Pratap Institute of Technology & Science
Lecture Plan II Semester

Name of Faculty: Mr. Akash Singhal **Department: Mathematics**

Subject: 2FY2-01: Engineering Mathematics-II **B. Tech. II Sem**

Sr. No.	Unit No.	Topic to be covered	No. of Lectures
		Matrices	
		Definition , Elementary transformation on matrix, Rank of matrix	Lec 1
		normal form and Echelon form	Lec 2, Lec3,
		Solution of system of linear equation	Lec 4, Lec5
		Symmetric, skew-symmetric and orthogonal matrices	Lec 6
		Eigen values and eigenvectors, Diagonalization of matrices	Lec 7,Lec8 Lec 9,
1	1	Cayley-Hamilton Theorem and Orthogonal transformation	Lec 10
		Test	**Lec 11**
		First order ordinary differential equations	
		Definition, order and degree	Lec 12
		Linear and Bernoulli's equations	Lec 13,Lec14
		Exact equations	Lec 15
		Equations not of first degree: equations solvable for p	Lec 16,
2	2	equations solvable for y	Lec 17
		equations solvable for x	Lec 18
		Clairaut's equation	Lec 18
		Test	**Lec 19**
		Ordinary differential equations of higher orders	
		Linear Differential Equations of Higher order with constant coefficients	Lec20,Lec21,Lec22, Lec23,Lec24
		Simultaneous Linear Differential Equations,	Lec 25
3	3	Second order linear differential equations with variable coefficients	Lec 26
		Homogenous and Exact forms	Lec 27
		one part of CF is known	Lec 28
		Change of dependent and independent variables	Lec 29
		method of variation of parameters, Cauchy- Euler equation	Lec30
		Power series solutions including Legendre differential equation and Bessel differential equations	Lec 31,Lec32
		Test	**Lec 33**
		Partial Differential Equations – First order	
		Definition, Order and Degree, Formation, Linear Partial differential equations of First order	Lec 34
4	4	Lagrange's Form	Lec 35,Lec36
		Non Linear Partial Differential equations of first order ,standard forms	Lec 37,Lec38
		Charpit's method	Lec 39,Lec40
		Test	Lec 41
		Partial Differential Equations– Higher order	
		Classification of Second order partial differential equations	Lec 42
		Separation of variables method to simple problems in Cartesian coordinates	Lec 43
5	5	Two dimensional Laplace equation.	Lec 44
		One dimensional Heat equation	Lec45
		One dimensional Wave equations	Lec 46,Lec47
		Test	**Lec 48**

Pratap Institute of Technology & Science, Sikar

Lecture Plan of II Semester

Name of Faculty: Mrs. Deepika Mishra   **Department: Humanities**

Subject: 2FY1-05: Human Values   **B. Tech. II Sem**

Sr. No.	Unit No.	Topic to be covered	No. of Lectures
1	1	Course Introduction - Need, Basic Guidelines, Content and Process for Value Education	Lec 1
		Understanding the need, basic guidelines, Self Exploration – its content and process; 'Natural Acceptance' and Experiential Validation,	Lec 2
		Continuous Happiness and Prosperity- Human Aspirations, Right understanding, Relationship and Physical Facilities, Understanding	Lec 3
		Happiness and Prosperity correctly- A critical appraisal of the current scenario.	Lec 4
		Method to fulfill the above human aspirations	Lec 5
		understanding and living in harmony at various levels	Lec 6
		Test	**Lec 7**
2	2	Understanding Harmony in the Human Being - Harmony in Myself Understanding human being as a co-existence of the sentient 'I' and the material 'Body'	Lec 8
		Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha	Lec 9
		Understanding the Body as an instrument of 'I',	Lec 10
		Understanding the characteristics and activities of 'I'	Lec 11
		harmony in 'I' Understanding the harmony of I with the Body: Sanyam and Swasthya;	Lec 12
		Correct appraisal of Physical needs	Lec 13
		meaning of Prosperity in detail	Lec 14
		Programs to ensure Sanyam and Swasthya	Lec 15
		Test	**Lec 16**
3	3	Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship: Understanding harmony in the Family,	Lec 17
		Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti;	Lec 18
		Trust (Vishwas) and Respect (Samman) , meaning of Vishwas; Difference between intention and competence,	Lec 19
		meaning of Samman, Difference between respect and differentiation	Lec 20
		the other salient values in relationship, harmony in the society	Lec 21
		Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals	Lec 22
		Visualizing a universal harmonious order in society	Lec 23
		Undivided Society (AkhandSamaj),	Lec 24
		Universal Order (Sarvabhaum Vyawastha)- from family to world family	Lec 25
		Test	**Lec 26**
4	4	Understanding Harmony in the Nature and Existence – Whole existence as Coexistence	Lec 27
		Understanding the harmony in the Nature.	Lec 28
		Interconnectedness and mutual fulfillment among the four orders of nature- recyclability	Lec 29
		self-regulation in nature	Lec 30
		Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in allpervasive Space.	Lec 31
		Holistic perception of harmony at all levels of existence	Lec 32
		Test	**Lec 33**
5	5	Implications of the above Holistic Understanding of Harmony on Professional Ethics. Natural acceptance of human values	Lec 34
		Definitiveness of Ethical Human Conduct	Lec 35
		Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order	Lec 36
		Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order,	Lec 37
		b) Ability to identify the scope and characteristics of people-friendly	Lec 38
		eco-friendly production systems	Lec 39
		technologies and management models	Lec 40
		Strategy for transition from the present state to Universal Human Order	Lec 41
		At the level of individual: as socially and ecologically responsible engineers, technologists and managers	Lec 42
		Case studies related to values in professional life and individual life	Lec 43
		Test	**Lec 44**

Pratap Institute of Technology & Science

Lecture Plan II Semester

Name of Faculty: Ms. Nikita Kanwar   **Department: CSE**

Subject: Programming for problem solving (2FY3-06)   **B.Tech. IISem**

Sr. No.	Unit No.	Topic to be covered	Lecture No.
1	1	Introduction, Objective and goals of this course, Applications	Lec 1
		Fundamentals of Computer, Generation of computer, Introduction to Memory .	Lec 2
		Primary memory, and Secondary storage, Random, Direct, Sequential access method.	Lec 3
		Concepts of High-level, Assembly and Low-level languages	Lec 4
		Concepts of High-level, Assembly and Low-level languages	Lec 5
		Representing algorithms through flowchart and pseudo code	Lec 6
		Test	**Lec 7**
2	2	Overview of Data representations, Concepts of radix	Lec 8
		Concepts of radix and representation of numbers in radix r with special cases of r=2, 8, 10 and 16	Lec 9
3		Concepts of radix and representation of numbers in radix r with special cases of r=2, 8, 10 and 16	Lec 10
		conversion from radix r1 to r2, r's and (r-1)'s complement	Lec 11
		Binary addition	Lec 12
		Binary subtraction	Lec 13
		Representation of alphabets.	Lec 14
		Test	**Lec 15**
	3	Problem specification, flow chart, data types, assignment statements, input output statements	Lec 16
		Problem specification, flow chart, data types, assignment statements, input output statements	Lec 17
		If statement, for loops, while loops, do-while loops	Lec 18
		Switch statement, break statement, continue statement	Lec 19
		Development of C programs using above statements	Lec 20
		Arrays	Lec 21
		Functions, parameter passing, recursion	Lec 22
		Programming in C using these statements	Lec 23
		Pointers	Lec 24
		Structures	Lec 25
		Files,	Lec 26
		multi file handling	Lec 27
		Assignment, Unit test and discussion	**Lec 28**

Name of Faculty: Mr.Prem Singh Gurjar   **Department: Civil Engineering**
Subject: 2FY3-09 Basic Civil Engineering   **B. Tech. II Semester**

Sr. No.	Chapter No.	Topic to be covered	No. of Lectures
1	1	Introduction to objective, scope and outcome the subject	Lec 1
		Scope and Specialization of Civil Engineering	Lec 2
		Scope and Specialization of Civil Engineering	Lec 3
		Role of civil Engineer in Society,	Lec 4
		Role of civil Engineer in Society,	Lec 5
		Impact of infrastructural development on economy of country.	Lec 6
		Impact of infrastructural development on economy of country.	Lec 7
		Test	**Lec 8**
2	2	Object, Principles of Surveying	Lec 9
		Types of Surveying	Lec 10
		Site Plans	Lec 11
		Plans & Maps	Lec 12
		Scales & Unit of different Measurements	Lec 13
		Test	**Lec 14**
3	3	Linear Measurements and Instruments used	Lec 15
		Linear Measurement by Tape	Lec 16
		Ranging out Survey Lines and overcoming Obstructions	Lec 17
		Measurements on sloping ground	Lec 18
		Tape corrections, conventional symbols	Lec 19
		Angular Measurements and Instruments used	Lec 20
		Introduction to Compass Surveying	Lec 21
		Bearings and Longitude & Latitude of a Line	Lec 22
		Introduction to total station	Lec 23
		Levelling and Instrument used &Object of levelling	Lec 24
		Methods of leveling in brief and Contour maps	Lec 25
		Test	**Lec 26**
4	4	Selection of site for Buildings, Layout of Building Plan	Lec 27
		Types of buildings	Lec 28
		Plinth area and carpet area of buildings , floor space index	Lec 29
		Introduction to building byelaws, concept of sun light and ventilation	Lec 30
		Components of Buildings & their functions	Lec 31
		Basic concept of R.C.C, Introduction to types of foundation	Lec 32
		Test	Lec 33
5	5	Introduction to Transportation Engineering, Traffic and Road Safety	Lec 34
		Types and Characteristics of Various Modes of Transportation	Lec 35
		Various Road Traffic Signs	Lec 36
		Causes of Accidents and Road Safety Measures	Lec 37
6	6	**Test**	**Lec 38**
		Environmental Pollution, Environmental Acts and Regulations	Lec 39
		Environmental Acts and Regulations	Lec 40
		Functional Concepts of Ecology, Basics of Species, Biodiversity, Ecosystem, Hydrological Cycle	Lec 41
		Chemical Cycles: Carbon, Nitrogen& Phosphorus	Lec 42
		Energy Flow in Eco-systems, Water Pollution: Water Quality standards	Lec 43
		Introduction to Treatment & Disposal of Waste Water	Lec 44
		Reuse and Saving of Water, Rain Water Harvesting	Lec 45
		Test	**Lec 46**

PRATAP INSTITUTE OF TECHNOLOGY AND SCIENCE, SIKAR
Lecture Plan

Name of Faculty: Dr. S. K. Jha

Engineering Physics (2FY2-02)			Full Marks:160
Unit	Chapter	Topic	Lecture No.
1	Wave Optics	Basic ideas about the interference	1
		Newton Rings	2
		Michelson Interferometer	3
		Fraunhofer Diffraction through a single slit	4
		Diffraction Grating:-Construction, Theory and Spectrum	5
		Difference between Fraunhofer and Fresnel diffraction . diffraction through a single slit	6
		Resolving power and Rayleigh criterian for limit of resolution	7
		Resolving power of plane diffraction grating	8
		X ray diffraction and Braggs law	9
	Unit Test		
2	Quantum Mechanics	Introduction to quantum mechanics and wave particle duality	10
		Matter waves	11
		Wave Function and basic postulates	12
		Time dependent and independent wave equation	13
		Physical interpretation of wave function and its properties.	14
		Application of Schrodinger wave equation in particle in one dimensional box problem	15
		Introduction, Spontaneous and stimulated emissions, Laser action,	16
		Three dimensional box problem	17
	Unit Test		
3	Coherence and Optical Fibres	Spatial and temporal coherence	18
		Coherence length, Coherence time and quality factor for light	19
		Visibility as measure of Coherence and spectral purity	20
		Optical fibre as optical wave guide, Numerical Aperture, Maximum angle of Optical Fibre	21
	Unit Test		
4	Laser	Einstein Theory of laser action, Einstein coefficients	22
		Properties of laser beam and applications of laser in science and medicine	23
		Amplification of light by population inversion, components of laser	24
		Construction and working of He-Ne Laser	25
		Semiconductor Laser	26
	Unit Test		
5	Material Science and Semiconductor Physics	Bonding in solids, covalent and metalic bonding	28
		Energy bands in solids	29
		Classification of solids as Insulators, Semiconductors and conductors	30
		Intrinsic and extrinsic semiconductor	31
		Fermi Dirac Function and Fermi Energy	32
		Conductivity in semiconductors,	33
		Hall effect: Theory, Hall coefficient and applications	34
	Unit Test		
6	Introduction to Electromagnetism	Divergence and Curl of electrostatics	35
		Laplace's and Poissons's equations for electrostatic potential	36
		Bio-Savart Law, Divergence and curl of static magnetic field	37
		Faraday's Law, Displacement Current	38
		Magnetic field arising from time dependent electric field	39
		Maxells equation	40
		Flow of Energy and Poynting Vector	41