement various memory management techniques.
						CO5	Execute basic Linux commands.
7	VR22	1F-00	MCA-Master of Computer Applications	4098221111	C Programming and Data Structures Lab	CO1	Implement various basic data structures and its operations.
						CO2	Apply sorting and searching algorithms to given numbers.
						CO3	Implement various tree operations.
						CO4	Implement various graphs algorithms.
						CO5	Develop applications using various data structures.
8	VR22	1F-00	MCA-Master of Computer Applications	4098221112	Object Orineted Programming through Java Lab	CO1	Use the Java programming language for various programming technologies.
						CO2	Develop software in the Java programming language.
						CO3	Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements.
						CO4	Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem.
9	VR22	1F-00	MCA-Master of Computer Applications	4098221170	Socially Relevant Project	CO1	Build mindsets and foundations essential for designers.
						CO2	using human-cented design methodology and understand their real-wrold applicatons.
						CO3	Use design thinking for problem solving methdology for investigate.
						CO4	Apply several design challenges and work towards the final desing challenges.
10	VR22	1F-00	MCA-Master of Computer Applications	4098221200	Database Management Systems	CO1	Illustrate the concept of databases, database management systems, database languages, database structures and their work.
						CO2	Apply ER modeling and Relational modeling for designing simple databases.
						CO3	Summarize the concepts related to relational model and SQL and Write database queries using relational algebra and structured query language.
						CO4	Design and develop databases from the real world by applying the concepts of Normalization.
						CO5	Outline the issues associated with Transaction Management and Recovery, Tree Structured and Hash-Based Indexing.
11	VR22	1F-00	MCA-Master of Computer Applications	4098221201	Computer Networks	CO1	Explain the network architecture, TCP/IP and OSI reference models.
						CO2	Identify and understand various techniques and modes of transmission.
						CO3	Demonstrate the data link protocols, multi-channel access protocols and IEEE 802 standards for LAN.
						CO4	Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme.
						CO5	Discuss the elements and protocols of transport layer.
						CO6	Develop network security and define various protocols such as FTP, HTTP, Telnet, DNS.

12	VR22	1F-00	MCA-Master of Computer Applications	4098221202	Python Programming	CO1	Construct software easily right out of the box.
						CO2	Experiment with an interpreted language.
						CO3	Build software for real needs..
						CO4	Explain to testing Orielly.
13	VR22	1F-00	MCA-Master of Computer Applications	4098221203	Data Warehousing and Mining	CO1	Understand the basics of types of data, quality of data, suitable techniques required for preprocessing and measures required to perform data analysis.
						CO2	Describe the need of classification, identify suitable technique(s) to perform classification, model building and evaluation.
						CO3	Identify the requirements and usage of association rule mining on categorical and continuous data.
						CO4	Compare and Identify suitable clustering algorithm(s) (apply with open source tools), interpret, evaluate and report the result.
						CO5	Describe the requirements and the need of web mining.
14	VR22	1F-00	MCA-Master of Computer Applications	4098221230	NoSQL Databases (Professional Elective-I)	CO1	Identify what type of NoSQL database to implement based on business requirements (key-value, document, full text, graph, etc.).
						CO2	Apply NoSQL data modeling from application specific queries
						CO3	Use atomic aggregates and denormalization as data modelling techniques to optimize query processing.
15	VR22	1F-00	MCA-Master of Computer Applications	4098221231	Advanced Data Structures (Professional Elective-I)	CO1	Understand graph representations, minimum Spanning Trees and traversals.
						CO2	Understand Dictionaries, hashing mechanism which supports faster retrieval.
						CO3	Implement heaps, queues and their operations, B Trees and B+ Trees.
						CO4	Illustration tries which share some properties of table look up, various issues related to the design of file structures.
16	VR22	1F-00	MCA-Master of Computer Applications	4098221232	Object Oriented Analysis and design (Professional Elective-I)	CO1	Possess an ability to practically apply knowledge software engineering methods, such as object-oriented analysis and design methods with a clear emphasis on UML.
						CO2	Have a working ability and grasping attitude to design and conduct object-oriented analysis and design experiments using UML, as well as to analyze and evaluate their Models.
						CO3	Have a capacity to analyze and design software systems, components to meet desired needs.
						CO4	Display an ability to identify, formulate and solve software development problems: software requirements, specification (problem space), Software design, and implementation (solution space).
						CO5	Show an ability to use the graphical UML representation using tools, such as IBM's Rational Rose or Microsoft's Vision.

17	VR22	1F-00	MCA-Master of Computer Applications	4098221233	Artificial Intelligence (Professional Elective-I)	CO1	Outline problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.
						CO2	Apply the language/framework of different AI methods for a given problem.
						CO3	Implement basic AI algorithms.
						CO4	Design and carry out an empirical evaluation of different algorithms on problem formalization and state the conclusions that the evaluation supports.
18	VR22	4E+09	MCA-Master of Computer Applications	4098221234	Advanced Java Programming (Professional Elective-I)	CO1	Implement web based applications using features of HTML and XML.
						CO2	Develop reusable component for Graphical User Interface applications.
						CO3	Apply the concepts of server side technologies for dynamic web applications.
						CO4	Implement the web based applications using effective data base access with rich client interaction.
19	VR22	4E+09	MCA-Master of Computer Applications	4098221210	Database Management Systems Lab	CO1	Utilize SQL to execute queries for creating database and performing data manipulation operations
						CO2	Examine integrity constraints to build efficient databases
						CO3	Apply Queries using Advanced Concepts of SQL
						CO4	Build PL/SQL programs including stored procedures, functions, cursors and triggers
20	VR22	1F-00	MCA-Master of Computer Applications	4098221211	Data Warehousing and Mining Lab using Python	CO1	Construct software easily right out of the box.
						CO2	Experiment with an interpreted language.
						CO3	Build software for real needs.
						CO4	Develop database applications in python.
21	VR22	1F-00	MCA-Master of Computer Applications	4098221212	Web Designing through PHP	CO1	Understand the fundamentals of web development.
						CO2	Desing static web pages using basic HTML elements.
						CO3	Able to design dynamic web pages using PHP.
						CO4	Understand the basic concepts of how a database is used in web apps.
22	VR22	1F-00	MCA-Master of Computer Applications	4098221270	Mini Project	CO1	Develop skills in distinguishing various types of computer crimes and identify the digital fingerprints associated with criminal activities.
						CO2	Illustrate how to apply different forensic analysis tools to recover important evidence for identifying computer crimes.
						CO3	Explain about threats and compare various threats.
						CO4	Summarize the need for surveillance and list the tools used.