Summary of the Courses

2nd Year 2nd Semester

Sl. No.	Course No.	Course Title	Theory hrs/week	Sessional hrs/week	Credits
1.	CSE-2122	Software & Hardware Project	0	3/2	0.75
2.	CSE-2521	Data Structure	3	0	3.00
3.	CSE-2522	Data Structure Sessional	0	3/2	0.75
4.	EEE-2823	Electrical Drives and Instrumentation	3	0	3.00
5.	EEE-2824	Electrical Drives and Instrumentation Sessional	0	3/2	0.75
6.	Math-2421	Mathematics-IV	4	0	4.00
7.	CSE-2124	Numerical Methods Sessional	0	3	1.50
8.	CSE-2821	Digital Electronics & Pulse Technique	3	0	3.00
9.	CSE-2822	Digital Electronics & Pulse Technique Sessional	0	3/2	0.75
10.	CSE-2523	Discrete Mathematics	3	0	3.00
Total			**16**	**9**	**20.50**

Contact Hours: 16T + 9 S = 25 hrs/week

Total credits: 20.50

No. of Theory Courses: 5

No. of Lab / Sessional courses: 5

Detailed Syllabus

CSE-2122 Software & Hardware Project

3 Hours/week **0.75 Credits**

Student will perform a project on basis of previous software and hardware related courses.

CSE-2521 Data Structure

3 Hours/ week **3.00 Credits**

Concepts and examples of elementary data objects, elementary data structures, arrays stacks, queues. Lists, trees, graphs, memory management, sorting and searching, hash techniques.

CSE-2522 Data Structure Sessional

3/2 Hours/ week **0.75 Credits**

Sessional based on Data Structure (CSE-2521).

EEE-2823 Electrical Drives and Instrumentation

3 Hours/ week **3.00 Credits**

Principles of operation of shunt, series and compound dc generators and dc motors. Performance characteristics, starting, speed control and braking of dc motors. Principles of operation of transformers, induction motor, synchronous generator, synchronous motor, stepper motor, universal motor, Fractional HP motor. Instrumentation amplifiers: differential, logarithmic and chopper amplifiers; Frequency and voltage measurements using digital techniques; Recorders and display devices, spectrum analyzers and logic analyzers; Data acquisition and interfacing to microprocessor based systems; Transducers: terminology, types, principles and application of photovoltaic, piezoelectric, thermoelectric, variable reactance and opto-electronic transducers; Noise reduction in instrumentation. Conversion from ac to dc, dc motor controls using semiconductor devices. Microprocessor based motor Control.

EEE-2824 Electrical Drives and Instrumentation Sessional

3/2 Hours/ week **0.75 Credits**

Sessional based on Electrical Drives and Instrumentation (CSE-2823).

Math-2421 Mathematics – IV

4 Hours/ week **4.00 Credits**

Matrix: Definition of Matrix, equality of two matrices, Addition, subtraction and multiplication of Matrices, Transpose of matrices and inverse of matrix and Rank of Matrices, Solve of simultaneous equation by matrix methods.

Vector Analysis: Definition of vectors, Equality of vectors, Addition and multiplication of vectors, Linear dependence and independence of vectors, Differentiation and integration of vectors together with elementary applications, Definitions of line, surface and volume integrals, Gradient of a scalar function, Divergence and curl of a vector function, physical significance of gradient, divergence and curl, Various formulae, Integral forms of gradient, divergence and curl, divergence theorem, Stoke's theorem, Green's theorem and Gauss's theorem.

Statistics: Frequency distribution, mean, median, mode and other measure of central tendency. Standard deviation and measure of dispersion, moments, skewness and kurtosis. Elementary probability theory, Characteristics of distributions. Elementary sampling theory, Estimation, Hypothesis testing and regression analysis. Probability distribution and expectations, discontinuous probability distribution e.g. binomial, position and negative binomial, continuous distributions e.g. normal and exponential.

CSE-2124 Numerical Methods Sessional

3 Hours/ week **1.50 Credits**

Solution of linear equations, nonlinear equations, ordinary deferential equations. Linear & polynomial regression. Interpolations. Integration and differentiation.

CSE-2821 Digital Electronics & Pulse Techniques

3 Hours/ week **3.00 Credits**

Diode logic gates, transistor switches, transistor gates, and MOS gates. Logic Families: TTL, ECL, IIL and CMOS logic with operation details. Propagation delay, product and noise immunity. Open collector and High impedance gates. Electronic circuits for flip-flop, counters and register, memory system, PLAs, PLDs, ADC, DAC design with applications. Minimizations of sequential circuits and their memory units. S/H circuits, LED, LCD and optically coupled oscillators.

Timing Circuits: Applications of logic gates in timing circuits, OP-Amp applications in timing circuits using 555 IC Linear wave shaping: diode wave shaping techniques, clipping and clamping circuits, comparator circuits, switching circuits, Pulse transformers, pulse transmission. Pulse generator: monostable, bistable and astable multivibration; Schmitt trigger; Blocking oscillators and time-base circuit. Timing circuits. Simple voltage sweeps, linear current sweeps.

CSE-2822 Digital Electronics & Pulse Techniques Sessional

3/2 Hours/ week **0.75 Credits**

Sessional based on Digital Electronics & Pulse Techniques (CSE-2821).

CSE-2523 Discrete Mathematics

3 Hours/ week **3.00 Credits**

Mathematics logic, set theory, relations, partial ordered sets, functions, mathematical reasoning and proof techniques, propositional calculus, predicate calculus. Graph theory, graphs, paths, trees, algebraic structures, binary operations, semi-groups, groups, rings and fields, lattices, morphisom of algebraic structures.