J. S. University, Shikohabad

M. Tech.

(ELECTRONICS & INSTRUMENTATION ENGINEERING)

Scheme

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Syllabus

[Effective from the session 2015-16]

STUDY AND EVALUATION SCHEME FOR

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

I- SEMESTER

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
1	MTEI-11	Computer Networks	3	1	-	-	50	100	150	3
2	MTEI-12	Process Control	3	1	-	-	50	100	150	3
3	MTEI-13	Transducers and Smart Instruments	3	1	-	-	50	100	150	3
4	MTEI-14	Real Time Embedded System	3	1	-	-	50	100	150	3
								Grand Total	600	

STUDY AND EVALUATION SCHEME FOR

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

II- SEMESTER

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
1	MTEI-21	Applied Industrial Instrumentation	3	1	-	-	50	100	150	3
2	MTEI-22	Industrial Instrumentation System Design	3	1	-	-	50	100	150	3
3	MTEI-23	Programmable Logic Control and DCS	3	1	-	-	50	100	150	3
4	MTEI-24	Applied Soft Computing	3	1	-	-	50	100	150	3
								Grand Total	600	

STUDY AND EVALUATION SCHEME FOR

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

III- SEMESTER

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	MTEI-31	ADVANCED VLSI SYSTEM DESIGN	3	1	-	-	50	100	150	3
2	MTEI-32	WIRELESS SENSOR NETWORKS	3	1	-	-	50	100	150	3
3	MTEI-33	Seminar	-	-	2	-	100	-	100	3
4	MTEI-34	Project	-	-	8	-	50	-	50	3
								Grand Total	450	

STUDY AND EVALUATION SCHEME FOR

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

IV- SEMESTER

1	MTEI-41	DISSERTATION a) Continuous Evaluation b) Project Report c) Viva Voice	-	-	18	-	150	200	350	
								Grand Total	350	

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

I- SEMESTER

[MTEI-11] Computer Networks

1. COMPUTER COMMUNICATIONS ARCHITECTURE

Network topology - Switching: Circuit switching and packet switching; Datagrams and virtual circuits - ISO reference model for layered architecture
- Functions of various layers.

2. LOCAL AREA NETWORKS

Objectives and advantages of PC LANs - Topologies for LANs - Media for LANs; Medium access control techniques: CSMA, CSMA/CD, Token bus and token ring; Performance analysis for LANs.

3. INTERNETWORKING

Basic principles - Bridges and routers - Connection oriented and connectionless internetworking. Introduction to the protocols in the TCP/IP protocol suite.

4. ISDN and B - ISDN

Frame relay and asynchronous transfer mode (ATM). Data compression. Data security and authentication techniques.

5. APPLICATION

Electrical mail, Network security, other internet applications. Test techniques for data networks: Basic tests; transmission impairment measurement tests; Time domain reflectometry (TDR). Line monitors and protocol analyzers.

TEXT BOOKS

1. Stalling W, Data and Computer Communications, Fifth edition, Prentice Hall of India, New Delhi, 1997.
2. William Stallings, High-speed Networks-TCP/IP and ATM Design Principles, Prentice Hall International Edition, New Jersey, 1998.

REFERENCES

1. Ed Taylor, McGraw -Hill Internetworking Handbook, Second edition, McGraw Hill Company Inc., New York, 1998.
2. Bertsekas D and Gallager. R, Data Networks, Second edition, Prentice Hall of India, New Delhi, 1992.

[MTEI-12] Process Control

1. PROCESS DYNAMICS

Need for process control - Review of Laplace transform and z-transform - Modified of z-transform - Pulse transfer function - Continuous and batch processes - Self regulation - Servo and regulatory operations - Interacting and non-interacting systems - Degrees of freedom - Linearization of nonlinear systems- Mathematical model of Level and Thermal processes - Lumped and Distributed parameter models - Identification of Transfer function model parameters using non-parametric approaches- state space model representation.

2. CONTROL ACTIONS & FINAL CONTROL ELEMENTS

Characteristic of ON-OFF, P, P+I, P+D and P+I+D control modes - Electronic PID controller -Digital PID algorithm - Auto/manual transfer - Reset windup - Practical forms of PID Controller - Pneumatic and electric actuators - Valve

Positioner - Control Valves - Characteristic of Control Valves:- Inherent and Installed characteristics - Modeling of pneumatic control valve

3. CONTROLLER TUNING -SINGLE LOOP REGULATORY CONTROL

Evaluation criteria - IAE, ISE, ITAE and % decay ratio - Tuning:- Process reaction curve method, Continuous cycling method and Damped oscillation method - Determination of optimum settings for mathematically described processes using time response and frequency response approaches -pole placement -lamda tuning- algebraic design - optimization methods - robust loop shaping

4. ENHANCEMENT TO SINGLE LOOP REGULATORY CONTROL

Feed-forward control - Ratio control - Cascade control - Inferential control - Split-range - override control-- selective control -Auto tuning.

5. MODEL BASED CONTROL SCHEMES

Dead-time compensation: - Smith predictor control scheme- Internal Model Controller- IMC PID controller - Single variable Model predictive control - Single Loop DMC - Introduction to Plant-wide Control and Batch Control - P&ID diagram.

TEXT BOOKS

1. Bequette, B.W., "Process Control Modeling, Design and Simulation", Prentice Hall of India, 2004.
2. Stephanopoulos, G., "Chemical Process Control - An Introduction to Theory and Practice", Prentice Hall of India, 2005.

REFERENCE BOOKS

1. Seborg, D.E., Edgar, T.F. and Mellichamp, D.A., "Process Dynamics and Control", Wiley John and Sons, 2nd Edition, 2003.
2. Coughanowr, D.R., "Process Systems Analysis and Control", McGraw – Hill International Edition, 2004.

[MTEI-13] Transducers and Smart Instruments

1. SCIENCE OF MEASUREMENT

Units and Standards - Calibration techniques - Classification of errors - error analysis - statistical methods - odds and uncertainty - static and dynamic characteristics of transducers.

2. VARIABLE RESISTANCE, INDUCTANCE AND CAPACITANCE TRANSDUCERS

Potentiometer - strain gauge - resistance thermometer - hot wire anemometer
- LVDT - variable reluctance transducers for measurement of dip and acceleration - Variable capacitive transducers - capacitor microphone.

3. OTHER CONVENTIONAL TRANSDUCERS

Piezoelectric transducer - IC sensors - Piezo-resistive sensors - transducers with frequency output - digital transducers. Fibre Optic Transducers: Principles
- types and characteristics of fibres - fibre optic transducers for the measurement of force, temperature, flow and pressure.

4. SPECIAL PURPOSE TRANSDUCERS.

Transducers used for specific application : Marine - Seismic - Aeronautics - Automobile - Gas sensors - Nuclear detectors - Smoke detectors - Fire detectors. Film sensors : Thick film and thin film - Integrated image sensors
- Bio sensors - Integrated micro arrays - RF - IDs - SIDBI based Sensors - Sensor arrays - Sensor network - Multisensor data fusion - Soft sensor.

5. SMART INSTRUMENTS

Primary and Secondary sensors - Amplification - Filters - Converters - Compensation - Information coding / processing - Data communication, standards for smart sensor interface - Smart transmitter with HART communicator - Smart sensor for flow and temperature measurement

REFERENCES

1. Doebelin, E.O., Measurement systems, McGraw Hill, Fourth edition, Singapore, 1990.
2. Barney G.C.V., Intelligent Instrumentation: Prentice Hall of India Pvt. Ltd., New Delhi, 1988.
3. Chapman, P. Smart Sensors, ISA publication, 1995.
4. Renganathan, S., Transducer Engineering, Allied Publishers, Chennai, 1999.
5. Handbook of Measuring System Design, Peters H.Sydenham, Richard Thom, John Wiley & sons Ltd., England, 2005.
6. Neubert, Herman, K.P., Instrument transducers: An introduction to their performance and design, 2" edition, Oxford University Press, 1975

[MTEI-14] Real Time Embedded System

1. INTRODUCTION TO REAL TIME SYSTEMS

Fundamentals of systems and real time system - Definitions, classification, features, issues an challenges - Introduction to real time operating systems - timeliness, scheduling and resource management - Implementation examples with commercial VxWorks and IJC/Os.

2. REAL TIME SYSTEM DESIGN AND ANALYSIS

Real time specification and design techniques-models-real time kernels- Characteristics and attributes of Real Time Kernel-kernel service-kernel implementation, performance analysis and optimization - Testing and Validation

3. EMBEDDED SYSTEM COMPONENTS AND ITS INTERFACE

Embedded system definition- architecture and standards with examples- Embedded hardware-processors-memory devices-Interface and Peripherals- Power and its Management.

4. EMBEDDED SYSTEM DESIGN AND DEVELOPMENT

Design methods and techniques - models and languages - state machine and state tables in embedded design - High level language descriptions in embedded system, Java based embedded system design - Simulation and Emulation of embedded systems- ARM processor based embedded boards- Examples with Microcontroller based embedded system development

5. CASE STUDIES

Case studies of sector specific, time - critical and safety - critical real time embedded systems- Typical applications in automotives, communication, medicine and manufacturing- engine controls and antilock braking systems, Embedded mobile communication and positioning devices, pacemaker and patient monitoring systems, Robotics and control systems.

REFERENCES

1. Phillip A. Laplante, 'Real-Time Systems Design and Analysis: An Engineer's Handbook', Wiley Publications,2004
2. Raymond J.A.Buhr Donaid L. Balley: An introduction to real time Embedded Systems, Prentice Hall International, 1999.
3. C.M. Krishna, Kang G.Shin, Real Time Systems, McGraw Hill, 1997.
4. Herma K,Real Time systems - Design for distributed embedded applications, Kluwer academic,1997.
5. Tamy Noergaard, Embedded Systems Architecture, ElseiverInc, 2005
6. D.E.Simon, An Embedded Software primer, Addison Wesley, 1999.
7. Gajski D.D. Vahid, F.,Narayan S.,Specification and design of embedded systems, PTR prentice hall, 1994
8. Arnold S.Berge, Embedded system design-An introduction to processors, tools and techniques, CMD.

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

II- SEMESTER

[MTEI-21] Applied Industrial Instrumentation

1 REVIEW OF INDUSTRIAL INSTRUMENTATION

Measurement of Force, Torque, Velocity, Acceleration, Pressure, Temperature, Flow, Level, Viscosity, Humidity & Moisture (Qualitative Treatment Only).

2 MEASUREMENT IN THERMAL POWER PLANT

Selection, Installation and maintenance of Instruments used for the measurement of fuel flow, Air flow, Drum level, Steam pressure, Steam temperature and other parameters in thermal power plant - Analyzers-Dissolved Oxygen Analyzers- Flue gas Oxygen Analyzers-pH measurement- Coal/Oil Analyzer - Pollution Controlling Instruments

3 MEASUREMENT IN PETROCHEMICAL INDUSTRY

Parameters to be measured in refinery and petrochemical industry- Temperature, Flow and Pressure measurements in Pyrolysis, catalytic cracking, reforming processes-Selection and maintenance of measuring instruments - Intrinsic safety.

4 INSTRUMENTATION FOR ENERGY CONSERVATION & MANAGEMENT AND SAFETY

Principle of energy audit, management & conservation and measurement techniques -Instrumentation for renewable energy systems - Energy management device (Peak load shedding) - Electrical and intrinsic safety - Explosion suppression and deluge systems - Flame arrestors, conservation vents and emergency vents - Flame, fire and smoke Detectors- Metal detectors.

5 SPECIAL PURPOSE INSTRUMENTATION

Toxic gas monitoring- Detection of Nuclear radiation - Water quality monitoring- Monitor measurement by neutron-Thermo-luminescent detectors - Measurement of length, mass, thickness, flow, level using nuclear radiation.

REFERENCES

1. D.Patranabis, Principles of Industrial Instrumentation, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1999.
2. John G Webster, Measurement, Instrumentation and Sensors Handbook, CRC press IEEE press
3. Liptak B.G, Instrumentation Engineers Handbook (Measurement), Chilton Book Co., 1994.
4. Reay D.A, Industrial Energy Conservation, Pergamon Press,1977.
5. Hodge B.K, Analysis and Design of energy systems, Prentice Hall, (1988).
6. Liptak B.G, Instrument Engineers Handbook, Clinton Book Company, (1982)
7. Ness S.A. Air monitoring for Toxic explosions, Air integrated Approach, Von Nostrand

[MTEI-22] INDUSTRIAL INSTRUMENTATION SYSTEM DESIGN

1. DESIGN OF SIGNAL CONDITIONING CIRCUITS

Design of V/I Converter and I/V Converter- Analog and Digital Filter design - Signal conditioning circuit for pH measurement -Compensation circuit - Signal conditioning circuit for Temperature measurement - Cold Junction Compensation - software and Hardware approaches -Thermocouple Linearization - Software and Hardware approaches

2. DESIGN OF TRANSMITTERS

RTD based Temperature Transmitter - Thermocouple based Temperature Transmitter- Design of Capacitance based Level Transmitter - Air-purge Level Measurement - Design of Smart Flow Transmitters.

3. DESIGN OF DATA LOGGER AND PID CONTROLLER

Design of ON / OFF Controller using Linear Integrated Circuits- Electronic PID Controller - Microcontroller Based Digital PID Controller - Micro - controller based Data Logger - Design of PC based Data Acquisition Cards

4. ORIFICE AND CONTROL VALVE SIZING

Orifice Sizing: - Liquid, Gas and steam services - Control Valves - Valve body:-Commercial valve bodies - Control valve sizing - Liquid, Gas and steam Services - Cavitation and flashing -Selection criteria - Rotameter Design.

5. DESIGN OF ALARM AND ANNUNCIATION CIRCUIT

Alarm and Annunciation circuits using Analog and Digital Circuits - Thyristor

Power Controller - Design of Programmable Logic Controller - Annunciator interlocks using PLC and DCS - Safety Instrument system

TEXT BOOKS

1. C. D. Johnson, "Process Control Instrumentation Technology", 8th Edition, Prentice Hall, 2006.
2. Control Valve Handbook, 4th Edition, Emerson Process Management, Fisher Controls International, 2005.
3. R.W. Miller, "Flow Measurement Engineering Handbook", Mc-Graw Hill, New York1996.

[MTEI-23] PROGRAMMABLE LOGIC CONTROL AND DCS

1. PLC

Evolution of PLCs - Sequential and programmable controllers - Architecture GE Fanuc- ABB - Siemens Higher end - Programming of PLC - relay logic - Ladder logic - Functional blocks programming.

2. COMMUNICATION IN PLCS

Requirement of communication networks for PLC - connecting PLC to computer - Use of Embedded PC as PLC - comparative study of Industrial PLCs - PLC application in Industrial Automation.

3. DISTRIBUTED CONTROL SYSTEMS

Evolution - Different architectures - Local control unit - Operator interface - Display's - Engineering interface. Case study - DCS - Study of two popular DCS available in market - Factors to be considered in selecting DCS.

4. HART AND FIELD BUS

Introduction - Evolution of signal standard - HART Communication protocol - Communication modes - HART networks - HART commands - HART field controller implementation - HART and OSI model - Field bus – Introduction profibus, Mod bus - Foundation field bus - General field bus architecture - basic requirements of field bus standard - Field bus topology - Interoperability CAN & LIN bus.

5. AS - INTERFACE (AS-i), DEVICENET AND INDUSTRIAL ETHERNET

AS interface:- Introduction, Physical layer, Data link layer and Operating characteristics. Devicenet:- Introduction, Physical layer, Data link layer and Application layer. Industrial Ethernet:- Introduction, 10Mbps Ethernet and 100Mbps Ethernet - Introduction to OLE for process control (OPC).

TEXT BOOKS

1. Petrezeulla, Programmable Controllers, Mc-Graw Hill, 1989.
2. Michael P.Lucas, Distributed Control System, Van Nastrand Reinhold Company, New York,1986.
3. Romilly Bowden, HART application Guide, HART Communication Foundation, 1999.
4. Berge, J., "Field Buses for Process Control: Engineering, Operation, and Maintenance", ISA Press, 2004.

REFERENCES

1. A.S.Tanenbaum, Computer Networks, Third Edition, Prentice Hall of India, 1996.
2. G.K.Mc-Millan, Process/Industrial Instrument and controls and handbook, Mc Graw Hill, New York, 1999.
3. Lucas, M.P., Distributed Control System, Van Nastrand Reinhold Company, New York, 1986.
4. Hughes T, Programmable Logic Controllers, ISA Press, 1989.
5. W. Bolton, "PLC", Elsevier Newnes
6. John W. Webb Ronald & Areis "PLC"
7. Clarke, G., Reynders, D. and Wright, E., "Practical Modern SCADA Protocols: DNP3, 60870.5 and Related Systems", Newnes, 1st Edition, 2004.
8. Mackay, S., Wrijut, E., Reynders, D. and Park, J., "Practical Industrial Data Networks Design, Installation and Troubleshooting", Newnes Publication, Elsevier, 1st Edition, 2004.

[MTEI-24] APPLIED SOFT COMPUTING

1. NEURAL NETWORK ARCHITECTURE AND LEARNING ALGORITHMS

Artificial neuron - Model of Neuron - Network Architecture - Learning Process - Single Layer Perception - Limitations - Multi Layer Perception - Back propagation algorithm - RBF - ART, SVM - Neural Network Tool Box familiarization - Application of Neural Network in Control

2. NEURAL NETWORKS FOR MODELING AND CONTROL

RNN - Reinforcement learning - Online learning - Schemes of Neuro-control - Identification and control of dynamical systems-Parameterized Neuro- Controller (PNC) and optimization aspects - Adaptive neuro controller - Simulation of case studies using Neural Network Tool Box.

3. INTRODUCTION TO FUZZY LOGIC

Fuzzy set theory - Fuzzy sets - Operation on Fuzzy sets - Fuzzy relations - Fuzzy membership functions - Fuzzy conditional statements - Fuzzy rules - MAMDANI - TAKAGI SUGENO.

4. FUZZY LOGIC CONTROL SYSTEM

Fuzzy Logic controller - Fuzzification - Knowledge base - Decision making logic - DefOzzification - Design of Fuzzy logic controller - Adaptive fuzzy systems - Simulation of case studies using Fuzzy Logic Tool Box.

5. HYBRID CONTROL SCHEMES

Fuzzy Neuron - Fuzzification and rule base Using ANN - Introduction to Evolutionary Algorithm - Optimization of membership function and rule base using GA - Particle Swarm Optimization - Ant colony optimization - Case study

TEXT BOOKS

1. Laurence Fausett, Fundamentals of Neural Networks, Prentice Hall, Englewood cliffs, N.J., 1992.
2. Jacek M.Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House, Mumbai, 1997.
3. Timothy J.Ross, Fuzzy Logic with Engineering Applications, McGraw Hill Inc.,1997.

REFERENCES

1. Freeman Neural network : Algorithms Applications and Programming Techniques,
2. Goldberg, Genetic Algorithm in Search, Optimization, and Machine Learning, Addison Wesley Publishing Company, Inc. 1989.
3. Tsoukalas L.H., and Robert E.Uhrig, Fuzzy and Neural approach in Engineering, John Wiley and Sons, 1997.
4. Millon W.T., Sutton R.S., and Webrose P.J., Neural Networks for control, MIT Press,1992.
5. MATLAB Neural Network Tool Box Manual.
6. MATLAB Fuzzy Logic Tool Box Manual.
7. R. Eberhart, P.simpson and R.Dobbins,"Computional Intelligence" PC Tools", AP Professional, Boston 1996.

M.Tech. (ELECTRONICS & INSTRUMENTATION ENGINEERING)

III- SEMESTER

[MTEI-31] ADVANCED VLSI SYSTEM DESIGN

1. BASIC DEVICE CHARACTERISTICS

NMOS, PMOS and CMOS devices characteristics, linear, saturation modes, bulk effect capacitances, device models for simulation, CMOS device fabrication principles

2. BASIC CIRCUITS FOR DIGITAL SYSTEMS

CMOS Inverter Design principles - Design layout rules. Construction of multiplexers, transmission gates, latches, flip flops. Timing and fan-out considerations.

3. BUILDING BLOCKS OF DIGITAL SYSTEMS

Combinational logic and sequential logic circuits, Data path circuits, Adder multiplier architecture and accumulators.

4. PROGRAMMABLE LOGIC DEVICES AND FPGAs

Programmable Logic interconnect principles and types, Programmable logic elements and AND-OR arrays, Routing Procedures in FPGAs and CPLDs, Programming methods for FPGAs and CPLDs, Comparison of ACTEL, Altera and Xlinx FPGAS.

5. PRINCIPLES OF HDL

Introduction to VHDL-Sequential and concurrent descriptions. Signal, Port and variable statements. Wait, case and other sequential statements. Block, process, component and generate descriptions. Test bench creation and principles of operation of VHDL simulator. Introduction to verilog and brief comparison with VHDL.

REFERENCES

1. Smith, M Application specific Integrated Circuits Addision Wesley Press, 1999.
2. Rabey, J.M., Digital Integrated Circuits: A design Perspective, Prentice Hall, 1995.
3. Weste, N.H.E and Ershingian, K., Principles of CMOS VLSI Design: A Design Perspective, Addison Wesley, 1996.
4. Bhasker,J., VHDL Primer, Prentice Hall 1995.

[MTEI-32] WIRELESS SENSOR NETWORKS

1. INTRODUCTION

Challenges for wireless sensor networks, Comparison of sensor network with ad hoc network, Single node architecture - Hardware components, energy consumption of sensor nodes, Network architecture - Sensor network scenarios, types of sources and sinks, single hop versus multi-hop networks, multiple sinks and sources, design principles, Development of wireless sensor networks.

2. PHYSICAL LAYER

Introduction, wireless channel and communication fundamentals - frequency allocation, modulation and demodulation, wave propagation effects and noise, channels models, spread spectrum communication, packet transmission and synchronization, quality of wireless channels and measures for improvement, physical layer and transceiver design consideration in wireless sensor networks, Energy usage profile, choice of modulation, Power Management.

3. DATA LINK LAYER

MAC protocols -fundamentals of wireless MAC protocols, low duty cycle protocols and wakeup concepts, contention-based protocols, Schedule-based protocols, Link Layer protocols -fundamentals task and requirements ,error control ,framing, link management

4. NETWORK LAYER

Gossiping and agent-based uni-cast forwarding, Energy-efficient unicast, Broadcast and multicast, geographic routing, mobile nodes, Data -centric and content-based networking -Data -centric routing, Data aggregation, Data- centric storage, Higher layer design issue

5. CASE STUDY

Target detection tracking, Habitat monitoring, Environmental disaster monitoring, Practical implementation issues, IEEE 802.15.4 low rate WPAN, Sensor Network Platforms and tools-Sensor node hardware, Node-level software platforms, node -level simulators.

REFERENCES

1. Wireless Sensor Networks: an information processing approach - Feng zhao, Leonidas guibas, Else vier publication, 2004.
2. Wireless Sensor Networks -C.S.Raghavendra Krishna, M.Sivalingam and Tarib znati, Springer publication, 2004.
3. Wireless Sensor Networks : Architecture and protocol -Edgar H .Callaway, CRC press.
4. Protocol and Architecture for Wireless Sensor Networks -Holger Karl , Andreas willig John wile y publication, Jan 2006.
5. Wireless Sensor Networks: First European workshop, EWSN 2004, Berlion, germany, January 2004 proceedings -Holger Karl , Andreas willig,Adam holisz,Springer publication.
6. I.F. Akyildiz, W. Su, Sankarasubramaniam, E. Cayirci, "Wireless sensor networks: a survey", computer networks, Elsevier, 2002, 394 - 422.
7. Jamal N. Al-karaki, Ahmed E. Kamal, " Routing Techniques in Wireless sensor networks: A survey", IEEE wireless communication, December 2004, 6 - 28.

[MTCE-33] SEMINAR

OBJECTIVE

The students are to select one technical topic related its branch for Seminar. The student is to submit the synopsis for assessment and approval. Progress for preparation of the seminar topic would be continuously assessed from time to time. Two periods per week are to be allotted and students are expected to present the seminar Progress. A faculty guide is to be allotted and he / she will guide and monitor the progress of the student and maintain the attendance.

Students have to give a final presentation for 15 minutes on his topic. Students are encouraged to use various teaching aids such as over head projectors, power point presentation and demonstrative models. This will enable them to gain confidence in facing the placement interviews

IV- SEMESTER

[MTCE-41] DISSERTATION

The student will submit a synopsis at the beginning of the semester for the approval from the University project committee in a specified format. Synopsis must be submitted within atwo weeks. The first defence, for the dissertation work, should be held within a one month. Dissertation Report must be submitted in a specified format to the University for evaluation purpose.