DAYANANDA SAGAR ACADEMY OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under VTU)

CURRICULUM

Scheme and Syllabus VII to VIII Semester Outcome Based

Education

(Academic Year 2026-2027)

DEPARTMENT OF CSE IN IOT & CYBER SECURITY INCLUDING BLOCKCHAIN

7th & 8th Semester B.E

ABOUT THE INSTITUTE

Dayananda Sagar Academy of Technology and Management- DSATM was established in 2011 with 5 UG Programs and 1 PG Program, currently there are 10UG courses, BArch course, and 2 PG courses the programs are approved by All India Council for Technical Education (AICTE) New Delhi, Affiliated to Visvesvaraya Technological University (VTU), Belagavi and DSATM is an autonomous institute from 2023-2024, (10 years), with NAAC A+ Grade,5 courses NBA Accredited.

The Dayananda Sagar Institutions is one of pioneer institutions in India and abroad with six decades of excellence in Academic and Research. The newer campuses were necessary to accommodate the growing need of the technology and innovation.

DSATM nurtures the students in academic, research, sports, cultural and extracurricular activities.

- Creating an academic environment to nurture and develop competent entrepreneurs, leaders and professionals who are socially sensitive and environmentally conscious.
- Integration of Outcome Based Education and cognitive teaching and learning strategies to enhance learning effectiveness.
- Developing necessary infrastructure to cater to the changing needs of Business and Society.
- Optimum utilization of the infrastructure and resources to achieve excellence in all areas of relevance.
- Adopting learning beyond curriculum through outbound activities and creative assignments.
- Imparting contemporary and emerging techno-managerial skills to keep pace with the changing global trends.
- Facilitating greater Industry-Institute Interaction for skill development and employability enhancement.
- Establishing systems and processes to facilitate research, innovation and entrepreneurship for holistic development of students.
- Implementation of Quality Assurance System in all Institutional processes.

VISION OF THE INSTITUTE

To strive at creating the institution a center of highest caliber of learning, so as to create an overall intellectual atmosphere with each deriving strength from the other to be the best of engineers, scientists with management & design skills.

MISSION OF THE INSTITUTE

- To serve its region, state, the nation and globally by preparing students to make meaningful contributions in an increasing complex global society challenge.
- To encourage, reflection on and evaluation of emerging needs and priorities with state-of-the-art infrastructure at institution.
- To support research and services establishing enhancements in technical, economic, human and cultural development.
- To establish interdisciplinary center of excellence, supporting/ promoting student's implementation.
- To increase the number of Doctorate holders to promote research culture on campus.
- To establish IIPC, IPR, EDC, innovation cells with functional MOU's supporting student's quality growth.

QUALITY POLICY

Dayananda Sagar Academy of Technology and Management aims at achieving academic excellence through continuous improvement in all spheres of Technical and Management education. In pursuit of excellence cutting – edge and contemporary skills are imparted to the utmost satisfaction of the students and the concerned stakeholders.

ABOUT THE DEPARTMENT

Year of Establishment: 2022 Intake of the Department = 60

Brief Details about Department of CSE in IoT & Cyber security including Blockchain

In today's world everything is connected to the Internet for ease of access, to monitor and control the devices across the globe. This provides an opportunity to automate different task and move all the communicating devices to be communicated through Internet. IoT is the most important technology for 21st century and it connects the device from home to industry, device to device or human to device.

The various industry which uses IoT are Manufacturing, Automotive, Transportation and Logistics, Retail, Public Sector, Health Care, Agriculture. The general safety across all industry is the requirement of securing these devices and its network. To secure the data generated due to communication between the devices, device to humans, and personal information are in demand.

Cyber Security courses aim to equip the students with the knowledge and skills required to defend your data, devices, and personal information from the attacker. This course provides a wide variety of opportunity in IT sector and in other manufacturing and production industries. As all devices are connected to Internet, the data generated is very huge. The data need to be accessed from the storage securely and should be available for access to the authorized users, the Blockchain provides this flexibility. Blockchain is a distributed ledger, in this system it records the information in such a way that it is impossible to change, hack or cheat the system.

VISION OF THE DEPARTMENT

To be frontier to provide the centre of Excellence in the field of IoT, Cybersecurity and Blockchain

MISSION OF THE DEPARTMENT

M1: a cutting-edge technology to the students to develop and innovate in IoT & Cybersecurity including Blockchain which proves to be an essential part for any organization.

M2: impart value based technical education of global standards.

M3: inculcate the entrepreneurship, technical knowledge and lifelong learning in theory and practice of Computer Science and Engineering in IoT & Cyber security including Blockchain.

M4: To strengthen the alumni and industrial association for development of students leading to technical and socio-economic growth.

PROGRAM EDUCATION OBJECTIVES (PEO'S):

PEO1: Employability: Having a successful professional career in Industry, Government, Academia, and Defense as an innovative engineer in a team.

PEO2: Higher Education: capable to pursue higher studies/research in the field of Engineering and other allied industries.

PEO3: Entrepreneurship: prepared for a successful career by meeting ever increasing demands required by Computer Science and Engineering profession and enable them to become an entrepreneur.

PEO4: Ethical: cultivated professional and ethical attitudes with effective communication skills, teamwork and multidisciplinary approach related to engineering issues.

PROGRAM OUTCOMES (PO's)

Engineering Graduates will be able to:

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

2. 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.

3. 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.

4. 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.

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

6. 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.

7. 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.

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

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

10. 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.

11. 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.

12. 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.

PROGRAM SPECIFIC OUTCOMES (PSO's)

PSO1: Practices of Computing: Connect learning from Core and Disciplinary/Interdisciplinary courses of CSE (IoT & Cybersecurity including Blockchain Technology) to assimilate Technological advancements in the field for analyzing and designing subsystem processes to arrive at the solution to real world problems.

PSO2: Knowledge in the domain specific: Acquire software skills pertinent to Research and industry practices in the field of CSE (IoT & Cybersecurity including Blockchain Technology); along with the soft skills like persistence, proper judgment through projects and industrial interactions.

Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

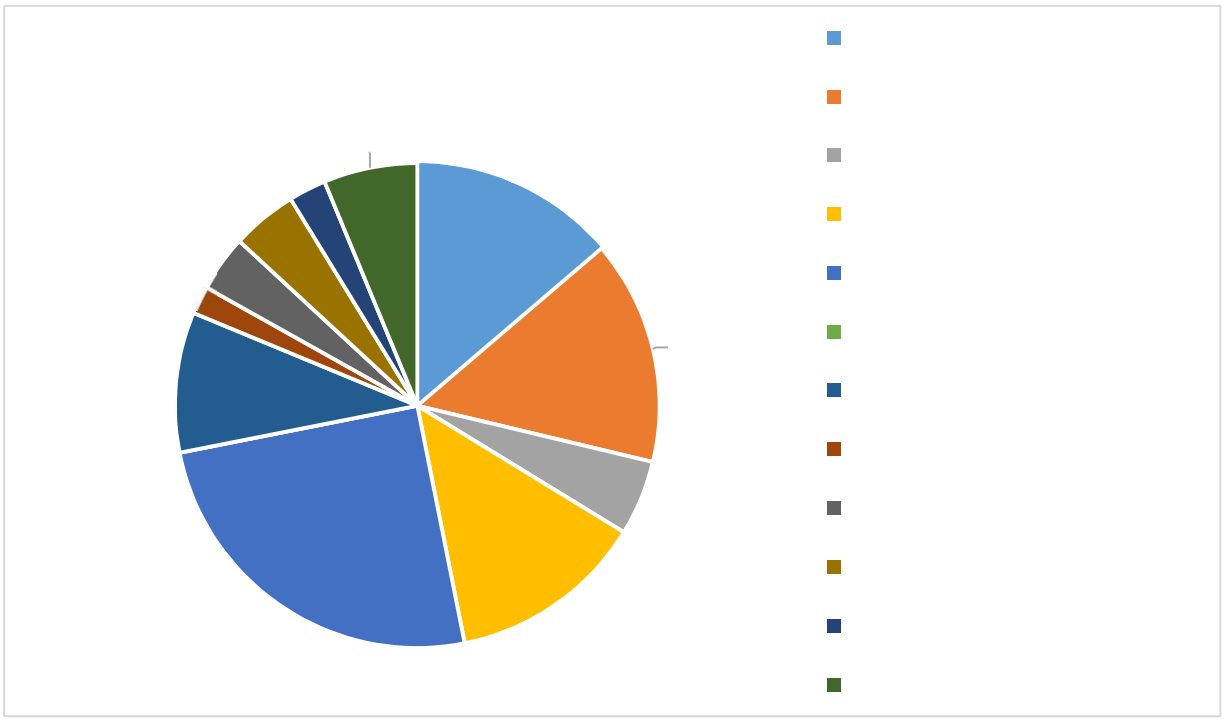
Affiliated to VTU
Approved by AICTE
Accredited by NAAC with A+ Grade
6 Programs Accredited by NBA
(CSE, ISE, ECE, EEE, MECH, CV)

PROPOSED UG CREDIT STRUCTURE IN ALIGNMENT WITH VTU

Sl. No.	Semester	No. of Credits
1	1st Semester	20
2	2nd Semester	20
3	3rd Semester	21
4	4th Semester	21
5	5th Semester	22
6	6th Semester	22
7	7th Semester	20
8	8th Semester	14
	Total	160

Scheme Distribution Department of CSE in IoT & Cybersecurity including Blockchain

Course Component	Credits	% of Credits
Basic Science (BS)	22	14
Engineering Science (ES)	24	15
Humanities (HU)	8	5
Program core (PC)	21	13
Program core Integrated (PCI)	40	25
Program core exclusive Lab	0	0
Program elective (PE)	15	9
Open Elective (OE)	3	2
Internship (INT)	6	4
Ability Enhancement course (AEC)	7	4
Mini Project (MPR)	4	3
Project (PR)	10	6
Total	160	100



Scheme of Teaching and Examinations – 2023
Outcome Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from 2026-27)

7th SEMESTER: CSE in IoT, Cyber Security including Blockchain

Sl. No	Course Code	Course Title	Course Category	BOS	TD	Teaching Hours/Week					Credits	Examination			
						Lecture	Tutorial	Practical	Project	Total		SEE Duration (Hrs.)	CIE Marks	SEE Marks	Total Marks
						L	T	P	S						
1	BIC701	IoT Security & Automotive Systems	IPCC	CSE-ICB	CSE-ICB	3	-	2	-	5	4	3	50	50	100
2	BIC702	Artificial Intelligence for Cyber Security	PCC	CSE-ICB	CSE-ICB	3	-	-	-	3	3	3	50	50	100
3	BIC703X	Professional Elective Course	PEC	CSE-ICB	CSE-ICB	3	-	-	-	3	3	3	50	50	100
4	BIC704X	Open Elective Course	OEC	CSE-ICB	CSE-ICB	3	-	-	-	3	3	3	50	50	100
5	BIC705	Project Phase-2	PROJ	CSE-ICB	CSE-ICB	-	-	-	6	6	7	3	50	50	100
6	BIC706	Indian Knowledge System	NCMC			1	-	-	-	1	--	-	100	-	100
7		AICTE Activity Points	Details of 80 AICTE Activity Points Earned												
					Total	13	-	2	6	21	20	15	350	250	600

Professional Elective Course:	
BIC703A	Design of Blockchain-AI Integrated Systems
BIC703B	IoT in Precision Agriculture & Healthcare

8th SEMESTER: CSE in IoT, Cyber Security including Blockchain

Sl. No	Course Code	Course Title	Course Category	BOS	TD	Teaching Hours/Week					Credits	Examination			
						Lecture	Tutorial	Practical	Project	Total		SEE Duration (Hrs)	CIE Marks	SEE Marks	Total Marks
						L	T	P	S						
1	BIC801	Capstone Project -phase 3 (Publication and Patents)	PROJ	CSE-ICB	CSE-ICB	-	-	-	4	4	4	3	100	100	200
2	BIC802	Internship (Industry/Research (14 - 20 weeks)	INT	CSE-ICB	CSE-ICB	-	-	10	-	10	10	3	100	100	200
3		AICTE Activity Points	Details of 100 AICTE Activity Points Earned												
Total						-		10	4		14	6	200	200	400

IPCC: Integrated Professional Core Course,

PCC: Professional Core Course

PBL: Project Based Learning

AEC: Ability Enhancement

Course, NCMC: Non-Credit

Mandatory Course L: Lecture,

T: Tutorial, P:Practical

S= SDA: Skill Development Activity,

CIE: Continuous Internal Evaluation,

SEE: Semester End Evaluation.

Integrated Professional Core Course (IPCC): Refers to Integrated Professional Core Course Theory Integrated with practicals of the same course. Credit for IPCC can be 04 and its Teaching Learning hours (L: T: P) can be considered as (3: 0: 2) or (2: 2: 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper.

Non-Credit Mandatory Course (NCMC) - National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Newly introduced subjects in the syllabus

		7th Semester	8th Semester
1.	List of Existing Elective Courses		
2.	List of New Existing Elective Courses		
3.	List of New Industry Aligned Course		

Percentage of Change in the Syllabus- NA

7th Semester						
Sl. No	Course Code	Course Name	Topics Added	Topics removed	Revised in %	Justification
1						
2						
3						
4						

8th Semester						
Sl. No	Course Code	Course Name	Topics Added	Topics removed	Revised in %	Justification
1						
2						
3						

7th Semester

INTEGRATED PROFESSIONAL CORE COURSE (IPCC)

IPCC Course – Integrated Professional Core Course

Teaching Hours/Week (L: T:P: S)	3:0:2:0
Total Hours of Pedagogy	40 hours Theory + 20 Hours of Practical Classes
Credits:	04
Theory - Each Module	8 Hrs
Practical's	8-10 Programs / Experiments
CIE Marks	50
SEE Marks	50
Total Marks	100
Exam Hours	3
Examination nature (SEE)	Theory

- The theory part of the IPCC shall be evaluated both by CIE and SEE.
- The practical part shall be evaluated by only CIE (no SEE).
- However, questions from the practical part of IPCC shall be included in the SEE question paper.

Integrated Professional Core Course (IPCC) - 4 Credit Course

Assessment Details (both CIE and SEE)

- The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.
- The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks).
- A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE) for the Theory component of the IPCC (Maximum marks 50)

Internal Assessment Test (IAT):

- IPCC means practical portion integrated with the theory of the course.
- CIE marks for the theory component are 25 marks and that for the practical component is 25 marks.
- 25 marks for the theory component are split into 15 marks for two Internal Assessment Tests
- (Two Tests, each of 50 Marks with 01-hour 30 minutes' duration, are to be conducted and average of two tests to be reduced to 15 marks) and 10 marks for Two Continuous Comprehensive Assessment(CCA) methods.
- The first Internal test at the end of 40-50% coverage of the syllabus
- The second Internal test after covering 85-90% of the syllabus.

- Scaled-down marks of the sum of two tests and other assessment methods will be CIE marks for the theory component of IPCC (that is for 25 marks).
- The student has to secure 40% of 25 marks to qualify in the CIE of the theory component of IPCC.

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Revised Blooms Taxonomy (RBT) Levels. Emphasis to be given for Higher order Thinking Skills(HOTS).

Continuous Internal Evaluation (CIE) for the practical component of the IPCC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day.
- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report, **05 Marks** are for conducting the experiment, **05 Marks for** preparation of the laboratory record, **5 Marks** for conducting Open Ended Experiments Each experiment. Marks of all experiments' write-ups are added to 15 marks.
- The Practical laboratory test **(duration 03 hours)** at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **5 Marks.**
- The open-ended experiment after completion of all the experiments shall be conducted for 20 marks with a split-up for 5 Marks for writeup, 10 Marks for Execution, and 5 Marks for Viva-Voce.
- Marks for writeup, Execution and Viva-Voce is added and scaled down to 05 marks.
- Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IPCC for 25 marks.
- The student has to secure 40% of 25 marks to qualify in the CIE of the practical component of the IPCC.

Semester End Examination (SEE) for IPCC Theory

SEE will be conducted as per the scheduled timetable, with common question papers for the course (duration 03 hours)

- The question paper will have ten questions. Each question is set for 20 marks.
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. **The duration of SEE is 03 hours.**

- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module. The two questions shall be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels.
- The students have to answer 5 full questions, selecting one full question from each module.
- Marks scored by the student shall be proportionally scaled down to 50 Marks.
- The theory portion of the IPCC shall be for both CIE and SEE, whereas the practical portion will have a CIE component only.
- Questions mentioned in the SEE paper may include questions from the practical component.

Continuous and Comprehensive Assessment (CCA):

Two continuous and comprehensive assessments (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be (CCA1+CCA2)/2 and scaled down to **10 Marks**.

- CCA1 after the 4th week and CCA2 after 9th week. The Assessment will be through rubrics.
- CCA as project-based learning,
    - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
    - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

Possible Continuous and Comprehensive Assessment (CCA):

- Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom,
- The assessment of these techniques shall be in rubrics.
- The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

4 Credits Courses – Integrated Professional Core Course (IPCC)

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				**50**	----	----	**20**	
CIE	**Theory**	Internal Assessment Test (IAT) - I	Module – 1 to 2.5	50	(50+50) / 2	**15**	6	Average of Two Internal test each of 50 Marks scale down the marks to 15 Marks
		Internal Assessment Test (IAT) - II	Module – 2.5 to 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives / Activity based learning	Considering all the Modules	50	(50+50) / 2	**10**	4	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives/ Activity based learning		50				
	Total CIE Theory					**25**	10	Scale down Marks of IAT and CCA to 25

CIE									
	Practical	Conduction of Experiments	Performance- Continuous Evaluation of each experiment	05	15	Average of all Experiments	15	4	Performance of the Experiment (On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. 20 marks are for conducting the experiment and calculations/observations/output)
			Record	05					
			Observation book	05					
		Practical Test	Write up	15	50	----	05	4	One Internal Practical Test after conduction of all Experiments for 50 Marks
			Execution	25					
			Viva-voce	10					
		Open Ended Experiment	Write up	05	20	----	05	2	One experiment for 20 marks. 20 marks reduced to 05 marks
			Execution	10					
			Viva-voce	05					
						Total CIE Practical	**25**	**10**	Scale down Marks of Experiments,

								Record, Observation, Practical Test and Open-Ended Experiment
SEE		Theory exam	Entire theory syllabus including questions from lab Component in respective Modules	100	----	50	20	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
			CIE + SEE	100	----	----	40	

- The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component.
- The Laboratory Component for the IPCC shall be for CIE only.
- However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.

Note: If few of the 3 Credit Courses are Integrated course type, for such courses the method suggested for 4 Credit IPCC Course shall be followed

INTEGRATED PROFESSIONAL CORE COURSE (IPCC)

Semester	:	**7th Semester**				
Course Title	:	**IoT Security & Automotive Systems**				
Course Code	:	**BIC701**				
Course Type (Theory/Practical/Project/Integrated)	:	**Integrated**				
Category	:	**IPCC**				
Stream	:	**CSE-ICB**		**CIE**	:	**50**
Teaching hours/ week (L: T:P:S)	:	**3-0-2-0**		**SEE**	:	**50**
Total Hours	:	**40 hours Theory + 20 hours Practical**		**SEE Duration**	:	**3 hours**
Credits	:	**4**				

Sl. No	Course Objectives
1	Understand security challenges in IoT systems
2	Analyze device, network and protocol vulnerabilities
3	Implement secure IoT communication mechanisms
4	Apply Zero Trust principles in IoT deployments
5	Understand security challenges in connected automotive systems

Course Learning Objectve Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Adopt different teaching methods to attain the course outcomes.
- Include videos to demonstrate various concepts.
- Encourage collaborative (Group) Learning to encourage team building.
- Ask at least three HOTS (Higher-order Thinking Skills) module-wise questions to promote critical thinking.
- Adopt Problem-Based Learning (PBL), which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
- Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
- Discuss various case studies to map with real-world scenarios and improve the understanding.

DSATM

Scheme of Teaching and Examinations for BE Programme 2023
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2026-27)

COURSE CURRICULUM

Module No.	Topics	Hours
1	Introduction to IoT Security: Overview of Internet of Things (IoT) architecture, IoT ecosystem components: Devices, Gateways, Cloud, Characteristics of IoT systems and constrained environments, IoT attack surface and threat landscape, Common vulnerabilities in IoT devices, OWASP IoT Top 10 vulnerabilities, Risk assessment in IoT deployments TB1: Chapters 1, Ch 2 TB2: Chapter 1	8
Pedagogy	**Demonstration of IoT vulnerabilities**	
2	IoT Device and Network Security: IoT device architecture and hardware components, Device identification and network exposure, Network discovery and device fingerprinting, Port and service vulnerabilities, Network attacks in IoT environments, Denial-of-Service attacks in IoT networks, IoT botnets and large-scale attacks TB1: Chapters 3, 4 TB2: Chapter 3	8
Pedagogy	**Illustration of IoT Botnet Attacks**	
3	IoT Communication and Protocol Security: IoT communication models, Publish–subscribe communication architecture, MQTT protocol architecture and operation, CoAP protocol overview, Security vulnerabilities in IoT communication protocols, Man-in-the-middle and replay attacks, Packet analysis and protocol inspection TB1: Chapter 5 TB2: Chapter 4	8
Pedagogy	**Poster Presentation of Replay Attacks in IoT systems**	
4	Encryption, Authentication and Secure Communication: Security requirements in IoT systems, Confidentiality, integrity and authentication, Symmetric and asymmetric encryption basics, Key management challenges in IoT, Transport Layer Security (TLS), Secure communication for IoT protocols, Device authentication mechanisms TB1: Chapter 6 TB2: Chapter 5	8
Pedagogy	**Demonstration of Device spoofing and Impersonation attacks in IoT**	
5	Firmware Security, Zero Trust and Secure IoT Deployment: Firmware architecture in IoT devices, Firmware vulnerabilities and security risks, Firmware analysis techniques, Secure boot concept, Firmware Over-the-Air (FOTA) updates, Risks of insecure firmware updates Zero Trust Architecture for IoT Systems: Concept of Zero Trust in IoT environments, Device identity and continuous verification, Micro-segmentation of IoT networks, Least-privilege access for	8

	IoT devices Automotive IoT Security (Connected Vehicle Systems): Connected vehicles as IoT systems, Electronic Control Units (ECUs) in vehicles, Controller Area Network (CAN) communication basics, Automotive attack examples (remote vehicle compromise), Secure OTA updates in automotive systems TB1: Chapter 8 TB2: Chapter 7	
Pedagogy	**Case Study: Remote Vehicle Attack – Jeep Cherokee Hack**	

List of Programs:

Sl. No.	Experiments/Programs	COs
1	Perform IoT Device Discovery and Service Scanning: Identify devices connected to a network, display IP and MAC addresses, perform port scanning and identify running services Tools: ARP, Nmap	CO1
2	Perform Capturing and Analyzing IoT Network Traffic: Capture packets using Wireshark, generate traffic from IoT applications, identify communication protocols Tool: Wireshark	CO2
3	Design a MQTT-Based IoT Communication by installing MQTT broker, configuring publisher and subscriber Tools: Mosquitto MQTT, MQTT Explorer	CO2, CO4
4	Analyze Security Weakness in MQTT Communication by capturing MQTT packets, monitoring payload and identifying plaintext communication risks Tool: Wireshark	CO3
5	Perform Firmware Analysis of an IoT Device by extracting firmware contents, identifying filesystem, configuration files and searching for sensitive information Tools: Binwalk, Strings	CO5
6	Demonstration of Firmware Update (FOTA Concept) using Flash firmware to ESP32 by modifying firmware functionality, uploading updated firmware and verifying device behavior Tools: ESP32, Arduino IDE	CO5
7	Encryption of IoT Data from sensor data, encrypting data using Python AES and decrypting received data Tool: Python	CO4
8	Demonstration of Automotive IoT Security via CAN simulation, simulating CAN bus communication using software tools, observing CAN message structure, demonstrating message injection or modification Tools: CAN simulator (SavvyCAN / CAN-utils / Python simulation)	CO5
Open ended Programs		
1	Designing a secure smart home sensor network.	CO4
2	Vulnerability Assessment and recommendation system for IoT device security breaches.	CO5

Text Books	
Sl. No.	**Text books**
1	Fei Hu, “Security and Privacy in Internet of Things (IoT)”, Taylor & Francis, 2020.
2	Brian Russell & Drew Van Duren, “Practical Internet of Things Security”, Packt Publishing, 2018.
Reference Books	
1	Lingyu Wang, Ali Dehghantanha, "IoT Security Issues", Elsevier, 2021.
2	Souvik Pal, Indrajit Banerjee, "Internet of Things Security: Fundamentals, Techniques and Applications",Wiley, 2021.

Course Outcomes: At the end of the course, the student will be able to:

CO’s	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Identify IoT devices, services and potential attack surfaces	L1	Identify
CO2	Analyze IoT network traffic and communication protocols	L4	Analyze
CO3	Evaluate security weaknesses in IoT communication systems	L5	Evaluate
CO4	Implement encryption and secure communication mechanisms	L3	Apply
CO5	Analyze firmware security, FOTA mechanisms, and security risks in connected IoT/automotive systems	L4	Investigate

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			1							1	2	
CO2	2	3		2	2							1	2	
CO3	2	3		3	2							1	2	
CO4	2	2	3	2	3							1	3	2
CO5	2	3	2	2	2							1	2	3

PROFESSIONAL CORE COURSE (PCC)

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**7th Semester**				
Course Title	:	**Artificial Intelligence for Cyber Security**				
Course Code	:	**BIC702**				
Course Type (Theory/Practical/Project/Integrated)	:	**Theory**				
Category	:	**PCC**				
Stream	:	**CSE-ICB**		**CIE**	:	**50**
Teaching hours/ week (L:T:P:S)	:	**3:0:0:0**		**SEE**	:	**50**
Total Hours	:	**40 Hours**		**SEE Duration**	:	**3 Hours**
Credits	:	**3**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To understand advanced cyber security challenges and modern attack landscapes
2	To apply AI techniques for intelligent threat detection and prevention
3	To design and implement AI-driven cybersecurity solutions
4	To explore real-world, industry-level security applications

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Adopt different teaching methods to attain the course outcomes.
- Include videos to demonstrate various concepts.
- Encourage collaborative (Group) Learning to encourage team building.
- Ask at least three HOTS (Higher-order Thinking Skills) module-wise questions to promote critical thinking.
- Adopt Problem-Based Learning (PBL), which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
- Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
- Discuss various case studies to map with real-world scenarios and improve the understanding.
- Devise innovative pedagogy to improve Teaching-Learning Process (TLP).

DSATM	**Scheme of Teaching and Examinations for BE Programme 2023 Outcome Based Education and Choice Based Credit System (CBCS) (Effective from the Academic Year 2026-27)**

COURSE CURRICULUM

Module No.	Topics	Hours
1	**Advanced Cyber Security Landscape:** Modern cyber threats and attack vectors, Advanced Persistent Threats (APT) Zero-day vulnerabilities, Security architecture and defense strategies, Limitations of traditional security approaches Text Book: 1. Cyber Security Essentials – Chapter 1 (Introduction), Chapter 2 (Security Concepts), Chapter 3 (Threats & Attacks)	8
Pedagogy	**Quiz**	
2	**AI & Machine Learning for Cyber Security:** ML techniques: classification, clustering, anomaly detection, Deep learning basics (CNN, RNN – application view) Feature engineering for security datasets, AI frameworks and tools, Data-driven security models. Text Book: 2. Artificial Intelligence: A Modern Approach – Chapter 1 (Introduction), Chapter 2 (Intelligent Agents), Chapter 18 (Learning from Examples)	8
Pedagogy	**Demonstration**	
3	**AI-Based Threat Detection Systems:** Intrusion Detection Systems (IDS) using AI, Network anomaly detection, Log analysis using machine learning, Behavioural analytics and user profiling, Real-time threat monitoring Text Book: 1. Cyber Security Essentials – Chapter 6 (Network Security), Chapter 7 (Monitoring & Incident Response) 2. Artificial Intelligence: A Modern Approach – Chapter 20 (Statistical Learning Methods)	8
Pedagogy	**Problem Solving**	
4	**Malware Analysis & Adversarial AI:** AI-based malware classification, Static vs dynamic malware analysis, Adversarial attacks on AI models, Evasion techniques and defences, Threat intelligence platforms Text Book: 1. Cyber Security Essentials – Chapter 5 (Malware & Attacks) 2. Artificial Intelligence: A Modern Approach – Chapter 21 (Reinforcement Learning – basic concepts)	8

Pedagogy	**Poster Presentation**	
5	**Ethical, Legal, and Emerging Trends in AI-based Cyber Security**: Ethical considerations in Artificial Intelligence for cybersecurity, Data privacy, protection, and regulatory compliance, Legal frameworks and policies in cyber security, Explainable Artificial Intelligence (XAI) in security systems, Emerging trends and future directions in AI-driven cyber defence. Text Book:1. Artificial Intelligence: A Modern Approach – Chapter 26 (Ethics in AI) 2. Cyber Security Essentials – Chapter 9 (Legal, Privacy & Ethical Issues)	**8**
Pedagogy	**Case Studies**	
	Pedagogical Initiatives (Not limited to): • Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another • Problem Solving: encourages cognitive thinking and enables creative problem solving • Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily. • Case studies: maps different domains in real time applications • Demonstration: exhibits the implementation process	

Text Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	1. Artificial Intelligence: A Modern Approach Authors: Stuart Russell, Peter Norvig, Edition: 4th Edition, Publisher: Pearson Education Year: 2020
	2. Cyber Security Essentials Authors: James Graham, Richard Howard, Ryan Olson, Edition: 1st Edition Publisher: CRC Press (Taylor & Francis Group), Year: 2016
Reference Books	
1	Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow Author: Aurélien Géron, Edition: 2nd Edition (or latest), Publisher: O'Reilly Media Year: 2019, Use: Practical AI implementation
2	The Art of Invisibility Author: Kevin Mitnick, Edition: 1st Edition, Publisher: Little, Brown and Company Year: 2017, Use: Real-world cybersecurity insights

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Explain advanced cybersecurity concepts and AI techniques	L2	Understand
CO2	Apply AI/ML models for cyber threat detection	L3	Apply
CO3	Design intelligent cybersecurity systems	L3	Apply
CO4	Analyze complex cyber-attacks and defense mechanisms	L4	Analyze
CO5	Evaluate AI-driven security solutions and emerging trends	L5	Evaluate

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														
CO5														

Weblinks and Video Lectures (e-Resources)	
1	**Google AI** https://ai.google ***AI tools, research, and real-world applications***
2	**SANS Institute** https://www.sans.org ***Cybersecurity research, training, and threat analysis***
3	**NPTEL** https://nptel.ac.in ***Courses on Cyber Security, Artificial Intelligence, and Machine Learning*** **SWAYAM** https://swayam.gov.in ***AI and Cyber Security courses aligned with Indian curriculum***

PROFESSIONAL ELECTIVE COURSE (PEC)

PEC Course - Professional Elective Course

Teaching Hours/Week (L: T:P: S)	3:0:0:0
Total Hours of Pedagogy	40 hours
Credits:	03
Each Module	8 Hrs
CIE Marks	50
SEE Marks	50
Total Marks	100
Exam Hours	3
Examination nature (SEE)	Theory

3 Credit Course – Professional Elective Course (PEC)

Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering professional electives is 10. However, this condition shall not be applicable to cases where the admission to the program is less than 10.

Assessment Details (both CIE and SEE)

- The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.
- The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks).
- A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

Internal Assessment Test (IAT):

- For the Internal Assessment Test component of CIE, there are 25 marks and for Assignment component of the CIE, there are 25 marks. Two Tests, each of 50 Marks with 01-hour 30 minutes' duration, are to be conducted and average of two tests to be reduced to 25 marks
- The first test will be administered after 40-50% of the syllabus has been covered, and
- The second test will be administered after 85-90% of the syllabus has been covered
- Any two assignment methods, if an assignment is project-based then only one assignment for the course shall be planned. The teacher should not conduct two assignments at the end of the semester if two assignments are planned.
- For the course, CIE marks will be based on a scaled-down sum of two tests and other methods of assessment.

- Internal Assessment Test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Semester-End Examination:

Theory SEE will be conducted as per the scheduled timetable (duration 03 hours).

- The question paper will have ten questions. Each question is set for 20 marks.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module.
- The students have to answer 5 full questions, selecting one full question from each module.
- Marks scored shall be proportionally reduced to 50 marks.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
    - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
    - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

Possible Continuous and Comprehensive Assessment (CCA):

- Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom,
- The assessment of these techniques shall be in rubrics.
- The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Professional Elective Course (PEC) – 3 Credit course – Theory								
Assessment Method	**Component**	**Type of Assessments**	**Syllabus Coverage**	**Maximum Marks**	**Average**	**Reduced Marks**	**Minimum Passing Marks**	**Evaluation Details**
Total CIE Theory + Practical				**50**	**----**	**----**	**20**	
	Theory	Internal Assessment Test (IAT) - II	Module – 1 to 2.5	50	(50+50) / 2	**25**	10	Average of Two Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) - II	Module – 2.5 to 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives / Activity Based learning	Considering all the Modules	50	(50+50) / 2	**25**	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives / Activity Based learning		50				
	Total CIE Theory					**50**	20	Total Marks of IAT and CCA is 50

SEE		Theory exam	Entire theory syllabus including questions from lab Component in respective Modules	100	----	50	20	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
			CIE + SEE	100	----	----	40	

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**7th Semester**				
Course Title	:	**Design of Blockchain-AI Integrated Systems**				
Course Code	:	**BIC703A**				
Course Type (Theory/Practical/Project/Integrated)	:	**Theory**				
Category	:	**PEC-1**				
Stream	:	**CSE-ICB**		**CIE**	:	**50**
Teaching hours/ week (L:T:P:S)	:	**3:0:0:0**		**SEE**	:	**50**
Total Hours	:	**40 Hours**		**SEE Duration**	:	**3 Hours**
Credits	:	**3**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To understand IoT applications in precision agriculture and smart healthcare.
2	To apply smart irrigation, greenhouse automation and farm monitoring systems.
3	To analyze crop health monitoring, drone surveillance and farm analytics.
4	To evaluate remote patient monitoring and wearable healthcare applications.
5	To create integrated IoT application models for agriculture and healthcare.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Adopt different teaching methods to attain the course outcomes.
- Include videos to demonstrate various concepts.
- Encourage collaborative (Group) Learning to encourage team building.
- Ask at least three HOTS (Higher-order Thinking Skills) module-wise questions to promote critical thinking.
- Adopt Problem-Based Learning (PBL), which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
- Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
- Discuss various case studies to map with real-world scenarios and improve the understanding.
- Devise innovative pedagogy to improve Teaching-Learning Process (TLP).

DSATM

Scheme of Teaching and Examinations for BE Programme 2023

Outcome Based Education and Choice Based Credit System (CBCS) (Effective from the Academic Year 2026-27)

COURSE CURRICULUM

Module No.	Topics	Hours
1	Digital Ecosystem & Emerging Technologies: Digital transformation and Industry 4.0, Role of AI and Blockchain in modern systems, Centralized vs decentralized applications (conceptual only), Need for trusted and intelligent systems. Text book : 1. Artificial Intelligence: A Modern Approach – Chapter 1 (Introduction)	8
Pedagogy	Problem-based learning	
2	Blockchain Platforms & Tools (Application View): Overview of Blockchain platforms (Ethereum, Hyperledger – usage only),Blockchain-as-a-Service (BaaS),APIs and SDKs for development,Tools: MetaMask, Infura, Cloud blockchain services Text book : 2. Blockchain Basics – Chapter 3, Chapter 8	8
Pedagogy	Chalk and talk	
3	AI Tools & Data Applications: AI applications in real-world systems, Machine learning using pre-built models, Data analytics and visualization, AI tools and services (AutoML, APIs) Text book : Machine Learning – Chapter 1, Chapter 2	8
Pedagogy	Demonstration	
4	Integration of Blockchain and AI Systems:Architecture of integrated systems, Data sharing and trust mechanisms, AI outputs secured via blockchain, Middleware, APIs, and pipelines, Cloud-based integration Text book : 1. Artificial Intelligence: A Modern Approach – Chapter 27 (AI Applications) 2. Blockchain Basics – Chapter 9, Chapter 10	8
Pedagogy	Chalk and talk	
5	Industry Applications:Healthcare systems,Supply chain analytics,Banking and fraud detection,Digital identity and verification systems Text book : Artificial Intelligence: A Modern Approach – Chapter 28 (Future & Applications)	8
	Case Studies	

	Pedagogical Initiatives (Not limited to): • Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another • Problem Solving: encourages cognitive thinking and enables creative problem solving • Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily. • Case studies: maps different domains in real time applications • Demonstration: exhibits the implementation process

Text Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	Artificial Intelligence: A Modern Approach • Authors: Stuart Russell, Peter Norvig, Edition: 4th Edition (Recommended) • Publisher: Pearson Education, Year: 2020
2	Blockchain Basics • Author: Daniel Drescher, Edition: 1st Edition • Publisher: Apress (Springer Nature),Year: 2017
Reference Books	
1.	Machine Learning Author: Tom M. Mitchell,Publisher: McGraw-Hill,Edition: 1st Edition
2.	Mastering Blockchain Author: Imran Bashir,Publisher: Packt Publishing,Edition: 2nd or 3rd Edition

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Explain application-level Blockchain and AI concepts	Understand	L2
CO2	Use tools/platforms for integration	Apply	L3
CO3	Design real-world Blockchain-AI solutions	Apply	L3
CO4	Analyze security, privacy, and ethical issues	Analyze	L4
CO5	Evaluate emerging trends and applications	Evaluate	L5

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														
CO5														

Weblinks and Video Lectures (e-Resources)	
1	Ethereum Foundation https://ethereum.org/en/developers/ *Developer documentation and tutorials*
2	Hyperledger https://www.hyperledger.org/learn *Enterprise blockchain learning materials*
3	Microsoft Learn https://learn.microsoft.com *AI and cloud-based integration tutorials*
4	NPTEL https://www.youtube.com/@nptelhrd *Structured lecture series by IIT professors*

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**7th**				
Course Title	:	**IoT in Precision Agriculture & Healthcare**				
Course Code	:	**BIC703B**				
Course Type (Theory/ Practical/ Integrated)	:	**Theory**				
Category	:	**PEC-2**				
Stream	:	**CSE-ICB**		**CIE**	:	**50**
Teaching hours/ week (L: T:P:S)	:	**3:0:0:0**		**SEE**	:	**50**
Total Hours	:	**40**		**SEE Duration**	:	**3**
Credits	:	**3**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To understand IoT applications in precision agriculture and smart healthcare.
2	To apply smart irrigation, greenhouse automation and farm monitoring systems.
3	To analyze crop health monitoring, drone surveillance and farm analytics.
4	To evaluate remote patient monitoring and wearable healthcare applications.
5	To create integrated IoT application models for agriculture and healthcare.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Use multiple teaching methods for conceptual understanding.
- Demonstrate IoT agricultural technologies through videos and demonstrations.
- Encourage collaborative learning and group problem solving.
- Include Higher Order Thinking Skills (HOTS) questions in each module.
- Implement Problem Based Learning (PBL).
- Conduct case studies of real smart farming deployments.
- Encourage IoT-based mini-projects in agriculture monitoring systems.

DSATM

Scheme of Teaching and Examinations for BE Programme -2026-27
Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2026-27)

COURSE CURRICULUM

Module No	Topics	Hours
1	**IoT Applications in Precision Agriculture and Digital Farming:** Precision agriculture, Agriculture 4.0, IoT-based farm monitoring, site-specific crop management, farm mapping and farm decision support. **Reference:** TB1: Ch. 1, 2, 7; TB2: Ch. 15	**8 Hours**
Pedagogy	Case Study-Based Learning	
2	**Smart Irrigation and Greenhouse Automation:** Smart irrigation scheduling, water-use optimization, pump and valve automation, greenhouse monitoring, fertigation, nutrient management and weather-based irrigation decisions. **Reference:** TB1: Ch. 4, 8; RB3	**8 Hours**
Pedagogy	Flipped Classroom Method	
3	**Crop Health Monitoring, Drones and Farm Analytics:** Crop health monitoring, pest and disease identification, drone-based crop surveillance, thermal imaging, plant-health index, yield prediction and farm machinery monitoring. **Reference:** TB1: Ch. 5, 6, 10, 21	**8 Hours**
Pedagogy	Problem-Based Learning	
4	**IoT Based Smart Healthcare and Remote Patient Monitoring:** Internet of Medical Things, remote patient monitoring, wearable healthcare systems, ECG, heart rate, SpO_2, temperature, blood pressure, respiration, smart hospital and emergency alert systems. **Reference:** TB3: Ch. 2, 6, 7, 8, 9; RB2	**8 Hours**
Pedagogy	Demonstration-Based Learning	
5	**Integrated IoT Applications for Smart Agriculture and Healthcare:** Livestock health monitoring, food-quality monitoring, cold-chain monitoring for agriculture and medicines, hospital asset tracking, telemedicine support, rural healthcare-agriculture integration and real-time alert-based applications. **Reference:** TB1: Ch. 11, 13, 14, 15; TB3: Ch. 10, 11, 14	**8 Hours**
Pedagogy	Mini Project-Based Learning	

Pedagogical Initiatives (Not limited to):

- **Think Pair and Share (Blended Learning):** provides an opportunity for students to learn from one another
- **Problem Solving**: encourages cognitive thinking and enables creative problem solving
- **Poster Presentation:** allows students to represent the concepts visually in order to understand the topics easily.
- **Case studies:** maps different domains in real time applications
- **Demonstration:** exhibits the implementation process

Sl. No	Title of the Book / Author / Publisher / Edition & Year
TB1	**Agriculture 4.0: Smart Farming with IoT and Artificial Intelligence**, Sheetanshu Gupta, Wajid Hasan, Shivom Singh, Dhirendra Kumar, Mohammad Javed Ansari and Shabistana Nisar, CRC Press, 1st Edition, 2025.
TB2	**Internet of Things: Principles and Paradigms**, Rajkumar Buyya and Amir Vahid Dastjerdi, Elsevier, 2016.
TB3	**Healthcare Paradigms in the Internet of Things Ecosystem**, Valentina Emilia Balas and Souvik Pal, Academic Press / Elsevier, 2021.

Reference Books

Sl. No	Title of the Book / Author / Publisher / Edition & Year
RB1	**Internet of Things: A Hands-on Approach**, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015.
RB2	**Internet of Medical Things: Remote Healthcare Systems and Applications**, edited volume, CRC Press / Routledge, 2021.
RB3	**IoT-Based Smart Agriculture**, L. Ashok Kumar, G. V. Ramesh and S. Balamurugan, CRC Press, Latest Edition.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Explain IoT applications in agriculture and healthcare.	Understand	Level 2
CO2	Apply smart irrigation and greenhouse automation concepts.	Apply	Level 3
CO3	Analyze crop monitoring and drone-based farm data.	Analyze	Level 4
CO4	Evaluate remote patient and wearable health monitoring systems.	Evaluate	Level 5
CO5	Create integrated IoT application models for agriculture and healthcare.	Create	Level 6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO 1	PSO 2
CO1	3	2	1		2								2	1
CO2	3	2	2		2								2	2
CO3	2	3	3		3								3	3
CO4	2	3	2	2	3								3	3
CO5	1	3	2	2	2		1						2	3

Weblinks and Video Lectures (e-Resources)	
1	https://www.coursera.org – IoT and Smart Agriculture Courses
2	https://nptel.ac.in – NPTEL Courses on IoT and Precision Agriculture
3	https://www.educba.com/iot-in-agriculture – IoT Agriculture Tutorials
4	https://freevideolectures.com – Engineering lectures on IoT systems

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory			
	Continuous Assessment Tests (IAT)		Continuous Comprehensive Assessment (CCA)	
	IAT-1	IAT-2	CCA-1	CCA-2
	50 Marks	50 Marks	50 Marks	50 Marks
Remember				
Understand				
Apply				
Analyse				
Evaluate				
Create				

CIE Course Assessment Plan

CO's	Marks Distribution						Total Marks	Weightage
	Test-1			Test-2				
	Module-1	Module-2	Module 2 to 2.5	Module-2.5 to 3	Module-4	Module-5		
CO1								
CO2								
CO3								
CO4								
CO5								
Total								

OPEN ELECTIVE COURSE (OEC)

OEC – Open Elective Course

Open Elective Courses: Students belonging to a particular stream of Engineering and Technology are not entitled to the open electives offered by their parent Department. However, they can opt for an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator / Advisor / Mentor. The minimum numbers of students' strength for offering Open Elective Course is 10. However, this condition shall not be applicable to class where the admission to the program is less than 10. Project Phase – I: Students have to discuss with the mentor / guide and with their help he / she has to complete the literature survey and prepare the report and finally define the problem statement for the project work.

Teaching Hours/Week (L: T:P: S)	3:0:0:0
Total Hours of Pedagogy	40 hours – Theory
Credits:	03
Modules	5
CIE Marks	50
SEE Marks	50
Total Marks	100
Exam Hours	3
Examination nature (SEE)	Theory

3 Credit Course – Open Elective Course (OEC)

Open Elective Courses (OEC): A open elective course (OEC) is a course offered by departments other than a student's parent department. These interdepartmental /interdisciplinary courses allow students to explore disciplines beyond their core area of study. These courses are intended to promote interdisciplinary learning, broad-based education, thereby enhancing a student's overall knowledge, creativity, and employability. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor/Proctor.

Assessment Details (both CIE and SEE)

- The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.
- The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks).
- A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

Internal Assessment Test (IAT):

- For the Internal Assessment Test component of CIE, there are 25 marks and for Assignment component of the CIE, there are 25 marks. Two Tests, each of 50 Marks with 01-hour 30 minutes' duration, are to be conducted and average of two tests to be reduced to 25 marks
  - The first test will be administered after 40-50% of the syllabus has been covered, and
  - The second test will be administered after 85-90% of the syllabus has been covered
  - Any two assignment methods, if an assignment is project-based then only one assignment for the course shall be planned. The teacher should not conduct two assignments at the end of the semester if two assignments are planned.
  - For the course, CIE marks will be based on a scaled-down sum of two tests and other methods of assessment.
  - Internal Assessment Test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Semester-End Examination:

Theory SEE will be conducted as per the scheduled timetable (duration 03 hours).

- The question paper will have ten questions. Each question is set for 20 marks.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module.
- The students have to answer 5 full questions, selecting one full question from each module.
- Marks scored shall be proportionally reduced to 50 marks.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
    - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
    - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

Possible Continuous and Comprehensive Assessment (CCA):

- Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom,
- The assessment of these techniques shall be in rubrics.
- The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Open Elective Course (OEC) – 3 Credit course – Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				**50**	----	----	**20**	
	Theory	Internal Assessment Test (IAT) - II	Module – 1 to 2.5	50	(50+50) / 2	**25**	10	Average of Two Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) - II	Module – 2.5 to 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives / Activity Based learning	Considering all the Modules	50	(50+50) / 2	**25**	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives / Activity Based learning		50				
	Total CIE Theory					**50**	20	Total Marks of IAT and CCA is 50

SEE		Theory exam	Entire theory syllabus including questions from lab Component in respective Modules	100	----	50	20	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
			CIE + SEE	100	----	----	40	

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Semester	:					
Course Title	:					
Course Code	:					
Course Type (Theory/Practical/Project/Integrated)	:					
Category	:					
Stream	:					
Teaching hours/ week (L:T:P:S)	:					
Total Hours	:					
Credits	:					

Course Learning Objectives: Students will be able to:

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Adopt different teaching methods to attain the course outcomes.
- Include videos to demonstrate various concepts.
- Encourage collaborative (Group) Learning to encourage team building.
- Ask at least three HOTS (Higher-order Thinking Skills) module-wise questions to promote critical thinking.
- Adopt Problem-Based Learning (PBL), which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
- Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
- Discuss various case studies to map with real-world scenarios and improve the understanding.
- Devise innovative pedagogy to improve Teaching-Learning Process (TLP).

DSATM	Scheme of Teaching and Examinations for BE Programme 2023 Outcome Based Education and Choice Based Credit System (CBCS) (Effective from the Academic Year 2025-26)

Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	
Reference Books	
1	

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1			
CO2			
CO3			

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														

Weblinks and Video Lectures (e-Resources)	
1	
2	
3	

CAPSTONE PROJECT
(Phase-2)

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**7th Semester**				
Course Title	:	**Project Phase 2**				
Course Code	:	**BIC705**				
Course Type (Theory/Practical/Project/ Integrated)	:	**Project**				
Category	:	**PROJ**				
Stream	:	**CSE-ICB**		**CIE**	:	**50**
Teaching hours/ week (L:T:P:S)	:	**0:0:0:6**		**SEE**	:	**50**
Total Hours	:	**24 Hours**		**SEE Duration**	:	**2 Hours**
Credits	:	**7**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	
2	
3	
4	

Teaching-Learning Process Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

- Adopt different teaching methods to attain the course outcomes.
- Include videos to demonstrate various concepts in R-Lang.
- Encourage collaborative (Group) Learning to encourage team building.
- Ask at least three HOTS (Higher-order Thinking Skills) module-wise questions to promote critical thinking.
- Adopt Problem-Based Learning (PBL), which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
- Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
- Discuss various case studies to map with real-world scenarios and improve the understanding.
- Devise innovative pedagogy to improve Teaching-Learning Process (TLP).

DSATM

Scheme of Teaching and Examinations for BE Programme 2023

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2025-26)

COURSE CURRICULUM

Module No.	Topics	Hours
1		5
2		5
3		5

Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	
Reference Books	
1.	
2.	

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1			

CO2			
CO3			
CO4			

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2															
CO3															
CO4															

Weblinks and Video Lectures (e-Resources)	
1	
2	

Indian Knowledge System
(NCMC)

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**7th Semester**				
Course Title	:	**Indian Knowledge System**				
Course Code	:	**BIC706**				
Course Type (Theory/Practical/Project/Integrated)	:	**THEORY**				
Category	:	**NCMS**				
Stream	:					
Teaching hours/ week (L:T:P:S)	:	**1:0:0:0**				
Total Hours	:					
Credits	:	**0**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	
2	
3	

Teaching-Learning Process

General Instructions - Pedagogy:
These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the activities will develop students' theoretical and applied social and cultural skills.
- State the need for activities and its present relevance in the society and Provide real-life examples.
- Support and guide the students for self-planned activities.
- You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress in real activities in the field.
- Encourage the students for group work to improve their creative and analytical skills

Scheme of Teaching and Examinations for BE Programme -2023

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2026-27)

DSATM

COURSE CURRICULUM

Module No.	Topics	Hours
1		3 Hours
Pedagogy		
2		3 Hours
Pedagogy		
3		3 Hours
Pedagogy		
4		3 Hours
Pedagogy		
5		3 Hours

	Pedagogical Initiatives (Not limited to): • **Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another** • **Problem Solving: encourages cognitive thinking and enables creative problem solving** • **Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily.** • **Case studies: maps different domains in real time applications** • **Demonstration: exhibits the implementation process**

Text Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	
2	
3	
Reference Books	
1	
2	
3	
4	
5	

e Outcomes: At the end of the course, the student will be able to:

CO	**Course Outcomes**	**RBT Level**	**RBT Level Indicator**
CO1			
CO2			
CO3			

ng of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1															
CO2															
CO3															

Weblinks and Video Lectures (e-Resources)	
1	
2	
3	
4	
5	

Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Affiliated to VTU
Approved by AICTE
Accredited by NAAC with A+
Grade 6 Programs Accredited by NBA (CSE, ISE, ECE, EEE, MECH, CV)

Course - Skills Mapping Table

5th Semester					
Sl. No	Name of the Course	Course Code	Course Type	Course Category	Skills attained by the students
1					
2					
3					

8th SEMESTER

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**8th Semester**				
Course Title	:	**Capstone project-Phase 3**				
Course Code	:	**BIC801**				
Course Type (Theory/Practical/Project/Integrated)	:	**ONLINE**				
Category	:	**PEC**				
Stream	:					
Teaching hours/ week (L:T:P:S)	:	**0:0:0:4**				
Total Hours	:					
Credits	:	**4**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	
2	
3	

Teaching-Learning Process

General Instructions - Pedagogy:

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the activities will develop students' theoretical and applied social and cultural skills.
- State the need for activities and its present relevance in the society and Provide real-life examples.
- Support and guide the students for self-planned activities.
- You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress in real activities in the field.
- Encourage the students for group work to improve their creative and analytical skills

Scheme of Teaching and Examinations for BE Programme -2023

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2026-27)

DSATM

COURSE CURRICULUM

Module No.	Topics	Hours
1		3 Hours
Pedagogy		
2		3 Hours
Pedagogy		
3		3 Hours
Pedagogy		
4		3 Hours
Pedagogy		

5		3 Hours
	Pedagogical Initiatives (Not limited to): • Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another • Problem Solving: encourages cognitive thinking and enables creative problem solving • Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily. • Case studies: maps different domains in real time applications • Demonstration: exhibits the implementation process	

Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	
2	
3	
Reference Books	
1	
2	
3	
4	
5	

e Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1			

CO2			
CO3			

ng of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1															
CO2															
CO3															

Weblinks and Video Lectures (e-Resources)	
1	
2	
3	
4	
5	

Sl. No	Course Objectives
1	
2	
3	

Internship (Industry /Research)

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**8th Semester**				
Course Title	:	**Internship (Industry/ Research)**				
Course Code	:	**BIC802**				
Course Type (Theory/Practical/Project/Integrated)	:	**Internship**				
Category	:	**INT**				
Stream	:					
Teaching hours/ week (L:T:P:S)	:	**0:0:10:0**				
Total Hours	:					
Credits	:	**10**				

Internship

Internship refers to the position of a student as trainee or a temporary (or unconfirmed) employee, who works in an organization, with or without pay, in order to gain work experience or satisfy requirements for a qualification. It is a structured, supervised professional experience in an industry, research organization, or community setting. Students taking up internship may be with or without stipend. Internships play a vital role in bridging the gap between theoretical education and professional practice. In general, engineering internships serve as a crucial component of professional education by providing experiential learning, industry readiness, and holistic skill development, ultimately producing competent engineers or entrepreneurs. Apart from these, it develops professional ethics, work culture awareness and communication skills. Some of the common types of internships are as follows:

i. Industry Internship: Carried out in the engineering industry, companies, manufacturing units, startups, business, IT industry. The topic involved may be technical, managerial, production-related tasks, live projects, or innovative activities.

ii. Research Internship: Carried out at universities, research labs, or R and D departments or organisations. The internship may involve literature review, data analysis, and experimental work leading to publications, prototypes, technical reports or innovations. The research internship may induce students to plan for higher studies or academic careers.

iii. Academic or Teaching Internship: Carried out at educational institutions. The students assist in academic activities, laboratory sessions or content development, and prepare or present report, presentation and **student evaluation.** The internship encourages interest in academia and pedagogy, develops new skills, helps to gain a competitive edge on the job market or for post-baccalaureate studies.

iv. Community or Societal Internship: Carried out with government schemes, or rural development projects, Non-Governmental Organisations (NGOs). The internship focused on social and community development activities promotes social responsibility, sustainable development awareness, encourages civic responsibility and ethical engagement.

v. Entrepreneurship Internship: Undertaken in association with start-ups, or entrepreneurship cells or launching own idea in Preincubations/Incubation centres. The internship offers exposure to business planning, prototype product development, and promotes innovation, risk-taking, and entrepreneurial mindset.

vi. Virtual or Remote or Online Internship: Undertaken using online tools and digital collaboration platforms. Such internships are common in content writing, data science, marketing, and software development. It offers flexible learning environments and access to global opportunities, and allows participation in real projects without being physically present, from anywhere and anytime.

vii. Government Internship: Ministries, public sector units, or civic bodies offer such internships in policy research, administrative tasks, or public service projects. This internship is for students interested in governance or public administration.

viii. Post-Placement Internship: Refers to the internship offered to students after they receive a confirmed job offer (placement) from a company, but before formally joining as full-time employees. This internship (on-site, virtual, or hybrid) ensures that students are groomed to be professionally ready, technically competent, and culturally aligned with the organization even before official induction.

ix. Skill Enhancement Internship: Carried out at reputed organisations in offline or online mode. The aim of the internship is to expose to real-world tools, technologies, and professional environments to improve a student's employability by offering hands-on experience, application of theoretical concepts, and skill development aligned with current industry and technical trends. Skill Enhancement Internships, depending on focus area and scope, can be carried out at various organisations such as, Academic and Research Institutions, Industry and Corporate Settings, Government and Public Sector, NGOs and Social Enterprises. For Skill Enhancement Internship topics refer to https://online.vtu.ac.in/category/courses/Skill-Enhancement-Course.

Note on Internship for the Attention of Students and Colleges

• Placement training conducted at the college level, whether by third-party agencies, training institutes, or internal faculty, shall not be considered as internship for either a 15 week or a 30-week period.

The official engagement period of 15-week or 30-week for students selected/recruited by the company/ organization only at their premises under the supervision of the company, shall only be considered as an internship.

• The period of training and working of students who have been recruited as employees by organisations at the beginning of the 4th year of the programme, shall also be treated as an internship.

• Students and colleges/institutions shall follow all the guidelines and procedures of the organization and the University's Internship Guidelines, and complete the internship within a period that matches with the VTU Calander and examination timetable.

• The assigned institution faculty mentor/ coordinator/guide should monitor the student's progress, and document offer letters, training reports, attendance, and evaluations for awarding academic credits.

• All students undergoing an internship, should adhere to all the guidelines, reporting protocols, and evaluation procedures prescribed by the University.

• Students must submit the certificate of completion of an internship with the period of internship clearly mentioned, from the respective company/organization.

• Colleges must submit details of students opting for internship during the odd and even semesters, along with a copy of the company selection letter, to the VTU when notified by the University.

Attention: In addition to the internship support provided by the college, students have the option to select internships through the AICTE and VTU Internship Portals. To ensure uniformity, quality, and transparency in the internship process, VTU has developed a dedicated web portal that serves as a single platform where colleges can also register companies offering internships. Every student is required to register on the portal before the commencement of their internship, and their progress will be monitored through the same platform.

As per VTU norms, the CIE shall be conducted based on the students' performance during the training program, assessed through rubrics from the company supervisor. The SEE evaluation shall be conducted by the college as per the examination timetable published by the VTU.

AICTE Activity Points

Apart from technical knowledge and skills, to be successful as professionals, students should have excellent soft skills, leadership qualities and team spirit. They should have entrepreneurial capabilities and societal commitment. To match these requirements, AICTE has created a unique mechanism of awarding minimum 100 Activity Points for regular students and 75 Activity Points for Lateral Entry students over and above the academic grades.

The activities can be spread over the entire duration of the programme and will be reflected in the Student's VIII Semester Grade Card. It shall not be considered for computation of SGPA/CGPA and for vertical progression. The total duration of the activities for the entire programme is 320 hours for regular students and 240 hours for lateral entry students.

Break-up of CCE marks for activity points:

Evaluation by the Proctor/Coordinator 50 marks

Evaluation by the Dept. Committee

(i) Report 20 marks

(ii) Presentation 20 marks

(iii) Outcome 10 marks

Total 100 marks

1. No SEE for AICTE Activity Points.

2. Students will be awarded either NP or P grade based on marks obtained.

Students will be awarded 'Degree' only on earning P grade in the Activity

Points.