PERIYAR UNIVERSITY
PERIYAR PALKALAI NAGAR
SALEM – 636 011

DEGREE OF MASTER OF PHILOSOPHY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR M.PHIL. ELECTRONICS & COMMUNICATION

FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2012 – 2013 ONWARDS

Sem	Code	Paper Name	Hrs/ Week	Credits	Marks		
					CIA	EA	Total
I		Research Methodology	4	4	25	75	100
		Advanced Electronics	4	4	25	75	100
		Special Paper (Guide Paper)	4	4	25	75	100
II		Dissertation – Viva- Voce		12	50	150	200

PAPER : 1- RESEARCH METHODOLOGY Hrs/Week : 4
CODE : Internal : 25 Marks
External : 75 Marks

Unit I INTRODUCTION TO RESEARCH

Research – Definition-Importance and meaning of research – characteristics of research – Types of Research- steps in research-identification, selection and formulation of research problem-Research questions- Research design- Formulation of Hypothesis – Review of Literature.

Unit II DATA COLLECTION AND SAMPLING

Sampling techniques – sampling theory- types of sampling – steps in sampling and non-sampling error- sample size – Advantages and limitations of sampling- collection of Data Primary Data – Meaning –Data collection methods – Secondary data-meaning Relevance's – Limitations and cautions.

Unit III DISTRIBUTIVE FUNCTIONS AND HYPOTHESIS

Random Variable and cumulative distributive function – Density Functions – Expectations and moments – Discrete Distributions- Continuous distributions .

Simple Hypothesis versus simple alternative –composite Hypothesis – Tests of Hypothesis – Chi-Square tests – sequential Test of Hypothesis.

Unit –IV Z- TRANSFORMS

Transform of standard functions – Convolution –Initial and Final value problems – Shifting Theorem- Inverse transform (Using Partial Fraction- Residues)- Solution of difference Equations using Z-Transform.

Unit – V PREPARATION OF TECHNICAL PAPERS

Preparation of technical papers and thesis writing- art of writing of scientific article- writing a thesis- presentation of data – symbols –

the observations- tables and figures equations- the style – sentence length –word length – page and chapter format- referencing.

Text Books:-

1. Anderson, J. Dusrston, B.h. and Poole, M. Thesis and Assignment, writing, Wiley Eastern (1977)- I Edition

2. Alexander M.Mood, Franklin A, Graybill and Duane C.Boes, Introduction to the theory of statistics. – III Edition Mc-Grawhill

3. M.K.Venkataraman, "Higher Mathematics for Engineering & Science", National Publishing Company, 2000

4. C. Hawkins and M..sorgi, Narosa, Research- How to plan, speak and write about it, - I Edition Pearson Education,

Paper : II- Advanced Electronics Hrs/Week : 4
Code : Internal : 25 Marks
External : 75 Marks

Unit –I **DIGITAL COMMUNICATION**

Digital communication signal Processing- Classification of Signals – Spectral density –Autocorrelation- Random Signals-Signal transmission through linear system – Bandwidth of digital data-Digital band pass modulation technique – detection of signals in Gaussian noise- coherent detection –Non coherent detection – complex envelope – Error performance for Binary system – M-ary signaling and performance –simple error performance for M-ary systems

Unit –II **CMOS VLSI DESIGN**

CMOS processing technology – Layout design rules – Circuit characterization and performance estimation –CMOS process enhancements- technology related CAD issues- Manufacturing issues – Delay estimation – Logical Effort and transistor sizing – Power distribution- interconnect –design Margin –Reliability – Scaling

Circuit simulation – A spice tutorial – Device models – Device characterization.

Unit –III **MEMS & MICROSYSTEMS**

Overview of MEMS and Microsystems – Working principles of Microsystems – Micro sensors –Micro actuation – MEMS Micro actuators – Materials for MEMS- Active substrate materials - Silicon as a substrate material – Silicon Compounds – silicon Piezo-resistors Gallium arsenide – Micro system Manufacturing –Bulk Micro manufacturing –Surface Micro machining – The LIGA Process.

Unit – IV **EMBEDDED SYSTEMS**

Introduction – Application of embedded systems – embedded systems development process –Round Rabin-Round Rabin with interrupts – Function Queue –Scheduling architecture – Kernel architecture – Types of embedded operating system – RTOS – Mobile handheld operating system

8051 Micro controller architecture – Assembly language programming for 8051 micro controller family- Introduction to ARM processor.

Unit – V **THIN FILM TECHNOLOGY**

Introduction to Thin Films – Thin Films growth process – Thermal Evaporation – Resistive Heating – Flash Evaporation – Are Evaporation – Laser Evaporation – RF Heating – Electro Bombardment Heating

Cathode Sputtering- Glow Discharge Sputtering –RF Sputtering – Ion Beam Sputtering – Chemical Vapor Deposition – APCVD- Substrate Materials – Substrate Cleaning – Thin film Resistors, Capacitors, Diodes and Transistors- Photo Conductive detectors – Thin Films Solar cells – Information storage devices

Text Books:

1. Bernard Sklar , Digital Communication Fundamentals and Applications, II Edition Pearson Education.
2. Neil H.E.Weste, David Harris and Ayan Banerjee, CMOS VLSI Design, III Edition Pearson Education.
3. Tai-Ran Hsu, MEMS and Microsystems: Design and Manufacture, Tata McGraw Hill- .
4. Daniel W. Lewis: Fundamentals of Embedded software, Prentice Hall of India, New Delhi.
5. David E. Simon, An Embedded software primer Pearson Education.
6. Kasturi Lal Chopra and Inderjeet Kaur- Thin film Device Applications – II Edition EEE

7. K.L. Chopra- Thin Film Phenomena, I Edition, Mc Graw- Hill, New York.

Paper : III- Special Paper	Hrs/Week : 4
(Guide Paper)	Internal : 25 Marks
Code :	External : 75 Marks

Syllabus will be framed by Guide