ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(Unit of Alva's Education Foundation (R), Moodbidri)

Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi.

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Shobhavana Campus, MIJAR-574225, Moodbidri, D.K., Karnataka

Ph: 08258-262725; Mob:722262724,7026262725,mail:principalaiet08@gmail.com

Department of Artificial Intelligence and Machine Learning

Course Outcome for the Year 2023-24

CO No.	Course Outcomes	Blooms Level	Target Level
1.	Explain the basic concepts of probability, random variables, probability distribution.	L1,L2,L3	2
2.	Apply suitable probability distribution models for the given scenario.	L1,L2,L3	2
3.	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem.	L1,L2,L3	2
4.	Use statistical methodology and tools in the engineering problem-solving process.	L1,L2,L3	2
5.	Compute the confidence intervals for the mean of the population.	L1,L2,L3	2
6.	Apply the ANOVA test related to engineering problems.	L1,L2,L3	2

| CO Numbers	Course Outcomes	Blooms Level	Target Level
BCS302.1	**Apply** the K–Map techniques to simplify various Boolean expressions.	Apply (L3)	2
BCS302.2	**Design** different types of combinational and sequential circuits along with Verilog programs.	Understand (L2)	2
BCS302.3	**Describe** the fundamentals of machine instructions, addressing modes and Processor performance.	Understand (L2)	2
BCS302.4	**Explain** the approaches involved in achieving communication between processor and I/O devices.	Understand (L2)	2
BCS302.5	**Analyze** internal Organization of Memory and Impact of cache/Pipelining on Processor Performance.	Understand (L2)	2

CO Numbers	Course Outcome	Blooms Level	Target Level
BCS303.1	**Explain** the structure and functionality of operating system	Understand (L2)	2
BCS303.2	**Apply** appropriate CPU scheduling algorithms for the given problem.	Apply (L3)	2
BCS303.3	**Analyse** the various techniques for process synchronization and deadlock handling.	Analyze (L4)	2
BCS303.4	**Apply** the various techniques for memory management.	Apply (L3)	2
BCS303.5	**Explain** file and secondary storage management strategies..	Understand (L2)	2
BCS303.6	**Describe** the need for information protection mechanisms	Understand (L2)	2

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CO Numbers	Course Outcomes	Blooms Level	Target Level
BCS304.1	**Understand and Use** relevant data structures like arrays, strings and its basic operations.	Apply (L3)	2
BCS304.2	**Demonstrate and Implement** the operations of stack and queues with the examples.	Analyse(L4) Apply(L3)	2
BCS304.3	**Understand and Implement** linked lists by its operations	Apply(L3)	2
BCS304.4	**Illustrate** the operations of trees and **Implement** the algorithms for binary trees and binary search trees.	Apply(L3)	2
BCS304.5	**Understand and Implement** the applications of graphs, methods for hash table organization and file management.	Apply (L3)	2

CO Numbers	Course Outcomes	Blooms Level	Target Level
BCSL305.1	**Design, Develop** and **implement** programs on array and string operations and its applications.	Apply (L3) Create (L6)	2
BCSL305.2	**Design, Develop** and **implement** programs on Stack, Queue, Linked List operations and its applications.	Apply (L3) Create (L6)	2
BCSL305.3	**Design, Develop** and **implement** programs on Tree, Graph and Heap operations.	Apply (L3) Create (L6)	2
BCSL305.4	**Design, Develop** and **implement** programs on Files, Searching, Sorting and Hashing operations.	Apply (L3) Create (L6)	2

CO No	Course Outcomes – BCS306A	BTL	Target Level
1	Demonstrate proficiency in writing simple programs involving branching and looping structures.	Apply(L3)	2
2	Design a class involving data members and methods for the given scenario.	Apply(L3)	2
3	Apply the concepts of inheritance and interfaces in solving real world problems.	Apply(L3)	2
4	Use the concept of packages and exception handling in solving complex problem	Understand (L2)	2
5	Apply concepts of multithreading, autoboxing and enumerations in program development	Apply(L3)	2

CO Numbers	Course Outcomes	Blooms Level	Target Level
BCS358A.1	Use advanced functions and productivity tools to assist in developing worksheets.	Apply (L3) Create (L6)	2
BCS358A.2	Manipulate data lists using Outline and PivotTables.	Apply (L3) Create (L6)	2
BCS358A.3	Use Consolidation to summarise and report results from multiple worksheets.	Apply (L3) Create (L6)	2
BCS358A.4	Apply Macros and Autofilter to solve the given real world scenario.	Apply (L3) Create (L6)	2
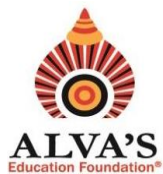
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CO Number	Course Outcomes- BSCK307	BTL	Target Level
1	Communicate and connect to the surrounding.	Understanding(L2)	2
2	Create a responsible connection with the society.	Creating(L6)	2
3	Involve in the community in general in which they work.	Understanding(L2)	2
4	Notice the needs and problems of the community and involve them in problem –solving.	Understanding(L2)	2
5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.	Apply(L3)	2
6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.	Apply(L3)	2

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SEMESTER - III

Course Code: **BCS303**	Course Name: **OPERATING SYSTEMS**

Course Teacher: **Mrs.Vidya and Mr.H. Harshavardhan**

Course Outcomes: After studying this course, students will be able to,

CO Numbers	Course Outcomes	Blooms Level	Target Level
BCS303.1	**Relate** the fundamentals of OS, operating system structures, operating system services.	L2(Understand)	2
BCS303.2	**Apply** appropriate process scheduling concepts, algorithms, and multithreaded programming techniques for the given problem.	L3(Apply)	2
BCS303.3	**Apply** the various techniques for process synchronization and deadlock handling.	L3(Apply)	2
BCS303.4	**Apply** the various techniques for memory management.	L3(Apply)	2
BCS303.5	**Explain** and **develop** a program on file,secondary storage management strategies, and information protection mechanisms.	L2(Understand) and L3(Apply)	2

CO-PO/PSO Mapping Matrix:

CO Numbers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BCS303.1	2	1							1			2	2	2	2
BCS303.2	2	2	2	2	1				2			2	2	2	2
BCS303.3	2	2	2	2	1				2			2	2	2	2
BCS303.4	2	2	2	2	1				2			2	2	2	2
BCS303.5	2	2	2	2	1				2			2	2	2	2
AVG.	2	1.8	2	2	1				1.8			2	2	2	2

CO	POs	Level	Justification
BCS303.1	PO1	2	The student should be able to moderately relate the fundamentals of Operating Systems and process
	PO2	1	The student have basic knowledge to identify the basic process management concepts and issues.
	PO9	1	Function effectively as an individual and as a member or leader to understand the concept of OS andprocessmanagement.
	PO12	2	It engages students in the process of lifelong learning.
	PSO1	2	This will develop the professional skills of a student.
	PSO2	2	Students will have the ability to solve real world problems on operating system

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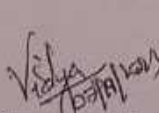|			
	PSO3	2	This will develop a moderate level skills needed to pursue carrier in IT Sector
BCS303.2	PO1	2	The student should be able to moderately apply the techniques of processing scheduling and multithreaded programming.
	PO2	2	The student will be able to analyze and formulate various scheduling techniques for the given problem.
	PO3	2	The students will be able to implement the scheduling algorithms and multithreaded programming.
	PO4	2	The students will be able to interpret and apply the information regarding process scheduling and multithreaded programming.
	PO5	1	Students will be able to implement process scheduling will contribute to modern tool usage in moderate level
	PO9	2	Implementation of Process scheduling concepts and various process scheduling algorithm will contribute to individual and team work in moderate level
	PO12	2	It engages students in the process of lifelong learning.
	PSO1	2	This will enhance the professional skills of a student.
	PSO2	2	This will moderately improve the ability of students to solve real world problems.
	PSO3	2	This will develop a moderate level skills needed to pursue carrier in IT Sector
BCS303.3	PO1	2	The student should be able to moderately apply the concepts of process synchronization and deadlock.
	PO2	2	The student should be able to analyse the process synchronization and deadlock techniques.
	PO3	2	The students will be able to implement the process synchronization and deadlock techniques.
	PO4	2	The students will be able to interpret and understand the deadlock situation.
	PO5	1	Students will be able to implement appropriate algorithms for process synchronization and deadlock technique using modern tools.
	PO9	2	Students will be able to apply appropriate algorithms for deadlock and memory management.
	PO12	2	It engages students in the process of life long learning.
	PSO1	2	This will improve the professional skills of a student.
	PSO2	2	This will moderately improve the ability of students to solve real world problems.
	PSO3	2	This will develop basic level skills needed to pursue carrier in IT Sector
BCS303.4	PO1	2	The student should be able to moderately understand the fundamentals of virtual memory.
	PO2	2	The student should be able to understand the various techniques of handling virtual memory.
	PO3	2	implementation of virtual memory and to understand the concept of virtual memory.
	PO4	2	The student will be learning about different memory

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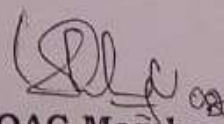
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			management strategies and the differences between them.
	PO5	1	The different virtual machines using VMWARE, DOS-BOX will be studied by the students.
	PO9	2	Knowledge of different types of virtual machines will contribute to individual and team work in moderate level
	PSO1	2	This will develop the professional skills of a student.
	PSO2	2	This will improve the ability of students to solve real world problems.
	PSO3	2	This will develop basic level skills needed to pursue carrier in IT Sector
BCS303.5	PO1	2	The student should be able to moderately understand the concepts file,secondary storage management strategies and information protection mechanisms
	PO2	2	Student will be able to analyse file,secondary storage management strategies and information protection mechanisms
	PO3	2	Student will be able to develop programs file system
	PO4	2	Student will be able to moderately interpret file, secondary storage management strategies and information protection mechanisms
	PO5	1	Student will be able to implement various disk scheduling algorithms and files using modern tool in moderate level
	PO9	2	Students will be able to apply appropriate algorithms for files and secondary storage structure and protection
	PO12	2	It engages students in the process of lifelong learning.
	PSO1	2	This will improve the professional skills of a student.
	PSO2	2	This will improve the ability of students to solve real world problems.
	PSO3	2	This will develop basic level skills needed to pursue carrier in IT Sector

Course Teacher 07/11/23
Signature with date

IQAC Member 08/11/2023
Signature with date

IQAC Chairman
Signature with date

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	PO4	1	Low level **Analysis and interpretation of data, and synthesis of the information** using Embedded System Software.
	PO9	1	Slightly discussing Function effectively as an **individual** able to design ARM Embedded Systems.
	PO11	1	Mapped as students will be able to think of some application circuit using ARM processor in low level.
	PO12	1	Mapped as students can able **to apply** the concepts of embedded software in low level.
	PSO1	2	Basic concepts of ARM Embedded Systems contribute to the enhancement of professional skills in understanding ARM systems in moderate level.
	PSO2	1	Understanding the fundamental concepts of registers, Current Program Status Register. will slightly enhance the problem solving skills.
	PSO3	1	Conducive in cultivating skills in RISC design for successful career development slightly.
3CS402.2	PO1	3	Applying strongly the **engineering fundamentals** to develop ARM programs using ARM instructions.
	PO2	2	**Identify** the real time problems and write programs for Embedded System Hardware in moderately.
	PO3	3	Strongly **design the programs** that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
	PO4	2	Moderate level **Analysis and interpretation of data, and synthesis of the information** using Embedded System Software.
	PO5	2	Moderately apply appropriate modern tools (Keil uvision4) to synthesize the embedded system problems.

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	PO9	2	Function effectively as **an individual**, and as a member or leader to study the computer system moderately its achieved by giving assignments.
	PO11	1	Mapped as students will be able to think of some **application programs** using arm keil software concepts in low level.
	PO12	2	Moderately mapped as students can able to analyze the concepts learnt of embedded systems using keil in continuing **professional development** and new developments.
	PSO1	2	Basic concepts of ARM Embedded Systems contribute to the enhancement of professional skills in ARM instructions in moderate level.
	PSO2	2	Understanding the ARM instruction set, Current Program Status Register. will moderately enhance the problem solving skills.
	PSO3	1	Conducive in cultivating skills in ARM programming for successful career development slightly.
BCS402.3	PO1	3	**Strong** knowledge on Basic C Data Types.
	PO2	3	Strongly Identify and analyse C Looping Structures to solve the real time tasks.
	PO3	3	Solve simple problems my using Register Allocation, Function Calls in high level.
	PO4	2	Moderate level **Analysis and interpretation of data, and synthesis of the information** using Embedded System Software.
	PO5	2	Moderately apply appropriate modern tools (Keil uvision4) to synthesize the embedded system problems using C programming skills.

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		2	Moderately discussing Function effectively as an **individual** able to design ARM Embedded Systems using C programming.
	PO9		
	PO11	1	Mapped as students will be able to think of some **application programs** using arm keil software in C programming concepts in low level.
	PO12	2	Mapped as students can able **to apply** the concepts of embedded software in low level for life long learning.
	PSO1	2	Basic concepts of C for ARM Embedded Systems contribute to the enhancement of professional skills in ARM instructions in moderate level.
	PSO2	2	Understanding the Embedded C concepts, C Register allocation. will moderately enhance the problem solving skills.
	PSO3	1	Conducive in cultivating skills in embedded C programming for successful career development slightly.
BCS402.4	PO1	2	**Moderate** knowledge on exceptions and interrupt handling in ARM processor.
	PO2	2	Moderately Identify and analyse ARM processor exceptions and modes, vector table to solve the real time tasks.
	PO3	2	Solve simple problems by understanding exception priorities, link register offsets, interrupts, assigning interrupts in moderate level.
	PO4	1	Low level **Analysis and interpretation of data, and synthesis of the information** using Exception handling, ARM processor exceptions and modes.
	PO9	2	Moderately discussing Function effectively as an **individual** able to design ARM Embedded Systems by handling exceptions and interrupts..

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	PO11	1	Mapped as students will be able to think of some **application programs** using exceptions and interrupts concepts in low level.
	PO12	2	Moderately mapped as students can able to analyze the concepts learnt of embedded systems using keil in continuing **professional development** and new developments.
	PSO1	2	Basic concepts of exceptions and interrupts and contribute to the enhancement of professional skills in ARM instructions in moderate level.
	PSO2	2	Understanding the Exception handling, ARM processor exceptions and modes, vector table, exception priorities, link register offsets, interrupts, assigning interrupts will moderately enhance the problem solving skills.
	PSO3	1	Conducive in cultivating skills in Exception handling and interrupts, assigning interrupts for successful career development slightly.
BCS402.5	PO1	2	**Moderate** knowledge on The Memory Hierarchy and Cache Memory in ARM processor.
	PO2	2	Moderately Identify and analyse ARM processor Caches and Memory Management Units to solve the real time tasks.
	PO3	1	Solve simple problems by Basic Operation of a Cache Controller in low level.
	PO4	1	Low level **Analysis and interpretation of data, and synthesis of the information** about cache Architecture: Basic Architecture of a Cache Memory, Basic Operation of a Cache Controller, The Relationship between Cache and Main Memory.
	PO5	1	
	PO9	1	Slightly discussing Function effectively as an **individual** able to understand Write Policy—Writeback or Writethrough, Cache Line Replacement Policies, Allocation Policy on a Cache Miss.
	PO11	1	Mapped as students will be able to think of some **application programs** using Cache memory and Cache policy in low level.
	PO12	2	Moderately mapped as students can able to analyze the

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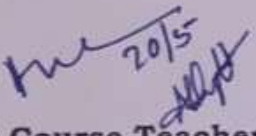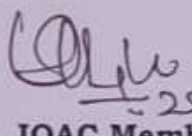
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		concepts of cache memory for **professional development** and new developments.
PSO1	2	Basic concepts of Cache and it's policies and contribute to the enhancement of professional skills in ARM instructions in moderate level.
PSO2	1	Understanding the Cache and cache policies will slightly enhance the problem solving skills.
PSO3	1	Conducive in cultivating skills in memory management slightly.

Course Teacher
Signature with date

IQAC Member
Signature with date

IQAC Chairman
Signature with date

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Department of Electronics and Communication Engineering

SEMESTER – IV	Academic Year: 2023- 2024 (Even Sem)
Course Code: BEC402	Course Name: Principles of Communication Systems
Course Teacher: Dr. Napolean A	
Course Outcomes: After studying this course, students will be able to,	

CO Numbers	Course Outcomes	Blooms Level	Target Level
BEC402.1	Identify and associate the random variables and random process in Communication system design	L1,L2 L3	2
BEC402.2	Identify the schemes for analog modulation and demodulation and compare their performance.	L1,L2,L3	2
BEC402.3	Understand the principles of analog communication systems and noise modelling	L1,L2,L3	2
BEC402.4	Design of PCM systems through the processes sampling, quantization and encoding	L1,L2,L3	2
BEC402.5	Describe the ideal condition, practical considerations of the signal representation for baseband transmission ofdigital signals	L1,L2,L3	2

CO-PO/PSO Mapping Matrix:

CO Numbers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEC402.1	3	3											3		
BEC402.2	3	3	3		2								3	3	2
BEC402.3	3	3	3		2								3	3	2
BEC402.4	3	3	3		2								3	3	2
BEC402.5	3	3	3										3	3	
SUM	15	15	12		6								15	12	6
AVERAGE	3	3	3		2								3	3	2

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Justification of Course Outcome and Program Outcome Mapping

CO	POs	Level	Justification
BEC402.1	PO1	3	Strongly mapped as the students will be able to apply the knowledge gained to understand the concepts of random variables and process in communication techniques.
	PO2	3	Strongly mapped as the students will be able to formulate the Gaussian distribution function.
	PSO1	3	Strongly mapped as the students will be able to understand and apply the needs of function of random variables in analog communications.
BEC402.2	PO1	3	Strongly mapped as the students will be able to apply the basic mathematical knowledge in the Amplitude modulation communication.
	PO2	3	Strongly mapped as students will be able to analyze the amplitude modulated and demodulated signals.
	PO3	3	Strongly mapped as students will be able to give a solution for the optimized modulator and detector circuit design in amplitude modulation technique.
	PO5	2	Mapped as the students will be able to use a modern simulation tool to predict the response of Amplitude modulation using MATLAB tool.
	PSO1	3	Strongly mapped as students will be able to understand the basic function of amplitude modulation technique and its broadcasting systems.
	PSO2	3	Strongly mapped as students will be able to design a Frequency division multiplexing circuits in communications applications.
	PSO3	2	Mapped as the students will be able to apply modern software tools to design and test a response of amplitude modulator for the different modulation index value.
BEC402.3	PO1	3	Strongly mapped as the students will be able to apply the basic mathematical relation between phase, angle and frequency knowledge in frequency modulation.
	PO2	3	Strongly mapped as students will be able to formulate the frequency modulator techniques in communication transmitters.
	PO3	3	Strongly mapped as students will be able to design a frequency conversion techniques in a communication receiver models for societal considerations.
	PO5	2	Mapped as the students will be able to design and test a RF Transmitter and receiver circuit by using a simulation tool.
	PSO1	3	Strongly mapped as students will be able to understand the basic principles of frequency modulation and side bands of transmitter system.

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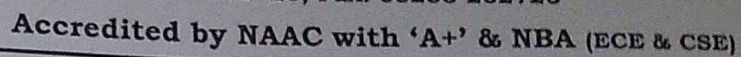| CO	POs	Level	Justification
	PSO2	3	Strongly mapped as the students will be able to design and implement analog communication systems using the super heterodyne receiver technique.
	PSO3	2	Strongly mapped as the students will be able to apply a modern hardware designing of various frequency mixing circuits.
	PO1	3	Strongly mapped as the students will be able to understand basic engineering fundamentals of impulse signals on sampling process.
	PO2	3	Strongly mapped as students will be able to formulate the basic steps in pulse amplitude modulation techniques.
	PO3	3	Strongly mapped as students will be able to design a successful communication model by converting analog to digital domain by the process of sampling and digital modulation techniques.
BEC402.4	PO5	2	Mapped as the students will be able to use a simulation tool to verify the sampling theorem and verify the pulse amplitude modulation process.
	PSO1	3	Strongly mapped as students will be able to understand the different types electronic circuits involved in the generation and detection PPM waves.
	PSO2	3	Strongly mapped as students will be able to design the pulse code modulation technique by using the suitable analog and digital electronics concepts.
	PSO3	2	Mapped as the students will be able to use a modern software tools to test the sampling and TDM process.
	PO1	3	Strongly mapped as the students will be able to derive the expression for the various types of noises associated in the receivers by applying the basic science and mathematical knowledge.
	PO2	3	Strongly mapped as the students will be able to formulate, the noise level in communication cascaded systems.
BEC402.5	PO3	3	Strongly mapped as students will be able to give a solution for the distortion transmission system to the public.
	PSO1	3	Strongly mapped as students will be able to understand the different types of noises and its effects in analog modulation.
	PSO2	3	Strongly mapped as the students will be able to design and implement communication systems by considering the effect of noises and signal to noise ratio.

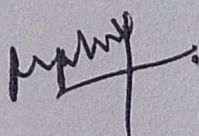Course Teacher
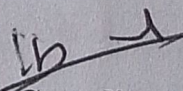
IQAC Coordinator
Mr. Sudhakara H M

HOD
Dr. Siddesh G K

Alva's Institute of Engineering & Technology

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Department of Electronics and Communication Engineering

SEMESTER – III	Academic Year: 2023- 2024
Course Code: BEC306A	Course Name: Electronic Devices
Course Teacher: Dr. Napolean A	

Course Outcomes: After studying this course, students will be able to,

CO Numbers	Course Outcomes	Blooms Level	Target Level
BEC306A.1	Understand the principles of semiconductor physics	L1,L2 L3	2
BEC306A.2	Understand the principles and characteristics of different types of semiconductor devices	L1,L2,L3	2
BEC306A.3	Utilize the mathematical models of semiconductor junctions for circuits and systems	L1,L2,L3	2
BEC306A.4	Identify the mathematical models of MOS transistors for circuits and systems.	L1,L2,L3	2
BEC306A.5	Understand the fabrication process of semiconductor devices	L1,L2,L3	2

CO-PO/PSO Mapping Matrix:

CO Numbers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEC306A.1	3	3											3		
BEC306A.2	3	3	3										3	3	
BEC306A.3	3	3	3										3	3	
BEC306A.4	3	3	3										3	3	
BEC306A.5	3	3	3										3		2
SUM	15	15	12										15	9	2
AVERAGE	3	3	3										3	3	2

Justification of Course Outcome and Program Outcome mapping

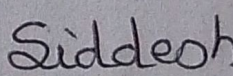| CO	POs	Level	Justification
BEC306A.1	PO1	3	Strongly mapped as the students will be able to apply the knowledge gained to understand the principle of semiconductor physics and its needs.
	PO2	3	Strongly mapped as the students will be able to formulate the physics behind the electronic semiconductor devices
	PSO1	3	Strongly mapped as the students will be able to understand and apply the needs of semiconductor physics in analog and digital electronics.
BEC306A.2	PO1	3	Strongly mapped as the students will be able to apply the basic semiconductor science knowledge in the electronics and communication engineering
	PO2	3	Strongly mapped as students will be able to analyze the different types of semiconductor diode structures and its working
	PO3	3	Strongly mapped as students will be able to give a solution for the energy saving light sources like LED for the consumer electronics applications
	PSO1	3	Strongly mapped as students will be able to understand the basic function of current flow functions in the various diodes
	PSO2	3	Strongly mapped as students will be able to design a rectifier and optoelectronic diodes for the electronics applications
BEC306A.3	PO1	3	Strongly mapped as the students will be able to study the basic BJT switching operation.
	PO2	3	Strongly mapped as students will be able to identify and formulate the transistor various operating regions
	PO3	3	Strongly mapped as students will be able to design the basic switching and amplification electronic device
	PSO1	3	Strongly mapped as students will be able to understand the amplification and switching effects of the BJT in analog and digital electronics.
	PSO2	3	Strongly mapped as the students will be able to design and implement a BJT using semiconductor technology

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CO	POs	Level	Justification
BEC306A.4	PO1	3	Strongly mapped as the students will be able to understand basic needs of JFET and MOSFET devices
	PO2	3	Strongly mapped as students will be able to formulate the basic mathematical equations which are related to voltage and current in the FET operation
	PO3	3	Strongly mapped as students will be able to design a successful amplifier design by using the JFET and MOSFET devices
	PSO1	3	Strongly mapped as students will be able to understand the different types of the FET and its working
	PSO2	3	Strongly mapped as the students will be able to design and implement a JFET and MOSFET using semiconductor technology
BEC306A.5	PO1	3	Strongly mapped as the students will be able to understand the steps involved in IC fabrication process.
	PO2	3	Strongly mapped students will able to identify the suitable fabrication process for the CMOS technology
	PO3	3	Strongly mapped as students will be able to fabricate a junction diodes by using semiconductor fabrication process
	PSO1	3	Strongly mapped as students will be able to understand and apply the semiconductor process steps in the IC fabrication
	PSO3	2	Mapped as students will be able to fabricate a diode structure by using a modern chemical vapour deposition and photolithography process.

Course Teacher	IQAC Coordinator	HOD
Dr. Napolean A	Mr. Sudhakara H M	Dr. Siddesh G K

PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME ASSESSMENT MAT

Alva's Institute of Engineering and Technology, Moodbidri
Department of Electronics and Communication Engineering

PO Attainment Chart

Academic Year: 2023-2024
Course Name: Electronic Devices
Course Code: BEC306A
Faculty Name: DR.NAPOLEAN

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEC306A.1	3	3	3										3	3	
BEC306A.2	3	3	3										3	3	
BEC306A.3	3	3	3										3	3	2
BEC306A.4	3	3	3												
BEC306A.5	3	3	3										3	3	2
BEC306A.6															
AVG	3	3	3										3	3	2

Key Words (POs)	Apply Knowledge	Solve Problems	Design/ Development of Solution	Conduct Investigations	Use Modern Tools	Environment and Sustainability	Professional Ethics	Individual and Team Work	Communicate Effectively	Project Management and Finance	Life-long Learning	PSO 1	PSO 2	PSO 3
BEC306A Direct (X)	1.4	1.4	1.38	0	0	0	0	0	0	0	0	1.4	1.34	1
BEC306A Indirect (Y)	3	3	3	0	0	0	0	0	0	0	0	3	3	2
Attainment Level	1.56	1.56	1.55	0	0	0	0	0	0	0	0	1.56	1.51	1.1

PO Attainment Calculation Direct

COs	CO Attainment Grade	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEC306A.1	1.50	1.5	1.5	0	0	0	0	0	0	0	0	0	0	1.5	1.5	0
BEC306A.2	1.50	1.5	1.5	1.5	0	0	0	0	0	0	0	0	0	1.5	1.5	0
BEC306A.3	1.50	1.5	1.5	1.5	0	0	0	0	0	0	0	0	0	1.5	1	1
BEC306A.4	1.00	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
BEC306A.5	1.50	1.5	1.5	1.5	0	0	0	0	0	0	0	0	0	0	4	1
BEC306A.6		0	0	0	0	0	0	0	0	0	0	0	0	7	9	2
Weighted Sum --->		7	7	5.5	0	0	0	0	0	0	0	0	0	15	44.44	50.00
Max Weight ---->		15	15	12	0	0	0	0	0	0	0	0	0	46.67		
PO Attainment in percentage :--->		46.67	46.67	45.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.67		
PO Attained Grade		1.4	1.4	1.38	0	0	0	0	0	0	0	0	0	1.4	1.34	1

PO Attainment Calculation Indirect

COs	CO Attainment Grade	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEC306A.1	3	3	3	0	0	0	0	0	0	0	0	0	0	3	3	0
BEC306A.2	3	3	3	3	0	0	0	0	0	0	0	0	0	3	3	0
BEC306A.3	3	3	3	3	0	0	0	0	0	0	0	0	0	3	3	3
BEC306A.4	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	2
BEC306A.5	3	0	0	0	0	0	0	0	0	0	0	0	0	15	9	9
BEC306A.6		0	0	0	0	0	0	0	0	0	0	0	0	15	9	9
Weighted Sum --->		15	15	12	0	0	0	0	0	0	0	0	0	100.00	100.00	100.00
Max Weight ---->		15	15	12	0	0	0	0	0	0	0	0	0			
PO Attainment in percentage :--->		100.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00		
PO Attained Grade		3	3	3	0	0	0	0	0	0	0	0	0	3	3	2

Faculty Name & Signature: [Dr. NAPOLEAN]

HOD Signature: Sidolesh

COURSE OUTCOMES (COs) ASSESSMENT MATRIX
Alva's Institute of Engineering and Technology, Moodbidri
Department of Electronics and Communication Engineering

Academic Year:	2023-2024
Course Name & Course Code:	Electronic Devices/BEC306A
Faculty Name:	DR NAPOLEAN

CO Attainment - Direct

COs	Formative Assessment	Summative Assessment	Total Attainment Direct	CO Attainment Indirect	CO Attainment
BEC306A.1	3	1	2.00	3	2.1
BEC306A.2	3	1	2.00	3	2.1
BEC306A.3	3	1	2.00	3	2.1
BEC306A.4	2	1	1.50	3	1.65
BEC306A.5	3	1	2.00	3	2.1
BEC306A.6					0
Average			1.90	3	1.68

Note:
Total Attainment Direct = (Weightage*Formative Assessment)+(Weightage*Summative Assessment) Weightage for Formative Assessment = 50%; Weightage for Summative Assessment = 50%

CO Attainment = (Weightage*Total Attainment Direct)+(Weightage*CO Attainment Indirect) Weightage for Total Attainment Direct = 90%, Weightage for CO Attainment Indirect = 10%
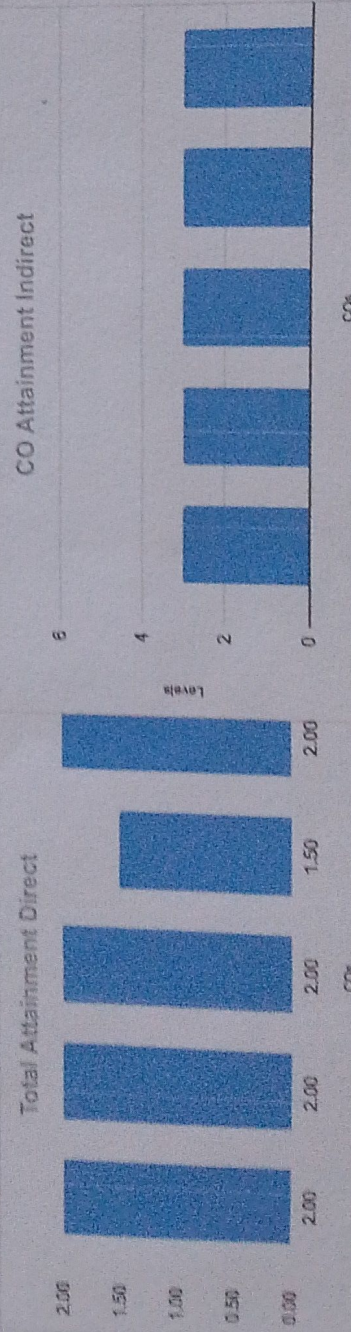
Attainment Level 1: 50% students rated more than or equal to 60% of maximum
Attainment Level 2: 60% students rated more than or equal to 60% of maximum
Attainment Level 3: 70% students rated more than or equal to 60% of maximum

Faculty Name & Signature:	[Dr. NAPOLEAN]	HOD Signature:	Siddesh

Total Attainment Direct

CO Attainment Indirect

CO Attainment Total

[Dr. NAPOLEAN]