VEER NARMAD SOUTH GUJARAT UNIVERSITY,

M.Phil

Faculty of Science.

Electronics

Department of Physics

1 Tentative Scheme for M.Phil in the Subject of Electronics.

1.1 Research Methodology

1.2 Content course - I

1.3 Laboratory course

1.4 Content course - II course offered by the supervisor.

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Course : 1

Research Methodology

Nature and scope of research, science and scientific method, main elements in project formulation.

Probabilities and distributions, properties of normal. Poission distribution binomial and normal distribution, random walk - problem, bivariate, normal distribution, sampling, x2 distributions, students' distribution, normal laws of errors, weighted observations, principles of least squares, linear cases, fluctuation which are polynomials of degree n, fluctuations which are not polynomials, weighted residues, correlation and refression, linear regression, standard error of estimate.

Research methodology in the field of Electronics

- Introduction to system
- Electronics system development software and hardware methodology
- Problem investigations and objectives
- Hypothesis
- Research design and methodology
- Data collections
- Likely contribution to knowledge
- Project design methodology, Instrumentation and laboratory

Reference :

1. S.K.Mathu 'Probability of errors for physical science.
2. Barry Wilkinson : 'Digital system Design' Prantice Hall.
3. Wolf & Smith : 'Students Instrument Reference Manual' Printice Hall of India.
4. Stan Prentiss : 'Electronics signals & systems'
5. CHEN : 'System and Signal Analysis' (Second Edition) Saunders College Publishing (1994).
6. R.Raghuram : 'Computer Simulation of Electronics Circuits' Wily Eastern Limited.
7. J.Anderson. Thesis and Report writing Wily Eastern.

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Course : 2

Content Course : I

Advancec Electronic Circuits

1. Modeling and signal processing principles. Human/Computer synorgism, volt-ampere and transfer characteristics, Ideal Amplifiers, input-output and interstage loading Difference amplifiers, other Amplifier limitation.
2. Operational amplifier circuits. The operational amplifier, Memoryless OP Amp circuits, OP Amp circuits with memory, simulations of Idfinite-gain OP Amp circuits, second-order effects in operational amplifiers circuits without negative feedback.
3. Frequency Response The wideband Amplifier, Analysis tools for dynamic circuits.Response to low frequencies, Response to high frequencies.
4. Power Circuits and Systems Transister power dissipation, Power transiter class A amplifiers, Nonlinear distortion, class - B amplifier, class AB amplifier, Power OP Amps class D amplifier and power supplies.
5. Analog Integrated circuits. Operational transconductance - Amplifiers, Analog multiplier, phase - locked loop.
6. Filters Basic filter concepts, second - order active filters, Lawpass active

   filter of order n Active extension of passive filter theory, switched capacitor circuits.
7. Digital Logic Circuits Idea logic gates and practical approximations, NMDS and PMDS Logic circuits, CMOS Logic Circuits Gallium Arsehide logic circuits TTL logic circuits, Emitter-coupled logic circuits.
8. Digital Memory, Interfacing and Timing Principles, Bistable circuits, Monostable circuits, Astable circuits, 555 Timer Circuits, Interfacing problems and principles, Transmission line effects, solid state memory.

REFERENCES :

1. Electronic Circuits Analysis, Simulation and Design By Norbert R. Malik Prantice - Hall International, Inc.
2. Sedra & Smith Microelectronics Circuits, Oxford University Press (Third Edition) (1991)
3. Botkav : 'Integrated Circuits' Khanna Publishers.

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Course : 3

Content Course - II

1.3 Laboratory work.

1 OP Amp applications
- (i) The 741 operational Amplifier : As case study
- (ii) Analog Multiplier

2 Phase locked loop
3 Low pass active filters
4 F.M. Modulation / Demodulation
5 Solid State Memories
6 Syndryonous Counter
7 S/P and P/S shift register
8 Microprogramming Circuit
9 Digital Companding in 8085
10 Assembly language in 8086
11 Programming in C.
12 Programming in C.

Students are required to prepare detail report of his Laboratory work

REFERENCES :

1.	Furht & Parikh	:	Microprocessor Interfacing and communication using the intel SDK - 85 Prantice - Hall.
2.	Barey Wilkinson	:	Digital System Design Prentice - Hall.
3.	R RA Ghuram	:	Computer simulation of Electronics circuits, Willey Eastern Limited.
4.	M.Morris Mawo	:	Computer Engineering, Hardware Design, Prentice Hall, INC. (1988)
5.	Sam Series	:	Programming in C.
6.	Rajarammon	:	Programming in C. Prentice - Hall.

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Course : 4

Content Course - III

This course will be framed by the supervising teacher under whom the candidate will be working for his/her dissertation. This course may be different for different candidates.