(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V^{th})

Course Code	**US05CELE51**	Title of the Course	Instrumentation
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The course is to make the students understand the vector algebra and about electric field intensities and various Potentials

Course Content		
Unit	Description	Weightage* (%)
1.	**DC and AC Bridges:** Wheastone Bridge, Kelvin Bridge, AC Bridge and their applications, Examples related to AC Bridge, Maxwell Bridge, Hay Bridge, Schering Bridge, Wein Bridge	25%
2.	**Power Supply:** Block diagram of regulated power supply, Discrete voltage regulator circuits – shunt regulator, Series regulator, IC regulators, Three terminal Voltage regulators – 78** and 79** regulator, Parameters of voltage regulator, General purpose Voltage Regulator IC 723 regulator, applications of IC 723 regulator – low voltage regulator, High Voltage regulator, switching regulator.	25%
3.	**Basic Transducers:** Classification of Transducers, Selection of Transducers, Capacitive Transducers, Inductive Transducer, Linear Variable Differential Transformer, Strain Gauges.	25%
4.	**Applied Transducers:** Photoelectric Transducer, Piezo electric Transducer, Displacement Transducer, Thermocouple, Thermistor characteristics and Applications.	25%

Teaching-Learning Methodology	Online and Board work

Evaluation Pattern

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	After studying this syllabus students will learn vectors analysis such as dot product, cross product, differentiation of vectors, velocity & acceleration, gradient, divergence, curl & their application, Integration of vector.
2.	With the background of Vector algebra, they will learn Coulomb's Law and Electric Field Intensity, the experimental law of coulomb, electric field intensity, field due to continuous volume charge distribution, filed of a line charge and field of a sheet of charge.
3.	This knowledge will be further enhanced by learning Electric flux Density, Gauss's Law& Divergence Electric Flux density, Gauss's law, application of Gauss's law: for symmetrical charge distribution and differential volume element, Divergence, Maxwell's First Equation, Vector operator and Divergence theorem which are important for learning electromagnetism.
4.	Student will be also exposed to other fundamental topics such as Energy and Potential Energy expanded in moving a point charge in an electric field, line integral, definition of potential difference and potential, the potential field of a system of a charges, conservative property, dipole, energy density in the electrostatic field.

Suggested References:	
Sr. No.	References
1.	Modern Electronics Instrumentation and Measurements Technique By : A.D.Helfrick and W.D.Cooper
2.	Instrumentation Devices and Systems By : C.S.Ragan Sharma and V.S.V.Mani.
3.	Electronics circuit and devices G. K. Mithal

On-line resources to be used if available as reference material
On-line Resources

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V^{th})

Course Code	**US05CELE52**	Title of the Course	**Digital System**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The course is to make the students understand the working of registers., Modems and Memory.

Course Content		
Unit	Description	Weightage* (%)
1.	Shift Registers Introduction, Buffer Register, Controlled Buffer Register, Data Transmission in shift registers, Serial-in serial-out shift registers, serial-in parallel-out shift registers, Parallel-in serial-out shift register, parallel-in parallel-out shift registers, Bidirectional shift registers	25%
2.	Universal shift register, Dynamic shift registers,Application of shift registers, ANSI/IEEE standard symbols, Tristate switch, The look ahead carry adder, IC parallel Adders	25%
3.	Two's complement Addition and Subtraction using parallel Adders, Serial Adders, BCD Adder, Binary Multipliers, Comparators, IC comparators ,Interfacing Digital & Analog system, Modems & Interfaces, The Schmitt Trigger as an Interface scircuit	25%
4.	The role of memory in a computer system, Memory Types and Terminology,memory Organization & operation, Reading and writing, RAMs, ROMs, andPROMs, Constituent of Memories, Read Only Memory (ROM), ROM organization, ROM timing .	25%

Teaching-Learning Methodology	Online and Board work

Evaluation Pattern		
Sr.	Details of the Evaluation	Weightage

No.		
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	After studying this syllabus students will learn about data transmission in shift registers, and its application.
2.	With the background of register, they will learn working of universal register. Get them selves aquainted with ANSI/IEEE standard symbols,.
3.	This knowledge will be further enhanced their knowledge in working of ,ALU in COMPUTER.
4.	Student will be understand the role of memory in computer system and its operation..

Suggested References:	
Sr. No.	References
1.	Fundamental of Digital circuits By : A.Anand Kumar
2.	Digital Integrated Electronics By : Herbert Taub & Donald Schilling
3.	Digital Fundamental By : Floyd

On-line resources to be used if available as reference material
On-line Resources

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(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V^{th})

Course Code	**US05CELE53**	Title of the Course	**8-Bit Microprocessor Programming & Applications**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The course is to make the students understand the working of Microprocessor and its programming concept

Course Content		
Unit	Description	Weightage* (%)
1.	The 8085 Microprocessor unit, Bus timing, Demultiplexing the bus, Generating control signal, A detailed look at the 8085 Microprocessor and its architecture, Examples of 8085 based microcomputer	25%
2.	Instruction classification, Method of writing and executing a simple program, Addressing modes, Data transfer Instruction set, Arithmetic instruction set, Logical instruction set, program related to Arithmetic and logical instruction.	25%
3.	Branch operations and their related programs, writing assembly language programs, Debugging a program, programming techniques : Looping, Counting and Indexing and their related flow charts, Additional Data transfer and 16 bit Arithmetic instruction and related program.	25%
4.	Arithmetic operations related to memory, Logical operations : Rotate and compare and related programs, Dynamic Debugging	25%

Teaching-Learning Methodology	Online and Board work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage

1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	Where the architecture of microprocessor and concept of Bus timing and Demultiplexing
2.	They will understand the classification of instructions and learn arithmetic, Logical programming
3.	They will study different types of programming and techniques and about 16 bit program
4.	They will study memory related arithmetical and logical operations and also DYNAMIC DEBUGGING

Suggested References:	
Sr. No.	References
1.	Microprocessor , Architecture, Programming and Applications with the 8085/8080 By : Ramesh S. Gaonkar
2.	
3.	

On-line resources to be used if available as reference material
On-line Resources

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(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V^{th})

Course Code	**US05CELE54**	Title of the Course	**Analog Communication**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The course is to make the students understand the working of radio receiver and TV receiver

Course Content		
Unit	Description	Weightage* (%)
1.	Classification of Radio Receivers, Salient Features of broadcast Receivers, Basic Function of AM Receiver, Principle & Block diagram of superhetrodyne Receiver.	25%
2.	RF Amplifier, Frequency Mixer & converters, IF Amplifier, Detector stage, Automatic gain control, Automatic Frequency control.	25%
3.	Introduction, Aspect Ratio, Rectangular Switching, Interlaced scanning, Composite video signals, TV camera Tubes, Image orthicon, Vidicon.	25%
4.	Block diagram and Function of Broadcast TV Receiver, RF Tuners, Functions of RF Tuners, Block Diagram of RF Tuner, RF Tuner circuits, Video IF Amplifier, Interstage coupling methods, Transistor video IF Amplifier Circuit.	25%

Teaching-Learning Methodology	Online and Board work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%

2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	They will understand types of radio receivers and superhetrodyne principle
2.	They will understand working of different circuit in radio receiver and its controlling
3.	They will study the TV camera tube and theory of TV communication
4.	They will study the functioning of TV receiver and its detail

Suggested References:	
Sr. No.	References
1.	Radio Engineering (Applied Electronics vol-II) By : G.K.Mithal
2.	Basic Radio & Television By : S.P.Sharma
3.	

On-line resources to be used if available as reference material
On-line Resources

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(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V)

Course Code	**US05CELE55 (A)**	Title of the Course	PRACTICAL Based on Course US06CELE51
Total Credits of the Course	4	Hours per Week	6

Course Objectives:	Doing these practicals students will learn about regulated power supply and various transducer.

Course Content		
Unit	Description	Weightage* (%)
1.	Discrete regulated power supply	10%
2.	Regulated Power Supply Using 78XX	10%
3.	Regulated Power Supply Using 79XX	10%
4.	Thermocouple/ Strain gauge	10%
5.	Thermistor characteristics and other practicals related to course	10%
6.		10%
7.		10%
8.		10%
9.		10%
10.		10%

Other experiments based on syllabus

Teaching-Learning Methodology	Online and lab work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%

2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Learn about regulated power supply and various transducer.

Suggested References:	
Sr. No.	References
1.	

On-line resources to be used if available as reference material
On-line Resources

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(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V)

Course Code	**US05CELE55 (B)**	Title of the Course	PRACTICAL Based on Course US06CELE52
Total Credits of the Course	4	Hours per Week	6

Course Objectives:	Students will learn the computer mathematics and its applications

Course Content		
Unit	Description	Weightage* (%)
1.	Serial in serial out Shift Registers	10%
2.	Serial in parallel out Shift Registers	10%
3.	Ring counter	10%
4.	Johnson counter	10%
5.	Shift Registers application 5	10%
6.	7485 4 bit comparator	10%
7.	Others based on syllabus (US06CELE52)	10%
8.		10%
9.		10%
10.		10%

Other experiments based on syllabus

Teaching-Learning Methodology	Online and lab work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%

2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Students learn about the applications of register and counters

Suggested References:	
Sr. No.	References
1.	Digital electronics lab New (Virtual lab)

On-line resources to be used if available as reference material
On-line Resources

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V)

Course Code	**US05CELE55 (C)**	Title of the Course	PRACTICAL Based on Course US06CELE53
Total Credits of the Course	4	Hours per Week	6

Course Objectives:	Student learn about Micro processor

Course Content		
Unit	Description	Weightage* (%)
1.	Hexadecimal addition using 8085	10%
2.	Hexadecimal subtraction using 8085	10%
3.	Hexadecimal subtraction using 8085	10%
4.	2'S compliment of 8 bit data using 8085	10%
5.	Logical operations using 8085	10%
6.	Others based on syllabus (US06CELE53)	10%
7.		10%
8.		10%
9.		10%
10.		10%

Other experiments based on syllabus

Teaching-Learning Methodology	Online and lab work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage

1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Students learn how to do mathematical and logical operations using 8085.

Suggested References:	
Sr. No.	References
1.	

On-line resources to be used if available as reference material
On-line Resources

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(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (V)

Course Code	**US05CELE55 (D)**	Title of the Course	PRACTICAL Based on Course US06CELE54
Total Credits of the Course	4	Hours per Week	6

Course Objectives:	Student learn about Micro processor

Course Content		
Unit	Description	Weightage* (%)
1.	Frequency response of IF amplifier (with AGC)	10%
2.	Frequency response of IF amplifier (without AGC)	10%
3.	Voltage control oscillator (FM)	10%
4.	Amplitude modulations	10%
5.	Amplitude de-modulation	10%
6.	Frequency modulations and de-modulations	10%
7.	Phase shift Oscillator Using Transistor	10%
8.	Heartley and Colpits Oscillator Using Transistor	10%
9.	RF amplifier	10%
10.	Others based on syllabus (US06CELE54)	10%

Other experiments based on syllabus

Teaching-Learning Methodology	Online and lab work

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage

1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Students learn the working of different sections of radio receiver and transmitter.

Suggested References:	
Sr. No.	References
1.	

On-line resources to be used if available as reference material
On-line Resources