UNIVERSITY POLYTECHNIC
B.I.T., MESRA, RANCHI

Syllabus of Diploma in Engineering (Electronics Engineering) (Semester VI)

COURSE STRUCTURE
(W.E.F. 2011 Batch Students)
(Total Unit 7.0)

Course Code	Theory	Unit	Course Code	Sessional	Unit
MBA 6003	Total Quality Management	1.0	DEC 6002	Consumer Electronics Lab.	0.5
DEC 6001	Consumer Electronics	1.0	DEC 6004	Optical Fiber Communication Lab.	0.5
DEC 6003	Optical Fiber Communication	1.0	DEC 6010	T.V. Engineering Lab.	0.5
DEC 6005 DEC 6007	Elective Papers (a) Computer Hardware/ (b) Bio-Medical Instrumentation	1.0	DEC 6006 DEC 6008	Elective Lab. Computer Hardware Lab. Biomedical Instrumentation Lab.	0.5
			DEC 6012	Project – II	1.0
				Seminar/Industrial Visits (Non-Credit)	
		4.0			**3.0**

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Subject : Total Quality Management **Course code : MBA 6003**

Module 1
Introduction to Management – Definition, Nature, Objective and functions of Management. Definition of Quality and its importance, Need for quality and Quality movement. (4)

Module 2
Introduction to Total Quality Management, Objective and Scope of TQM, Elements/Components of TQM. (6)

Module 3
Pioneers of TQM, Process of TQM, Need, Significance and Barriers of TQM, Role of Senior Management. (6)

Module 4
Quality Circle - Purpose, Benefits, Problem in implementation of quality circles, Requirements of Elective Circle. (6)

Module 5
Benchmarking - Reasons to Benchmark, Benchmarking Process, Quality Function Development (QFD) – Cost of Quality, QFD Process, Six Sigma. (6)

Module 6
TQM and HRD, Introduction to ISO 9000 and ISO 14000 – Concept, Requirement and Benefits. (6)

Module 7
Statistical Tools and Techniques - Common Statistical Tools, Flow Diagram, Check Sheets and Scatter Plots. (6)

TEXT BOOK:

1. Dr. S. Kumar "Total Quality Management, Laxmi Publications.

REFERENCE BOOKS :

1. S. K. Mandal, "Total Quality Management, Principles & Practice", Vikas Publishing House, Pvt. Ltd.
2. Narayana V. and Sreenivasan, N.S. "Quality Management – Concepts and Tasks", New Age International, 1996.
3. K. Sridhar Bhatt, "Total Quality Management" – Himalaya Publishing House.
4. L. M. Prasad, " Principles& Practices of Management"

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Subject : Consumer Electronics **Course Code : DEC 6001**

Module – 1

P.A.System : Requirements, Block diagram, microphones & loudspeakers, placement of microphones & loudspeakers, amplifier power output. (6)

Module – 2

Stereo Sound System : Introduction, stereo tape, stereo controls, stereo tape recorders, Hi-fi stereo tape, cum CD player, Graphic equaliser system, system, technical details of a stereo. (6)

Module – 3

VCR & DVD : Difference between video & audio recording, problems in video recording & solution, VCR system, block diagram, playback from DVD, technical details of VCR, technical details of DVD. (6)

Module – 4

Television Fundamentals : Requirements and standards : Introduction to Televisions, Television System & Standards, Black & White Transmission : Fundamentals, Beam Scanning, Blanking & Sync. Pulses. (6)

Module – 5

Black & White Reception : Fundamentals, Common, Video and sound circuits, Synchronising Circuits, Colour Transmission and Reception : Introduction, Colour Transmission, Colour Reception. (6)

Module – 6

Home Appliances : Inverter, Microwave oven, Domestic Refrigerator, Controls in Refrigerator, Room Air Conditioning. (6)

Module – 7

Office Appliances : Calculator, Facsimile (FAX) and Pager. (4)

Books Recommended:

1. Consumer Electronics – B. R. Gupta
2. Electronic Communication Systems – G. Kennedy & B. Davis.
3. Refrigeration and Air Conditioning – R. S. Khurmi, J. K. Gupta

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Subject : Optical Fiber Communication **Course Code : DEC 6003**

Module – 1

Introduction : Different Optical Communication System, Analog Vs Digital Communication, Need for Optical Communication, Basic Elements of an Optical Communication. (4)

Module – 2

Optical Fibre : Basic Principle involved, Fibre Classification, Acceptance angle, Acceptance Cone, Numerical Aperture, Ray optics representation, Advantages and disadvantages of using optical fiber as communication medium. (4)

Module – 3

Losses and Dispersion in Optical Fibre : Fibre Losses (Material, Scattering, Splice, Absorption, Radiative). Dispersion (Modal, Material, Wave guide). (6)

Module – 4

Optical Transmitter : Fiber Optic communication system, Transmitter, Different elements of optical transmitter, Light source, Its important parameters, Drive Circuit. (6)

Module – 5

Optical Sources : LED, LED structure, light source materials, efficiency and modulation of LED. Laser Diode, structure, radiation pattern, efficiency & modulation of laser diode. (6)

Module – 6

Optical Receiver : Different elements of optical Receiver, Optical detector and its operating parameters, Demodulation Techniques. Optical Repeaters. (6)

Module – 7

Application : Various applications & future developments of optical communication system. (6)

Books :

1. Optical Fiber Communication – By – G. Keiser
2. Optical Fiber and Laser – By – Anuradha De
3. Introduction to Fiber Optics – By – Ghatak and Thyagarajan
4. Optical Fiber Communication – By – J. M. Senior

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Subject : Computer Hardware **Course Code : DEC 6005**

Module 1: **06 Lectures**

Motherboard: Motherboard form factors; Layout of motherboard; Components of motherboard ─ chipset, processor socket, expansion slots, power supply connectors, ROM BIOS, CMOS, ports etc.

Module 2: **04 Lectures**

Microprocessor: Processor Specification, FSB; Evolution of Processor; Overview of Modern Microprocessors; Processor Socket and Slots.

Module 3: **06 Lectures**

Memory: Logical memory Configuration─ Conventional memory, UMA, Extended Memory & Expanded Memory; Memory Physical Packaging; SIMM, DIMM & RIMM memory modules; Memory Banks; Types of Dynamic RAM─ FPM, EDO, BEDO, SDRAM, RD RAM, DDR RAM etc; Laptop Memory; Memory Installation/upgradation rules.

Module 4: **08 Lectures**

Secondary Storage devices: Hard Drives─ Hard Drive Construction and Interfaces; Disk Partitioning; File System; Disk Formatting ─ Low Level and High Level; Hard Drive Fragmentation; CD-ROM and DVDs: CD-ROM Formats; Compact Disk Media; Laser and Head Assembly; CD-R (Compact Disk Recordable), CD-RW (CD Rewritable), Writing to a CD, DVD Technology.

Module 5: **06 Lectures**

Power Supply and Electrical Issues: Power Problems─ Spike, Surge, Brownout and Blackout; EMI (Electromagnetic Interference); Static Electricity and ESD; SMPS─ SMPS form factors, connectors and voltages; Power supply problems; UPS─ Purpose of UPS, Online and offline UPS.

Module 6: **04 Lectures**

Printer: Printer types; Printing technology─ Dot Matrix Printer, Inkjet Printer, Laser Printer.

Module 7: **06 Lectures**

Maintenance and Troubleshooting: Preventive Maintenance ─ HDD, CDROM, FDD, Viruses detection and Protection; Logical Troubleshooting ─ Troubleshooting Overview; Re-create the Problem; Divide and Conquer; Repair the Problem or go back to test another theory.

Textbook:

Ron Gilster, "PC Hardware: A Beginner's Guide", TMH

Reference Books:

C.A.Schmidt, "The Complete Computer Repair Textbook", 3e, Dreamtech
David Groth, "A+ Complete Study Guide", 3e

SUBJECT : BIO MEDICAL INSTRUMENTATION COURSE CODE : DEC 6007

Module – 1

Bio-Medical Engineering : Introduction, Biometrics, Man-Instrument System, Components of Man-Instrument System, Physiological Systems of the Body, Bio-Electric Potentials, Resting Potential, Action Potential, Propagation of Action Potential, Electrocardiogram (ECG), Electroencephalogram (EEG), Electromyogram (EMG). (8)

Module – 2

Physiological Transducers : Transducers in General, Active Transducers, Passive Transducers, Pressure Transducers, Catheter Tip Pressure Transducer, Temperature Transducer, Pulse Sensors, Respiration Sensors. (6)

Module – 3

Analytical Instruments : PH Meter, PH Measurement, Blood Cell Counter Mass Spectrometer. Recording Systems : Pen-Arm and Hot-Stylus Recorders. (6)

Module – 4

Measuring and Monitoring System : Electrocardiograph (ECG), Block Diagram of Electrocardiograph, ECG Recorder Principles, Electro Encephalograph (EEG), Phonocardiogram Stethoscope (PCG), BP Measuring Instrument, Digital BP Measurement, Blood Flow Meter. (8)

Module – 5

Biological Simulators and Controllers : Pacemakers. (6)

Module – 6

Modern Imaging Systems : X-Ray Machine, CT Scanner, MRI. (5)

Module – 7

Operating Room Instrumentation & Safety in Hospitals (5)

Text Book :

1. Bio - Medical Electronics & Instrumentation by S. K. Venkata Ram
- Galgotia Publications

LIST OF EXPERIMENTS ELECTRONICS – VI

DEC 6002 CONSUMER ELECTRONICS LAB.

1. Study of microphone and measurement of electrical output.
2. Study of construction of speaker and its frequency response on CRO.
3. Study of tape mechanism
4. Study of public address system
5. Determination of Gain and frequency response of an audio amplifier.
6. Study of Refrigerator
7. Study of Washing machine
8. Study of Compact Disc System.
9. Study of Digital Video Disc System.
10. Study of an Air Conditioner.

LIST OF EXPERIMENTS ELECTRONICS – VI

DEC 6010 T.V. ENGINEERING LAB.

1. Study of Block Diagram of T.V. receiver.
2. Study of Power Supply Section
3. Study of Tuner Section.
4. Study of VIF Section.
5. Study of S.I.F. and sound output section
6. Study of Sync Section.
7. Study of Vertical Section
8. Study of A.F.C. Section Horizontal oscillator section, line driver section.
9. Study of Horizontal O/P Section, line output and EHT section
10. Study of Video O/P Section.
11. Testing Voltage of different sections of T.V. circuit
12. Fault finding & repairing of different sections.