GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE304** SUBJECT NAME : **MICROCONTROLLERS**

FACULTY NAME : **devendra kumar** DESIGNATION : **LECTURER (INSTRUMENTATION)**

TOPIC	PRACTICAL CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME	E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC
Study of 8085 microprocessor kit	2	Aug-15			
Addition of two 8 bit numbers with and without carry	2	Sep-15			
Subtraction of two 8 bit numbers with and without borrow	2	Sep-15			
Multiplication of two 8 bit number using successiv	2	Oct-15			
Addition and resistor shifting method	2	Oct-15			
Program to find out square of a number.	2	Nov-15			
Programs involving data arrays 6.1 Generating odd numbers. 6.2 Data transfer schemes 6.3 Sorting of odd/even numbers. 6.5 Finding largest and smallest numbers. 6.6 Arrange data array in ascending / descending order 7. Programs using stack 8. Programs using subroutine. 9. Debugging of programs using single stepping on kit	10	Feb-15			
. Study of 8051 microcontroller kit	2	Mar-15			
TOTAL	24				

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE201** SUBJECT NAME : **ELECTRONIC INSTRUMENTS**

FACULTY NAME : **Devendra kumar** DESIGNATION : **LECTURER (INSTRUMENTATION)**

TOPIC	LECTURE CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME	E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC
Multimeter : Principle of measurement of D.C. Voltage and current	2	Aug-15			
A.C. Voltage and current	2	Aug-15			
Resistance	2	Sep-15			
AC and DC sensitivity	1	Nov-15			
Calculation of shunt and multiplier for range extension	1	Sep-15			
Loading effect	1	Sep-15			
Specifications	1	Sep-15			
2 Electronic Voltmeter : 2.1 Characteristics and specification of analog electronic voltmeter of different	2	Sep-15			
Circuits for DC voltmeter using BJTs and FETs (single device and balanced bridge	3	Sep-15			
. Ramp type Digital Volt Meter	1	Oct-15			
Integrating type Digital Volt Meter	1	Oct-15			
Cathode Ray Oscilloscope : Block diagram of CRO	1	Oct-15			
Construction of CRT	1	Oct-15			
Deflection sensitivity and various controls	1	Oct-15			
Detail of X-Y section and delay line	2	Oct-15			
3.5 Horizontal sweep section	2	Nov-15			
Synchronization of sweep and triggered	2	Nov-15			
Measurement of voltage, current frequency and phase angle using CRO	2	Nov-15			
CRO probe	2	Dec-15			
Construction and working of dual trace dual beam and analog storage type	2	Dec-15			
Working Principle and Application of :	1	Jan-16			
Q-meter	1	Jan-16			
Transistor tester	1	Jan-16			
Digital frequency counter	1	Jan-16			
Analog IC tester	1	Jan-16			
LCR Bridge	1	Jan-16			
Output power meter (AF)	1	Jan-17			
Function Generator	1	Jan-17			
5. Signal Generation :Sinewave	1	Feb-17			
Special waveform generators.	2	Feb-18			
Frequency synthesised signal generators	4	Feb-17			
Signal Analysis : 6.1 Measurement Technique, 6.2 Wave Analysers 6.2.1 Frequency selective wave anslyser 6.2.2 Hetrodyne	4	Mar-16			

Frequency : 7.1 Time & Interval measurement 7.1.1 Resonance methods 7.1.2 Wave meters 7.1.3 Frequency counting 7.1.4 Time Interval measurement 7.1.5 System Time Counters 7.2 Frequency Counters - Gating error, Time base error, Trigger level error, High frequency measuremen	4	Mar-18			
Revision	2	April			
Total	57				

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE201** SUBJECT NAME : **Electronic Instruments**

FACULTY NAME : **devendra kumar** DESIGNATION : **LECTURER**

TOPIC	PRACTICAL CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME
1. Measurement of DC voltage and current by multimeter	2	Aug-15		
2. Measuremen of AC voltage and current by multimeter	2	Sep-15		
3. Measurement of resistance by multimeter	2	Sep-15		
4. Complete study of multimeter and specification.	2	Oct-15		
Study of electronic voltmeter	2	Oct-15		
Study and use of CRO for voltage, frequency	2	Nov-15		
Measurement of phase and frequency using	2	Nov-16		
testing of transistors using transistor tester	2	Dec-16		
Testing of digital IC's using IC tester	2	Jan-16		
Study of seven-segment display (LED and	2	Feb-16		
Study of digital frequency meter	2	Mar-16		
Study of digital voltmeter	2	Mar-16		
TOTAL	24			

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(INSTRUMENTATION)

E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE206** SUBJECT NAME : **industrial instrumentation**

FACULTY NAME : **devendra kumar** DESIGNATION : **LECTURER**

TOPIC	LECTURE CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME
1. Basic of Instrumentation : 1.1 Names of important process parameters, their units, necessity of measuring these parameters 1.2 Primary & secondary standards 1.3 Name of the sensors used for above parameters and their ranges 1.4 Direct & indirect measurement 1.5 Static & dynamic characteristics 1.6 Actuating, controlling & damping methods 1.7 Concept of under, over and critical, damping 1.8 Source of errors 1.9 Classification of errors 1.10 Their remedies 1.11 Simple numerical problems	9	Sep-15		
Flow : 2.1 Introduction 2.2 Differential pressure flow meter 2.3 Orifice plates 2.4 Venturi tubes 2.5 Flow nozzles 2.6 Dall tubes 2.7 Pitot tubes 2.8 Annubar tubes 2.9 Rotameter 2.10 Electromagnetic and ultrasonic flow meters 2.11 Vortex flow meters 2.12 Mass flow type meters 2.13 Shunt flow meters	12	Oct-15		
Level : 3.1 Introduction 3.2 Float type 3.3 Displacement type 3.4 Hydrostatic type 3.5 Diaphragm type 3.6 Differential pressure method 3.7 Electrical conductivity method 3.8 Capacitance level 3.9 Ultrasonic and nucleonic gauges 3.10 Capacitance probes 3.11 Solid	8	Oct-15		

Density : 4.1 Introduction 4.2 Hydrometers 4.3 Density of gases 4.4 Metering orifice 4.5 Gas impulse wheel methods 4.6 Gas specific gravity measuring system	9	Nov-15		
Moisture / Humidity : 5.1 Moisture content of materials 5.2 Methods of measurement of moisture 5.3 Humidity 5.4 Methods of measurement of humidity	3	Jan-15		
Viscosity : 6.1 Introduction 6.2 Co-efficient of viscosity and temperature 6.3 Ostwald method of determination of viscosity 6.4 Free fall of piston under gravity 6.5 Two float viscometer 6.6 Torque method 6.7 Ultrasonic shear waves method 6.8 Temperature compensation	7	Jan-15		
Pressure : 7.1 Introduction 7.2 Conventional pressure transducers 7.3 Mechanical pressure transducers 7.3.1 Manometer method 7.3.2 C-type Bourdon tube 7.3.3 Diaphragm 7.3.4 Bellows 7.4 Measurement of vacuum 7.5 Force balance pressure gauges 7.6 Electrical pressure transducers 7.6.1 Strain gauge pressure transducer 7.6.2 Potentiometric pressure transducer 7.6.3 Capacitive pressure transducer 7.6.4 Piezo electric pressure transducers	8	Feb-15		
Temperature : 8.1 Introduction 8.2 Temperature scales 8.3 Temperature measuring theory 8.4 Methods of measuring temperature, filled systems 8.5 Resistance thermometer 8.6 Thermocouples 8.7 Bimetallic thermometer 8.8 Thermistors 8.9 Radiation pyrometer 8.10 Optical pyrometer 8.11 Thermographic color change, Acoustical, Quartz crystal thermometers	5	Mar-15		

Vibration : 9.1 Introduction 9.2 Methods of vibration measurement 9.3 Vibration pick-ups 9.4 Vibrometers 9.5 Measuring, monitoring and balancing	5	Feb-15		
Speed Measurements : 10.1 Introduction 10.2 Mechanical tachometers 10.3 Electrical tachometers 10.4 Contact less tachometers 10.5 Frequency type tachometers 10.6 Stroboscopic tachometers	8	Mar-15		
Miscellaneous Measurement : 11.1 Force and Torque 11.2 Acceleration and Velocity 11.3 Weight	2	Mar-15		
Revision	2	Apr-15		
Total	78			

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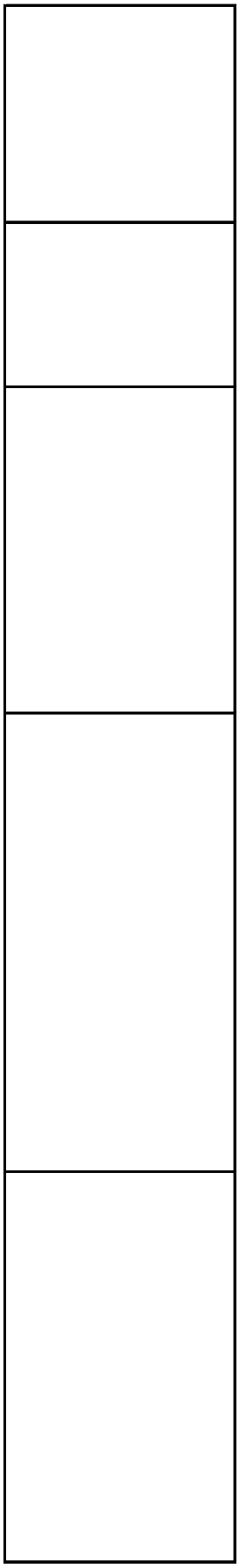
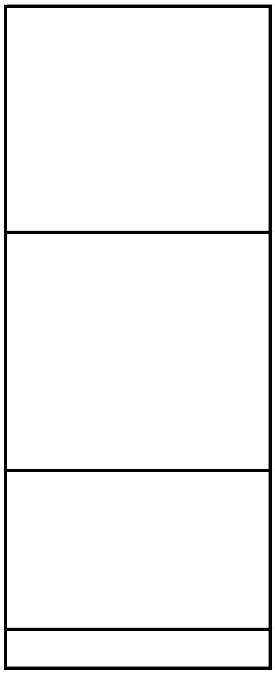
E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC





GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE206** SUBJECT NAME : **industrial instrumentation**

FACULTY NAME : **devendra kumar** DESIGNATION : **LECTURER**

TOPIC	PRACTICAL CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME
1. Measurement of flow by rotameter	1	Aug-15		
Study and testing of house water meter	1	Sep-15		
Measurement of flow by orifice method	1	Sep-15		
Measurement of flow by differential pressure flow meter	1	Sep-15		
Measurement of flow by magnetic flow meter	1	Oct-15		
Study of vibration pick-ups	1	Oct-15		
To determine relative humidity by wet and dry bulb hygrometer	1	11/1/15/		
Measurement of viscosity by red wood viscometer	1	Dec-15		
Measurement of density by Hydrometer	1	Jan-15		
Measuring of speed of a motor by hand tachometer	1	Jan-15		
Measurement of speed of a motor fan by electronic stroboscope method	1	Jan-15		
Measurement of temperature by thermistor	1	Feb-15		
Measurement of temperature by filled system	1	Feb-15		
Measurement of pressure by Bourden tube	1	Mar-15		
Measurement of pressure by manometer	1	Mar-15		
Study of various pressure elements	1	Mar-15		
TOTAL	16			

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(INSTRUMENTATION)

E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **IE304** SUBJECT NAME : **MICROCONTROLLERS**

FACULTY NAME : **Devendra kumar** DESIGNATION : **LECTURER**

TOPIC	LECTURE CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME
Introduction 1.1 Historical review of microprocessor development 1.2 Organization of a micro computer	4	Aug-15		
The 8085 Architecture: 2.1 Internal block diagram 2.2 8085 signals and their functions 2.3 Demultiplexing of buses 2.4 Pin configuration and logical diagram.	8	Sep-15		
8085 Instructions and Programming: 3.1 Instruction format 3.1.1 Mnemonics 3.1.2 Opcode and operand 3.1.3 Instruction length 3.2 Classification of instruction 3.2.1 Data transfer 3.2.2 Arithmetic 3.2.3 Logical 3.2.4 Branching 3.2.5 Machine control 3.3 Different interrupts of 8085 Microprocessor 3.4 Addressing modes 3.5 Stack operation and related instructions 3.6 Subroutine and related instructions 3.7 Machine and assembly language 3.8 Assembly language programming 3.9 Debugging of programs	12	Nov-15		
Memory and I/O System: 4.1 Memory types 4.2 Memory organization 4.3 Basic concept of memory interfacing and I/O interfacing 4.4 Difference between peripheral I/O and memory mapped I/O	8	Jan-15		
THE 8051 MICROCONTROLLER: 5.1 Introduction 5.2 The 8051 microcontroller hardware 5.3 I/O pins	12	Feb-15		

8051 ASSEMBLY LANGUAGE PROGRAMMING: 6.1 Addressing modes 6.2 External data moves 6.3 Push and pop opcodes 6.4 Logical operations 6.5 Byte level and bit level logical operations 6.6 Arithmetic operations 6.7 Jump and call instructions 6.8 Interrupts & returns.	10	Mar-15		
TOTAL	54			

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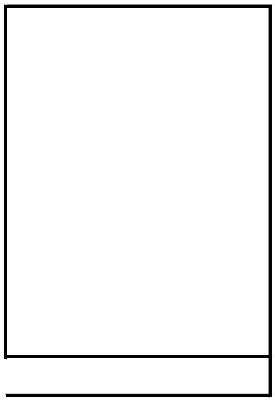
E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC



GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : IE307 SUBJECT NAME : APPLIED INSTRUMENTATION

FACULTY NAME : DESIGNATION : **LECTURER**

TOPIC	LECTURE CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME
Processes and Control Schemes of the Following in Industries : 1.1 Iron and steel Industry 1.2 Glass Industry 1.3 Power Industry 1.3.1 Thermal 1.3.2 Nuclear 1.3.3 Combined Gas Cycle 1.4 Cement Industry 1.5 Fertiliser Industry 1.6 Paper Industry 1.7 Sugar Industry	20	Oct-15		
Instrumentation and Control Scheme in Chemical Reactors: 2.1 Temperature control 2.2 Pressure control	6	Nov-15		
Instrumentation and Control Scheme In Dryers: 3.1 Inst and Control in batch dryers 3.2 Inst and Control in continuous dryers	6	Jan-15		
Instrumentation and Control Scheme of Heat Exchangers: 4.1 Steam heaters 4.2 Condensers 4.3 Reboilers 4.4 Vaporiser	12	Feb-15		
Instrumentation and Control Scheme in Evaporators: 5.1 Types of evaporators 5.2 Measurement and control of pressure 5.3 Density 5.4 Conductivity differential pressure.	8	Mar-15		
Revision	2	Apr-15		
TOTAL	54			

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(INSTRUMENTATION)

E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC