

PPH421 ANALOG ELECTRONICS

L	T	P	Cr
3	1	0	3.5

Course Objectives: To introduce students to entire circuit designs, and to provide in-depth theoretical base of Digital Electronics.

Linear Wave Shaping: High Pass RC circuits: Its response to step, Pulse, Square wave, Ramp, exponential waveforms, It's application as a Differentiator. Low pass RC Circuit: Its response to step, pulse, Square wave, Ramp, Exponential wave forms, It's application as an integrator.

Clipping and comparators Circuits: Non Linear Wave Shapers, Diode Clippers, Positive and Negative Clippers, Combinational and Biased clippers, Transistor Clipper. Application of clipping circuits as comparators.

Clamping and Switching Circuits: Operation of Clamping Circuits, Clamping Circuit theorem, Practical Clamping Circuit theorem, Operation of Transistor as a switch.

Logic Systems: Basic Concepts of dc positive and negative logic systems, Dynamic logic systems, OR gate and AND gate, NOT gate, NAND gate, EX-OR gate, NOR gate & their applications, Response to input pulse operation. TTL (transistor transistor logic) and DTL (diode transistor logic)

Multivibrators: Solid state switching circuits, A bistablemultivibrator-basic concepts of its operation. Symmetrical and Unsymmetrical triggering, Applications (brief). Monostable Multivibrator - basic concepts of its operation, quantitative discussion of quasi-stable state, Applications, Astablemultivibrator - basic concepts of operation, Applications.

Negative Resistance Devices and their applications:The negative resistance characteristic,Basic circuit principles,The tunnel diode – its characteristics and applications (brief) , Backward diode, Four-layer diode, SCR – its characteristics and applications (brief).

Course learning outcomes: Students will have achieved the ability to:

1. design linear wave shaping circuits and also use them as differentiator and integrator.
2. design an appropriate circuit for clipping wave forms.
3. explain practical clamping circuits.
4. design appropriate multivibrators for various applications.
5. design logic gates using TTL and DTL.
6. explain the working of various negative resistance devices.

Recommended Books:

1. *Millman, J. and Taub, H., Pulse Digital and Switching Wave forms, Tata McGraw Hill, (1991).*
2. *Boylestad, R.L. and Nashelsky, L., Electronic Devices and Circuit Theory, Prentice Hall of India, (2007).*
3. *Bell, D.A., Electronics Devices and Circuits, Oxford University, (2008).*

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	MST	30
2	EST	45
3	Sessionals (May include assignments/quizzes)	25