Program Outcomes (PO) of Computer engineering with effect from Academic Year: 2019-2020

PO1- Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2- Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3- Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4-Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5- Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6- The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7- Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8- Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9- Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10- Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11- Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12- Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	1
Course title:	Maths-I	Course code	23000001
Course type:	Engineering Science	Course credit:	5

CO 1	Analyze and manipulate infinite sequences and series.
CO 2	Evaluate limits involving indeterminate forms.
CO 3	Understand and apply techniques for improper integrals.
CO 4	Analyze functions of several variables and solve optimization problems.
CO 5	Solve systems of linear equations using matrices and determinants.

CO -PO Mapping												
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	2	1	-	-	-	-	-	-	2
CO2	3	2	-	-	-	-	-	-	-	-	-	2
CO3	3	3	-	2	-	-	-	-	-	-	-	2
CO4	3	3	2	2	2	-	-	-	-	-	-	2
CO5	3	3	-	2	3	-	-	-	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	1
Course title:	Fundamentals of Computer Programming	Course code	23000004
Course type:	Engineering Science	Course credit:	3

CO 1	Apply fundamental principles of problem solving in software engineering.
CO 2	Apply basic programming principles using C language.
CO 3	Apply basic C program structure in software development
CO 4	Prepare graduates for professional careers in roles including, but not limited to, the fol1ing: computer programmer, software engineer, software systems designer, software applications developer, technical software project lead, computer systems analyst, computer systems programmer, software applications tester and maintainer.
CO 5	To prepare graduates with the knowledge and skills to do advanced studies and research in computer science and related engineering and scientific disciplines

CO -PO Mapping												
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	–	–	–	2	2	2	3
CO2	3	3	3	2	3	–	–	–	–	2	2	3
CO3	3	2	3	2	3	–	–	–	–	2	2	3
CO4	3	3	3	2	3	1	–	1	3	3	3	3
CO5	3	2	2	3	2	–	–	–	–	2	2	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	1
Course title:	ELEMENTS OF ELECTRICAL ENGINEERING	Course code	23000012
Course type:	Engineering Science	Course credit:	5

CO 1	Apply fundamental principles of problem solving in software engineering.
CO 2	Apply basic programming principles using C language.
CO 3	Apply basic C program structure in software development
CO 4	Prepare graduates for professional careers in roles including, but not limited to, the fol1ing: computer programmer, software engineer, software systems designer, software applications developer, technical software project lead, computer systems analyst, computer systems programmer, software applications tester and maintainer.
CO 5	To prepare graduates with the knowledge and skills to do advanced studies and research in computer science and related engineering and scientific disciplines

CO -PO Mapping												
PO⁄CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	–	–	–	2	2	2	3
CO2	3	3	3	2	3	–	–	–	–	2	2	3
CO3	3	2	3	2	3	–	–	–	–	2	2	3
CO4	3	3	3	2	3	1	–	1	3	3	3	3
CO5	3	2	2	3	2	–	–	–	–	2	2	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Technology	Branch:	CE
Year:	First Year	Semester:	1
Course title:	Elements of Mechanical Engineering	Course code	23000003
Course type:	Engineering Science	Course credit:	5

CO1	Describe the various sources of energy and basic terminology of Mechanical engineering.
CO2	Make calculations for commonly used working fluids i.e. ideal gases and steam.
CO3	Analyze various heat engine cycles and understand construction and working of IC engines.
CO4	Discuss working and applications of steam boilers and various energy conversion systems.
CO5	Discuss various power transmission elements and properties of various engineering materials with their applications.

CO -PO Mapping											
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	2	2	1	-	-	-	2
CO2	2	1	-	-	-	1	-	-	-	-	-	1
CO3	3	2	3	-	-	1	1	1	-	-	-	2
CO4	3	2	3	-	-	1	1	1	-	-	-	2
CO5	3	2	2	-	-	1	1	1	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	1ˢᵗYear	Semester:	1
Course title:	Orientation Program in Start-up and Entrepreneurship	Course code	12300001
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Apply the basic principles of entrepreneurship
CO 2	Distinguish the concepts of the entrepreneurship ecosystem, entrepreneurship education, and various entrepreneurial opportunities
CO 3	Understanding various individual attributes of entrepreneurial personality traits, entrepreneurial characteristics, behavioral attributes and importance of creativity and innovation.
CO 4	Develop an understanding of best techniques for idea generation and opportunities exploration.

CO -PO Mapping												
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	-	-	-	-	-	-	-	2
CO2	2	3	1	3	-	-	-	-	-	-	-	1
CO3	1	3	2	3	-	-	-	-	-	-	-	2
CO4	2	2	2	2	-	-	-	-	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	1
Course title:	Electrical and Electronics Workshop	Course code	23000002
Course type:	Engineering Science	Course credit:	3

CO-1	Measure different electrical quantities.
CO-2	Understand the requirement and operation of safety devices
CO-3	Select the appropriate tools and components required for specific operation
CO-4	Wire and trouble shoot of house-hold appliances.

CO -PO Mapping											
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	-	-	-	-	-	-	-	2
CO2	2	3	1	3	-	-	-	-	-	-	-	1
CO3	1	3	2	3	-	-	-	-	-	-	-	2
CO4	2	2	2	2	-	-	-	-	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1st Year	Semester:	2
Course title:	Engineering Physics	Course code	23000005
Course type:	Engineering Science	Course credit:	5

CO 1	Understand the basic concepts and classification of sound.
CO 2	Analyze applications of superconductors.
CO 3	Understand the fundamentals of laser radiation.
CO 4	Evaluate the applications of optical fibers.
CO 5	Apply dielectric materials in capacitors and transformers.

CO -PO Mapping												
PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	–	–	1	–	–	–	–	–	–	2
CO2	3	3	2	2	2	–	2	–	–	–	–	2
CO3	3	2	1	2	3	–	2	–	–	–	–	2
CO4	3	3	2	2	3	–	2	–	–	–	–	2
CO5	3	2	2	2	3	–	2	–	–	–	–	2

Note: High = 3, Medium = 2 and Low = 1

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SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1st Year	Semester:	2
Course title:	Communication Skills	Course code:	23000008
Course type:	Engineering Science	Course credit:	3

CO-1	To improve students' communicative and linguistic approach in English.
CO-2	To provide an icebreaking technique using LSRW skills and soft skills
CO-3	To learn techniques to improve overall communication abilities and effective use of writing in the field of advertising and public relations.
CO-4	Improve communication skills through practicing debate, discussion and appearing in interview.
CO-5	Use of ethical consideration in order to develop good etiquettes both in online and offline communication.

CO -PO Mapping												
PO \ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	2	3	-	2
CO2	-	-	-	-	-	-	-	-	2	3	-	2
CO3	-	-	-	-	-	-	-	2	2	3	-	2
CO4	-	-	-	-	-	-	-	-	3	3	-	2
CO5	-	-	-	-	-	2	-	3	2	2	-	2

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	2
Course title:	Basic Electronics	Course code	23000009
Course type:	Basic Science	Course credit:	5

CO 1	To study basics of semiconductor & devices and their applications in different areas.
CO 2	Demonstrate the operating principle and output characteristics of pn junction diodes, zener diode, Varactor diode, BJT, rectifiers and different diode circuits
CO 3	Compute and characterization of different biasing techniques to operate transistor ,FET , MOSFET and operational amplifier in different modes
CO 4	To implementation of basic digital gates using diode and basic family of logic families

CO -PO Mapping												
PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	2	1	-	-	-	1	-	2
CO2	3	3	3	1	2	3	-	-	-	1	-	-
CO3	3	3	3	2	3	2	-	-	-	1	-	-
CO4	3	2	3	3	2	1	-	-	3	1	-	-

Note: High = 3, Medium = 2 and Low = 1

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SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	2
Course title:	Maths-II	Course code	23000010
Course type:	Engineering Science	Course credit:	5

CO 1	Understand vectors in $R^n \times R^n$ and operations involving linear combinations.
CO 2	Identify subspaces and determine basis and dimension and Perform coordinate transformations and understand the change of basis.
CO 3	Understand linear transformations and their properties and represent linear transformations with matrices and explore the concept of similarity.
CO 4	Apply inner product spaces to least squares approximation and diagonalization of symmetric matrices and Explore applications of quadratic forms and optimization.
CO 5	Apply double and triple integrals over different regions and Utilize Fubini's theorem and change of variables in multiple integrals.
CO 6	Apply integration techniques to calculate volumes of various solids.

CO -PO Mapping											
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	2
CO2	3	2	1	-	-	-	-	-	-	-	-	2
CO3	3	2	1	-	1	-	-	-	-	-	-	2
CO4	3	2	-	2	-	-	-	-	-	-	-	2
CO5	3	2	-	2	3	-	-	-	-	-	-	2
CO6	3	2	-	-	3	-	-	-	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Technology	Branch:	CE
Year:	First Year	Semester:	1
Course title:	Engineering Graphics	Course code	23000011
Course type:	Engineering Science	Course credit:	4

CO1	Describe the fundamental methods of engineering drawing, sketching and drafting.
CO2	Understanding the object through orthographic projections.
CO3	Construct basic and intermediate geometry and application of engineering curves.
CO4	Enhance visualization skills for developing new products.
CO5	Develop new products through technical communication skill in the form of communicative drawings.
CO6	Develop the theory of orthographic projection and views.

CO -PO Mapping												
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	-	2	-	1	2	2	-	1
CO2	2	3	3	3	-	2	-	2	2	2	-	1
CO3	2	3	3	2	3	-	-	-	-	3	-	2
CO4	2	2	3	1	-	-	-	-	-	3	-	2
CO5	3	2	2	2	-	-	-	-	2	3	2	2
CO6	2	2	3	-	3	-	-	-	-	-	-	2

Note: High = 3, Medium = 2 and Low = 1

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SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	2
Course title:	Basic Program in Entrepreneurship	Course code	12300002
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Develop an understanding of best techniques for idea generation, opportunities exploration, and market research.
CO 2	Check technical, market, financial and other types of Feasibility of their business idea.
CO 3	Develop business model to describe the rationale of how an organization creates, delivers, and captures value
CO 4	Conduct the customer's survey to know the need of their business idea.

CO -PO Mapping												
PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	-	2	-	1	2	2	-	1
CO2	2	3	3	3	-	2	-	2	2	2	-	1
CO3	2	3	3	2	3	-	-	-	-	3	-	2
CO4	2	2	3	1	-	-	-	-	-	3	-	2

Note: High = 3, Medium = 2 and Low = 1

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SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Semester: 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	1st Year	Semester:	1
Course title:	Fundamentals of Computer Programming	Course code	23000004
Course type:	Engineering Science	Course credit:	3

CO 1	Apply fundamental principles of problem solving in software engineering.
CO 2	Apply basic programming principles using C language.
CO 3	Apply basic C program structure in software development
CO 4	Prepare graduates for professional careers in roles including, but not limited to, the falling: computer programmer, software engineer, software systems designer, software applications developer, technical software project lead, computer systems analyst, computer systems programmer, software applications tester and maintainer.
CO 5	To prepare graduates with the knowledge and skills to do advanced studies and research in computer science and related engineering and scientific disciplines

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	3	3	2	3	–	–	–	2	2	2	3
CO-2	3	3	3	2	3	–	–	–	–	2	2	3
CO-3	3	2	3	2	3	–	–	–	–	2	2	3
CO-4	3	3	3	2	3	1	–	1	3	3	3	3
CO-5	3	2	2	3	2	–	–	–	–	2	2	3

Note: High = 3, Medium = 2 and Low = 1

Semester: 3

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	3
Course title:	Data Structure And Algorithm	Course code	23040302
Course type:	Engineering Science	Course credit:	4

CO 1	Learn the basic types for data structure, implementation and application.
CO 2	Know the strength and weakness of different data structures.
CO 3	Use the appropriate data structure in context of solution of given problem.
CO 4	Develop programming skills which require solving given problem.
CO 5	Learn the data structure, implementation and application.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO - 11	PO- 12
CO- 1	3	2	2	1	3	–	–	–	–	1	–	3
CO- 2	3	2	2	2	2	–	–	–	–	1	–	3
CO- 3	3	3	3	2	3	–	–	–	–	1	–	3
CO- 4	3	3	3	2	3	–	–	–	1	2	1	3
CO- 5	3	2	2	1	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	2ndYear	Semester:	3
Course title:	Database Management System	Course code	23040301
Course type:	Engineering Science	Course credit:	5

CO 1	Understand the basic concepts of database management systems.
CO 2	Apply SQL to find solutions to a broad range of queries.
CO 3	Apply normalization techniques to improve database design.
CO 4	Analyze a given database application scenario to use ER model.
CO 5	conceptual design of the database.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO-6	PO-7	PO-8	PO-9	PO- 10	PO-11	PO-12
CO- 1	3	2	2	1	3	–	–	–	–	1	–	3
CO- 2	3	2	3	2	3	–	–	–	–	1	–	3
CO- 3	3	3	3	2	3	–	–	–	–	1	–	3
CO- 4	3	3	3	2	3	–	–	–	–	2	–	3
CO- 5	3	3	3	2	3	–	–	–	–	2	–	3

Note: High = 3, Medium = 2 and Low = 1

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Program:	Bachelor of Engineering	Branch:	CE
Year:	2ndYear	Semester:	3
Course title:	Computer Network	Course code	23040303
Course type:	Engineering Science	Course credit:	4

CO 1	Understand the fundamental concepts of computer networks, including network edge, core, delay, loss, throughput, and protocol layers.
CO 2	Analyze error detection and correction techniques, multiple access protocols, and Ethernet switching in the link layer and local area networks.
CO 3	Demonstrate knowledge of network layer functions, including IP addressing, routing algorithms, and virtual/datagram networks.
CO 4	Explain transport layer services such as UDP, TCP, reliable data transfer, congestion control, and multiplexing/de multiplexing.
CO 5	Evaluate the role of different network protocols and routing techniques in improving network performance and reliability.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	2	3	–	–	–	–	1	–	3
CO-2	3	3	2	2	3	–	–	–	–	1	–	3
CO-3	3	3	3	2	3	–	–	–	–	1	–	3
CO-4	3	3	3	2	3	–	–	–	–	1	–	3
CO-5	3	3	2	2	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

Semester-4

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	4
Course title:	Operating System	Course code	23040401
Course type:	Engineering Science	Course Credit	4

CO- 1	Understand the fundamental concepts of Operating Systems, including their evolution, types, structures, and system calls.
CO- 2	Analyze process management techniques, including process scheduling, multithreading, and inter-process communication mechanisms.
CO- 3	Demonstrate knowledge of deadlock handling strategies, including prevention, avoidance, detection, and recovery techniques.
CO- 4	Explain memory management concepts such as paging, segmentation, virtual memory, and page replacement policies.
CO- 5	Evaluate various I/O management strategies, file systems, disk scheduling algorithms, and storage structures.
CO-6	Explore Unix/Linux operating systems, including kernel functionalities, system administration, and shell programming.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	–	–	–	–	1	–	3
CO-2	3	3	3	2	3	–	–	–	–	1	–	3
CO-3	3	3	3	2	3	–	–	–	–	1	–	3
CO-4	3	2	3	2	3	–	–	–	–	1	–	3
CO-5	3	2	2	2	3	–	–	–	–	1	–	3
CO-6	3	2	3	1	3	–	–	–	–	2	1	3

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	4
Course title:	Object Oriented Programming with C++	Course code	23040402
Course type:	Engineering Science	Course Credit	5

CO 1	Understand the fundamental concepts of Object-Oriented Programming (OOP), its principles, benefits, and applications.
CO 2	Apply basic C++ programming concepts, including program structure, control structures, data types, and operators.
CO 3	Implement functions in C++, including inline functions, function overloading, default arguments, and virtual functions.
CO 4	Develop object-oriented solutions using classes, objects, constructors, destructors, and operator overloading.
CO 5	Demonstrate inheritance concepts, including different types of inheritance and method overriding.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	–	–	–	–	1	–	3
CO-2	3	2	3	1	3	–	–	–	–	1	–	3
CO-3	3	2	3	2	3	–	–	–	–	1	–	3
CO-4	3	2	3	2	3	–	–	–	–	1	–	3
CO-5	3	2	3	2	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	4
Course title:	System Software	Course code	**23040403**
Course type:	Engineering Science	Course Credit	4

CO 1	To understand the relationship between system software and machine.
CO 2	To understand architecture..
CO 3	To understand the processing of an HLL program for execution on a computer.
CO 4	To understand the process of scanning and parsing.
CO 5	To know the design and implementation of assemblers, macro processor, linker.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	–	–	–	–	1	–	3
CO-2	3	2	2	1	2	–	–	–	–	1	–	3
CO-3	3	2	3	2	3	–	–	–	–	1	–	3
CO-4	3	3	3	2	3	–	–	–	–	1	–	3
CO-5	3	3	3	2	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARNIM INSTITUTE OF TECHNOLOGY

Swarrnim Institute of Technology
Swarrnim Startup & Innovation University
University Campus, Bhoyan Rathod, Near ONGC WSS, Opp. IFCCO, Adalaj Kalol Highway,
Gandhinagar, Gujarat, INDIA 382420 Phone: 095123 43333

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	4
Course title:	Computer Organization and Microprocessor	Course code	23070401
Course type:	Engineering Science	Course Credit	4

CO 1	To know the background of internal communication of computer.
CO 2	To have better idea on how to write assemble language programs.
CO 3	To be clear with memory management techniques.
CO 4	To better with IO devices communication with processor.
CO 5	To notice how to perform computer arithmetic operations.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	-	-	-	2	1	1	2
CO-2	3	3	2	1	2	-	-	-	2	1	1	2
CO-3	3	3	3	1	3	-	-	-	2	1	1	2
CO-4	3	2	2	1	2	-	-	-	2	1	1	2
CO-5	3	2	3	1	3	-	-	-	2	1	1	2

Note: High = 3, Medium = 2 and Low = 1

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SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Semester: 5

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Object Oriented Programming with JAVA	Course code	23040501
Course type:	Engineering Science	Course Credit	6

CO 1	Able to solve real world problems using OOP techniques.
CO 2	Able to understand the use of abstract classes.
CO 3	Able to solve problems using java collection framework and I/o classes.
CO 4	Able to develop multithreaded applications with synchronization.
CO 5	Able to develop applets for web applications.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	3	3	1	3	-	-	-	2	2	1	2
CO-2	3	2	3	1	3	-	-	-	2	2	1	2
CO-3	3	3	3	1	3	2	-	-	2	2	1	2
CO-4	3	3	3	3	3	3	-	-	2	2	1	2
CO-5	3	2	3	1	3	-	2	2	2	2	1	2

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Information Network & Cyber Security	Course code	23040503
Course type:	Engineering Science	Course Credit	4

CO 1	Understand the fundamental concepts of cryptography, including symmetric and asymmetric key models, and their applications in securing data.
CO 2	Analyze different cryptographic techniques such as substitution, transposition, stream ciphers, and block ciphers, including their structures and operational principles.
CO 3	Evaluate the security features and transformation functions of encryption standards like DES and AES, and understand the Cipher Block Chaining (CBC) mode of operation.
CO 4	Apply public key cryptographic techniques, including RSA and Daffier-Hellman key exchange algorithms, to secure communication channels.
CO 5	Understand and implement secure hashing mechanisms, digital signatures, and key management strategies to maintain data integrity and authenticity.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	–	2	–	–	1	–	1	–	3
CO-2	3	3	2	2	2	–	–	–	–	1	–	3
CO-3	3	3	2	2	2	–	–	–	–	–	–	3
CO-4	3	3	2	–	2	–	–	1	–	–	–	3
CO-5	3	2	2	–	3	–	–	2	–	–	–	3

Note: High = 3, Medium = 2 and Low = 1

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Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Web Technology	Course code	23040504
Course type:	Engineering Science	Course Credit	4

CO 1	Understand the foundational concepts of the Internet, the World Wide Web, HTTP protocol, web browsers and servers, and Web 2.0 features, along with principles of effective web design and site navigation.
CO 2	Apply basic HTML elements such as text formatting, hyperlinks, tables, images, and meta tags to create structured and interactive web pages.
CO 3	Develop websites using advanced HTML elements including character entities, frames, frame sets, and understand browser architecture and website structure.
CO 4	Create responsive and semantic web forms using HTML and HTML5, incorporating various input types and new HTML5 elements.
CO 5	Design and style web pages using CSS2 and CSS3, applying layout properties, background customization, text and font styling, box models, and positioning.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	2	2	2	1	2	1	–	–	–	2	2	3
CO-2	3	2	2	–	3	–	–	–	–	2	–	2
CO-3	3	2	2	–	3	–	–	–	–	2	–	3
CO-4	3	2	3	–	3	–	–	–	–	2	–	3
CO-5	3	2	3	–	3	–	–	–	–	2	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Theory of Computation	Course code	23040502
Course type:	Engineering Science	Course Credit	4

CO 1	Understand fundamental mathematical concepts including sets, functions, logic, proofs, relations, and recursive definitions essential for formal language theory.
CO 2	Apply the concepts of regular languages and finite automata, including DFA, NFA, ε-NFA, their inter conversion, minimization, and use of regular expressions.
CO 3	Analyze and construct context-free grammars (CFG), evaluate ambiguity, and perform simplification and transformation using normal forms like CNF and GNF.
CO 4	Design and simulate Pushdown Automata (PDA) for context-free languages and understand their correspondence with CFGs.
CO 5	Understand and analyze Turing Machines and its variants, including Universal TM and Non-deterministic TM, and explore computational models like Two-Stack PDA.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	1	–	–	–	–	–	–	–	–	3
CO-2	3	3	2	2	2	–	–	–	–	–	–	3
CO-3	3	3	2	2	–	–	–	–	–	1	–	3
CO-4	3	3	3	2	–	–	–	–	–	–	–	3
CO-5	3	3	2	2	–	–	–	–	–	–	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARNIM INSTITUTE OF
TECHNOLOGY

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Image Processing	Course code	23040507
Course type:	Engineering Science	Course Credit	4

CO 1	Discuss the processes involved in design Engineering
CO 2	Analyze interesting interaction of various segments of humanities, disciplines and engineering in the progress of a design
CO 3	Analyze use of AEIOU framework, logbook, mind mapping for the observation.
CO 4	Identify the flow of the system and design the system accordingly.
CO 5	Define the problem domain by identifying the various product functions and features and compile the product development canvas.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO-10	PO-11	PO-12
CO-1	3	2	2	2	2	1	–	–	2	2	2	3
CO-2	2	3	2	1	–	2	2	–	2	2	–	3
CO-3	3	3	2	2	2	–	–	–	2	2	–	3
CO-4	3	3	3	2	2	–	–	–	2	1	–	3
CO-5	3	3	3	2	2	1	–	–	2	2	2	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Semester: 6

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Wireless Network	Course code	23040601
Course type:	Engineering Science	Course Credit	4

CO-1	Understand the architecture and characteristics of 3G/4G and WiMAX wireless networks.
CO- 2	Design and implement wireless network environments using appropriate protocols and standards.
CO- 3	Evaluate the role of wireless communication protocols in mobile computing environments.
CO- 4	Develop and deploy applications for smart phones and mobile devices using modern wireless technologies.
CO- 5	Assess the strategies and challenges in implementing smart network-based applications in real-world scenarios.

CO	Co –PO Mapping											
	PO-1	PO- 2	PO- 3	PO- 4	PO-5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO-11	PO-12
CO-1	3	2	2	2	3	2	2	–	–	1	–	3
CO-2	3	3	3	2	3	2	2	–	2	2	2	3
CO-3	3	3	2	2	3	2	2	–	–	1	–	3
CO-4	3	3	3	2	3	1	2	–	2	2	2	3
CO-5	3	3	2	2	3	3	2	–	2	2	2	3

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Compiler Design	Course code	23040602
Course type:	Engineering Science	Course Credit	4

CO 1	Realize basics of compiler design and apply for real time applications.
CO 2	To introduce different translation languages
CO 3	To understand the importance of code optimization
CO 4	To know about compiler generation tools and techniques
CO 5	To learn working of compiler and non compiler applications

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	2	3	–	–	–	–	1	–	3
CO-2	3	2	2	1	3	–	–	–	–	1	–	3
CO-3	3	3	2	2	3	–	–	–	–	1	–	3
CO-4	3	2	3	2	3	–	–	–	–	1	–	3
CO-5	3	2	2	2	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Cloud Computing	Course code	23040603
Course type:	Engineering Science	Course Credit	4

CO 1	Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
CO 2	Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost.
CO 3	Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.
CO 4	Analyze various cloud programming models and apply them to solve problems on the cloud.
CO 5	Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	2	2	–	–	2	–	3
CO-2	3	3	2	2	3	2	2	–	–	2	2	3
CO-3	3	3	2	2	3	–	–	–	–	1	–	3
CO-4	3	3	3	2	3	–	–	–	–	2	–	3
CO-5	3	2	2	1	2	2	2	–	–	2	–	3

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Data Mining and Warehousing	Course code	23040604
Course type:	Engineering Science	Course Credit	4

CO 1	Be familiar with mathematical foundations of data mining tools.
CO 2	Understand and implement classical models and algorithms in data warehouses and
CO 3	data mining discovered by association rule
CO 4	Characterize the kinds of patterns that can be discovered by association rule
CO 5	Data mining, classification and clustering.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	–	–	–	–	1	–	3
CO-2	3	3	3	2	3	–	–	–	–	1	–	3
CO-3	3	2	2	2	2	–	–	–	–	1	–	3
CO-4	3	2	2	2	2	–	–	–	–	1	–	3
CO-5	3	3	3	2	3	–	–	–	–	1	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Advance JAVA	Course code	23040606
Course type:	Engineering Science	Course Credit	5

CO 1	Able to solve real world problems using OOP techniques.
CO 2	Able to understand the use of abstract classes.
CO 3	Able to solve problems using java collection framework and I/o classes.
CO 4	Able to develop multithreaded applications with synchronization.
CO 5	Able to develop applets for web applications.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	3	2	3	–	–	–	2	2	2	3
CO-2	3	2	2	1	3	–	–	–	–	1	–	3
CO-3	3	2	3	2	3	–	–	–	1	1	–	3
CO-4	3	2	3	2	3	–	–	–	1	2	–	3
CO-5	3	2	2	2	3	–	–	–	1	2	2	3

Note: High = 3, Medium = 2 and Low = 1

Semester: 7

Program:	Bachelor of Engineering	Branch:	CE
Year:	4th Year	Semester:	7
Course title:	Artificial Intelligence	Course code	23040701
Course type:	Engineering Science	Course Credit	6

CO 1	Understand the foundational concepts and applications of Artificial Intelligence.
CO 2	Apply and compare uninformed and informed search techniques for problem-solving.
CO 3	Apply logical reasoning and representation techniques for knowledge modeling.
CO 4	Analyze adversarial search strategies and apply minimax and alpha-beta pruning.
CO 5	Use Prolog for AI programming and problem-solving.

CO	Co –PO Mapping
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	2	1	2	2	1	1	1	2	1	3
CO-2	3	3	3	2	3	-	-	-	2	2	1	3
CO-3	3	3	3	2	2	-	-	-	2	2	1	3
CO-4	3	3	3	2	2	-	-	-	2	2	1	3
CO-5	3	2	3	2	3	-	-	-	2	2	1	3

Note: High = 3, Medium = 2 and Low = 1

Program:	Bachelor of Engineering	Branch:	CE
Year:	4th Year	Semester:	7
Course title:	Python Programming	Course code	23040702
Course type:	Engineering Science	Course Credit	5

CO 1	Develop proficiency in creating applications using Python Programming Language.
CO 2	Apply various Python data structures to solve computational problems.
CO 3	Perform testing and debugging of Python programs effectively.
CO 4	Create and customize visualizations using PyLab for data representation.
CO 5	Utilize regular expressions for text filtering in Python applications.

CO	Co –PO Mapping											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	3	2	3	1	3	–	–	–	2	2	2	3
CO-2	3	3	3	2	3	–	–	–	1	2	–	3
CO-3	2	3	2	2	3	–	–	–	–	2	–	3
CO-4	2	2	2	1	3	–	–	–	–	2	–	3
CO-5	3	2	2	1	3	–	–	–	–	2	–	3

Note: High = 3, Medium = 2 and Low = 1

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Semester: 8

Program:	Bachelor of Engineering	Branch:	CE
Year:	4th Year	Semester:	8
Course title:	Programming with XML & JSON	Course code	23040802
Course type:	Engineering Science	Course Credit	6

CO 1	Students are able to develop a dynamic webpage by the use of java script and DHTML.
CO 2	Students will be able to write a well formed / valid XML document. ·
CO 3	Students will be able to connect a java program to a DBMS and perform insert, update.
CO 4	Delete operations on DBMS table.
CO 5	Students will be able to write a server side java application called Servlet to catch form data

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO - 12
CO-1	2	2	3	-	3	-	-	-	2	3	-	-
CO-2	2	2	3	2	3	-	-	-	-	2	-	-
CO-3	3	2	3	2	3	-	-	-	-	2	2	-
CO-4	3	2	3	2	3	-	-	-	-	2	2	-
CO-5	2	2	3	2	3	-	-	-	3	3	2	-

Note: High = 3, Medium = 2 and Low = 1

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Program:	Bachelor of Engineering	Branch:	CE
Year:	1stYear	Semester:	1
Course title:	Orientation Program in Start-up and Entrepreneurship	Course code	12300001
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Apply the basic principles of entrepreneurship
CO 2	Distinguish the concepts of the entrepreneurship ecosystem, entrepreneurship education, and various entrepreneurial opportunities
CO 3	Understanding various individual attributes of entrepreneurial personality traits, entrepreneurial characteristics, behavioral attributes and importance of creativity and innovation.
CO 4	Develop an understanding of best techniques for idea generation and opportunities exploration.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO- 1	3	2	3	2	-	-	-	-	-	-	-	-
CO- 2	2	3	1	3	-	-	-	-	-	-	-	-
CO- 3	1	3	2	3	-	-	-	-	-	-	-	-
CO- 4	2	2	2	2	-	-	-	-	-	-	-	-

Program:	Bachelor of Engineering	Branch:	CE
Year:	1st Year	Semester:	2
Course title:	Basic Program in Entrepreneurship	Course code	12300002
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Develop an understanding of best techniques for idea generation, opportunities exploration, and market research.
CO 2	Check technical, market, financial and other types of Feasibility of their business idea.
CO 3	Develop business model to describe the rationale of how an organization creates, delivers, and captures value
CO 4	Conduct the customer's survey to know the need of their business idea.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO- 1	3	3	3	3	-	-	-	-	-	-	-	-
CO- 2	2	2	1	2	-	-	-	-	-	-	-	-
CO- 3	1	2	2	1	-	-	-	-	-	-	-	-
CO- 4	2	1	2	2	-	-	-	-	-	-	-	-

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	3
Course title:	Foundation Program in Entrepreneurship	Course code	12300003
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Apply the basic principles of entrepreneurial finance.
CO 2	Understand the importance of industrial collaborations.
CO 3	Acquire funds from different sources for seed funding.
CO 4	Prepare guideline for earning maximum profits with minimum cost.
CO 5	Explore Entrepreneurial ecosystem support for start-ups.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO-1	3	3	2	3	2	-	-	-	-	-	-	-
CO-2	1	2	3	2	3	-	-	-	-	-	-	-
CO-3	2	2	2	2	2	-	-	-	-	-	-	-
CO-4	2	2	1	2	1	-	-	-	-	-	-	-
CO-5	2	3	3	3	3	-	-	-	-	-	-	-

Program:	Bachelor of Engineering	Branch:	CE
Year:	2nd Year	Semester:	4
Course title:	Intermediate Program in Entrepreneurship	Course code	12300004
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Design marketing and sales strategy for a venture
CO 2	Understand new product design and development procedure.
CO 3	Register any one form of business.
CO 4	Make pitch deck to present business idea to different stakeholders.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO- 1	3	2	3	2	-	-	-	-	-	-	-	-
CO- 2	2	2	1	1	-	-	-	-	-	-	-	-
CO- 3	2	1	3	3	-	-	-	-	-	-	-	-
CO- 4	3	2	3	2	-	-	-	-	-	-	-	-

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	5
Course title:	Intellectual Property Rights	Course code	12300005
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	The students once they complete their academic projects, shall get an adequate knowledge on patent and copyright for their innovative research works.
CO 2	During their research career, information in patent documents provide useful insight on novelty of their idea from state-of-the art search. This provide further way for developing their idea or innovations.
CO 3	Pave the way for the students to catch up Intellectual Property(IP) as an career option as a R&D IP Counsel, Government Jobs as Patent Examiner, Private Jobs in any corporate, Patent agent and Trademark agent and as an Entrepreneur.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO- 1	2	2	3	-	-	-	-	-	-	-	-	-
CO- 2	3	3	1	-	-	-	-	-	-	-	-	-
CO- 3	2	2	2	-	-	-	-	-	-	-	-	-

Program:	Bachelor of Engineering	Branch:	CE
Year:	3rd Year	Semester:	6
Course title:	Expert Program in Entrepreneurship	Course code	12300006
Course type:	Innovation and Entrepreneurship	Course credit:	3

CO 1	Apply the basic principles of Start-up scalability
CO 2	Understanding various individual attributes of strategic business plan development
CO 3	Develop strategies for start-ups growth.
CO 4	Experience real world financial modeling and valuation through IPO.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PO- 11	PO- 12
CO- 1	3	3	3	3	-	-	-	-	-	-	-	-
CO- 2	2	2	1	2	-	-	-	-	-	-	-	-
CO- 3	1	2	2	1	-	-	-	-	-	-	-	-
CO- 4	3	2	3	2		-	-	-	-	-	-	-

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Program:	Bachelor of Engineering	Branch:	CE
Year:	4th Year	Semester:	7
Course title:	Start-Up Project Part-1	Course code	12300007
Course type:	Innovation and Entrepreneurship	Course credit:	1.5

CO 1	Initiate a start-up in team.
CO 2	Register it as any form of business.
CO 3	Develop a team to run the venture.
CO 4	Collaborate with government and industry fraternity.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO-10	PO-11	PO-12
CO- 1	3	3	3	3	-	-	-	-	-	-	-	-
CO- 2	2	2	1	2	-	-	-	-	-	-	-	-
CO- 3	1	2	2	1	-	-	-	-	-	-	-	-
CO- 4	3	1	3	2	-	-	-	-	-	-	-	-

Program:	Bachelor of Engineering	Branch:	CE

Swarrnim Institute of Technology
Swarrnim Startup & Innovation University
University Campus, Bhoyan Rathod, Near ONGC WSS, Opp. IFCCO, Adalaj Kalol Highway,
Gandhinagar, Gujarat, INDIA 382420 Phone: 095123 43333

SWARRNIM INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING
COURSE OUTCOME

Year:	4th Year	Semester:	8
Course title:	Start-Up Project Part-2	Course code	12300008
Course type:	Innovation and Entrepreneurship	Course credit:	1.5

CO 1	Initiate a start-up in team.
CO 2	Design Financial and marketing strategies for their venture.
CO 3	Generate revenue for them and contribute to society with their problem solving product.
CO 4	Register it as any form of business.

CO	Co –PO Mapping											
	PO- 1	PO- 2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO-10	PO-11	PO-12
CO- 1	3	2	3	2	-	-	-	-	-	-	-	-
CO- 2	2	2	1	1	-	-	-	-	-	-	-	-
CO- 3	2	1	3	3	-	-	-	-	-	-	-	-
CO- 4	3	2	3	2	-	-	-	-	-	-	-	-