SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

Department of Computer Science and Engineering

Minutes of 9th Board of Studies Meeting (UG)

The Ninth Board of Studies meeting of Computer Science and Engineering Department was held on **14th March 2025 at 2:00 P.M** at Seminar Hall, Computer science department, Sri Manakula Vinayagar Engineering College, with Head of the Department in the Chair through online mode.

The following members were present for the BoS meeting

Sl.No	Name of the Member with Designation and official Address	Responsibility in the BoS
1.	**Dr.K. Premkumar, M.E., Ph.D.,** Professor and Head Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry hodcse@smvec.ac.in 9842127679	Chairperson
2.	**Dr. M. Shanmugam, M.E.,Ph.D.,** Associate Professor, Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry shanmugam.mm@smvec.ac.in 9444370963	Member Secretary
3.	**Dr. T. CHITHRALEKHA** Professor, Department of Computer Science, School of Technology, Pondicherry University, Puducherry tchithralekha.csc@pondiuni.edu.in	Subject Expert (Pondicherry University Nominee)
4.	**Dr. M. Ramakrishnan** Professor and Head, School of Information Technology, Department of Computer Applications, Madurai Kamaraja University, Madurai. Ph:8939432261 Mail id: ramkrishod@gmail.com	Subject Expert (Academic Council Nominee)
5.	**Dr. A. Kalaivani** Professor, Department of Information Technology, Rajalakshmi Engineering College, Chennai. 7904977893 Mail: kalaivanianbarasan@rediffmail.com	Subject Expert (Academic Council Nominee)
6.	**Aroulvel S** Technical leader, Cisco, Bangalore	Representative from Industry

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	aroshanm@cisco.com, 9003898387	
7.	**Shakin Banu. H** Design Engineer Specialist British Telecommunication, UK shakin2cse@gmail.com 9791854301	Postgraduate Alumnus (nominated by the Principal)
8.	**Dr. M. Ganesan, M.E., Ph.D.,** Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry ganesan@smvec.ac.in 9486341535	Internal Member
9.	**Dr. R. Ramachandiran, M.Tech., Ph.D.,** Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry ramachandiran@smvec.ac.in 7639031674	Internal Member
10.	**Dr. T. Megala, M.Tech., Ph.D.,** Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email :Megalag26@gmail.com 9789722271	Internal Member
11.	**Dr. N. Pazhaniraja** Associate Professor, Computer Science and Engineering, Sri Manakula Vinayagar Engineering College Email:pazhaniraja.cse@smvec.ac.in	Internal Member
12.	**Mr. P. Karthikeyan** Associate Professor, Computer Science and Engineering, Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:karthikcse@smvec.c.in	Internal Member
13.	**Mr.B.Thiyagarajan** Assistant Professor Sri Manakula Vinayagar Engineering College Email:thiyagarajan@smvec.ac.in	Internal Member
14.	**Mr.S.Kumarakrishnan** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Skumarakrishnan@smvec.acin	Internal Member
15.	**Mrs.C.Kalpana** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:ckalpana@ smvec.ac.in	Internal Member

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16.	**Mrs.P.Bhavani** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Bhavani@ smvec.ac.in	Internal Member
17.	**Mr.D.Rajesh** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:successraju@gmail.com	Internal Member
18.	**Mr.Arokiaraj Christian Hubert** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Arokiaraj@smvec.ac.in	Internal Member
19.	**Ms.Swathilakshmi.V** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Swathilakshmi@gmail.com	Internal Member
20.	**Mrs.S.Subasree** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Subasree@smvec.ac.in	Internal Member
21.	**Mrs.S.Deeba** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:deebacse@smvec.ac.in	Internal Member
22.	**Mrs. R. Deepa** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:deepa.cse@smvec.ac.in	Internal Member
23.	**Mrs.C.Karthika** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:karthikacse@smvec.ac.in	Internal Member
24.	**Mr.K. Anbuthiruvarangan** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Anbuthiruvarangan.cse@smvec.ac.in	Internal Member
25.	**Mrs.N.Suganya** Assistant Professor Sri ManakulaVinayagar Engineering College Madagadipet,Puducherry Suganaya.cse@smvec.ac.in	Internal Member
26.	**Ms.N.Pavithra** Assistant Professor	Internal Member

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	Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Pavithra.cse@smvec.ac.in	
27.	**Mrs.M.Hemalatha** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry hemalatha.cse@smvec.ac.in	Internal Member
28.	**Ms.V.Nivetha** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry nivetha.cse@smvec.ac.in	Internal Member
29.	**Ms.A.Mohanapriya** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry mohanapriya.cse@smvec.ac.in	Internal Member
30.	**Ms.A.Amala Margret** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry amalamargret.cse@smvec.ac.in	Internal Member
31.	**Mrs.Renu** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry renu.cse@smvec.ac.in	Internal Member
32.	**Mr.M.Elamaran** Associate Professor, Department of English, SMVEC	Internal Member
33.	**Dr.T.Jayavarthanan** Professor, Department of Physics, SMVEC	Internal Member
34.	**Dr.S.Savithiri** Professor and Head, Department of Chemistry, SMVEC	Internal Member
35.	**Dr.K.Raja** Assistant Professor, Department of Mathematics, SMVEC	Internal Member

Agenda of the Meeting	
Item No. : BoS/ UG/ CSE 9.1	Welcome Address and to confirm the minutes of the eighth meeting of Board of Studies held on 30.08.2024.
Item No. : BoS/ UG / CSE 9.2	To discuss and approve Curriculum for 1 to 8 semesters and syllabi of seventh Semester for the B.Tech Computer Science and Engineering students admitted from the academic year 2023-24 under R-2023 Regulation. • Credit Distribution • Course structure • Professional Core Courses • Professional Elective Courses

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	• Open Elective Courses offered to other departments

Item No. : BoS/ UG / CSE 9.3	To discuss the uniqueness of the Curriculum (R-2023)
	• Theory cum Practical Courses
	• Micro and Mini Projects
	• Ability Enhancement Courses
	  o Skill Enhancement Courses
	  o Certification Courses
	• Mandatory courses
	• Introduction of Universal Human Values II
	Sustainable Development Goals (SDG) – Equivalent courses as per NEP 2020

Item No. : BoS/ UG / CSE 9.4	To Discuss the Honors Degree and Minor Degree – Courses, Syllabus and Credits
Item No. : BoS/ UG / CSE 9.5	To discuss and approve the Evaluation Systems for regulation R-2023. • Mark weightage for Continuous Assessment and End Semester Examination • Question paper pattern • Mark requirement to pass the course
Item No. : BoS/ UG / CSE 9.6	• To discuss and approve the academic calendar for the even semester of 2024-2025 academic year.
Item No. : BoS/ UG / CSE 9.7	To apprise about the Industry Institute Interactions of the department of Computer Science and Engineering. • Guest lectures • Internship details • MOUs • Industrial Visits • Value Added Courses
Item No. : BoS/ UG / CSE 9.8	To apprise the End Semester Results of the students admitted in the Academic Year 2021-2022 (VII sem), 2022-2023 (V sem), 2023-2027 (III sem) and to discuss about Extra-Curricular and Co-Curricular activities.
Item No. : BoS/ UG / CSE 9.9	To apprise the schedule of the End Semester Examination to be conducted in the month of APR / MAY 2025 and to discuss and recommend the panel of examiners to the Academic Council.
Item No. : BoS/ UG / CSE 9.10	Any other item with the permission of chair.

Minutes of the Meeting

Dr. K.Premkumar, Chairperson, BoS opened the meeting by welcoming and introducing the external members, to the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairperson.

Item No. : BoS/ UG/ CSE 9.1

Confirmation of minutes of 8th BoS meeting held on 30.08.2024.

Chairperson, BoS, apprised the minutes of 8th BoS. Then it is confirmed that suggestion and minor revision stated at 8th BoS meeting was incorporated and mentioned below.

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S. No	Regulation	Semester	Subject Name with code	Unit	Particulars
1	2023	V	Research Methodology U23HSTC02	-	Reconsider Syllabus for Research Methodology
2	2023	V	Cloud Computing U23CST504	III,IV	Swap Unit III -Cloud deployment tools to unit IV and Unit-IV AWS Cloud computing basics to Unit III
3	2023	V	Artificial Intelligence U23CSTC06	IV,V	Reframe unit 4 and Unit 5 and suggested to include Typical AI Syllabus
4	2023	V	Web Designing U23CSTC07	-	CO4, CO5 need to be revised and prerequisite to be changed
5	2023	V,VI	-	-	Text Books and Reference books of all courses need to be updated to recent edition
6	2023	V	Cloud Laboratory U23CSP503		Change exercise number 6 and 7 as to write a procedure instead of find a procedure
7	2023	V	Artificial Intelligence Laboratory U23CSPC05		Reframe Artificial Intelligence Laboratory all exercises
8	2023	V	Programming in C# U23CSE506		Practical exercises need to be added in Syllabus
9	2023	V	Cloud Tools and Techniques U23CSE508		Replace Elective Cloud Tools and Techniques with any other paper(Included Network Security U23CSE507)
10	2023	V	Front-End Development U23CSE510		Replace Elective Front-End Development and Techniques with any other paper(Included Software Project Management U23CSE509)
11	2023	V	Open source Programming for IoT U23CSE508	-	Swap the elective paper Open source Programming for IoT from 6th Semester to 5th Semester and IoT challenges and Future from 5th Semester to 6th Semester
13	2023	-	-	-	Include Neural Computation Course in Syllabus-(Included in VII semester)

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14	2023	VI	Designing and Building of Bots U23CST605	-	In Course Designing and Building of Bots include Robotic Process Automation alone
15	2023	VI	Animation and Visual Effects U23CST606	v	Reframe Unit 5 Blender
16	2023	VI	Blockchain Concepts and Applications U23CSB602	I,II	Reframe unit I and III in Blockchain Concepts and Applications
17	2023	VI	Game Design and Development U23CSE611	-	Include unity in the Course Game Design and Development
18	2023	IV	Cyber Security Essentials U23CSH401	-	In Honours degree Swap the course Cyber Security Essentials from 5th Semester to 4th
19	2023	IV	Cryptography and data privacy U23CSH502	-	In Honour degree change the title Cryptography and data privacy to Cryptography

The above correction was incorporated and approved by BoS members in 8th BoS meeting

Item No. : BoS/ UG/ CSE 9.2

To discuss and approve Curriculum for 1 to 8 semesters and syllabi of seventh Semester for the B.Tech Computer Science and Engineering students admitted from the academic year 2023-24

The B.Tech. Degree curriculum and syllabus approval of VII semesters under Autonomous Regulations 2023 for the B.Tech programme and the students admitted in the 2023-24 were discussed and recommended with the following modifications.

S. No	Regulation	Semester	Subject Name with code	Unit	Particulars
1.	R-23	VII	Data science and digital Marketing Course to be reframed to Data Analytics	-	Course has been Replaced with Data Analytics Course
2.	R-23	VII	Incorporate 5G technology oriented courses in Elective	-	Fundamentals of 5G technology Course is added as elective course

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3.	R-23	VII	Reframe IoT and Edge computing into Internet of things Course	-	IoT and Edge Computing course is reframed as Internet of things and its Applications
4.	R-23	VII	Neural Computation Course syllabus to be reframed	-	Neural Computation is Reframed
5.	R-23	VII	Remove Digital Security and steganography course from elective	-	Digital Security and steganography is removed and 5G technology course is included in elective
8	R-23	-	Include Go Programming in any of the application either cloud or networks	-	Suggestions Incorporated
9	R-23	-	Suggested to prepare lab Exercise by reflecting theory Course	-	Suggestions Incorporated

The above correction was incorporated and approved by BoS members in 9th BoS meeting, and the details are enclosed in Annexure - I.

Item No. : BoS/ UG/ CSE 9.3

To discuss the uniqueness of the Curriculum (R-2023)

- Credit Distribution
- Course structure
- Professional Core Courses
- Professional Elective Courses
- Open Elective Courses offered to other departments

- Discussed about the approval of Theory cum Practical Courses, Micro and Mini Projects , Syllabus Credits, Ability Enhancement Courses, Mandatory courses Introduction of Universal Human Values II and Sustainable Development Goals (SDG) introduced for B.Tech Computer Science and Engineering under R-2023 regulation from the Academic Year 2023 -2024 and the same is approved by BoS members.

Item No. : BoS/ UG/ CSE 9.4

To Discuss the Honours Degree and Minor Degree – Courses, Syllabus and Credits

The Honours and Minor Degree curriculum and syllabus approval under Autonomous Regulations 2023 for the B.Tech programme and the students admitted in the 2023-24

2. A. 3. 8

were discussed and recommended with the following modifications.

S. No	Regulation	Semester	Subject Name with code	Unit	Particulars
1.	R-23	-	Remove Malware Analysis Course form Honors Curriculum	-	Malware Analysis is removed and Ethical hacking is included in Honors Curriculum
2.	R-23	-	Reorder the honors curriculum	-	As per the BOS Members Suggestion ,the course is reordered

The above correction was incorporated and approved by BoS members in 9th BoS meeting, and the details is enclosed in Annexure - II.

Item No. : BoS/ UG/ CSE 9.5

To discuss and approve the Evaluation Systems for Honors and Minors regulation R-2023.

- Mark weightage for Continuous Assessment and End Semester Examination
- Question paper pattern
- Mark requirement to pass the course

Discussed about the Evaluation System and Question paper Format under R-2023 for the students admitted from the Academic Year 2023-24 and the same was approved by BoS members and details are attached in **Annexure-III**

Item No. : BoS/ UG/ CSE 9.6

To Discuss and Approve the academic Calendar for the even semester of 2024 -25 academic year

The Panel of Experts discussed and approved the calendar for the even semester 2024-25 and details are attached in **Annexure-IV**

Item No. : BoS/ UG/ CSE 9.7

To apprise about the Industry Institute Interactions of the department of Computer Science and Engineering

- Guest lectures
- Internship details
- MOUs
- Industrial Visits
- Value Added Courses

The Panel of Experts discussed about the Industry Institute Interactions

2.A.3.9

Item No. : BoS/ UG/ CSE 9.8

To apprise the End Semester Results of the students admitted in the Academic Year 2021-2022 (VII sem), 2022-2023 (V sem), 2023-2027 (III sem) and to discuss about Extra-Curricular and Co-Curricular activities.

The panel discussed about Results of III ,V and VII semester and encouraged students to participate in Extra-Curricular and Co-Curricular activities

Item No. : BoS/ UG/ CSE 9.9

To apprise the schedule of the End Semester Examination to be conducted in the month of APR / MAY 2025 and to discuss and recommend the panel of examiners to the Academic Council.

The list of question paper setters and recommended to include government college faculties. The suggestion is incorporated and details are enclosed in Evaluators **(given in Annexure-V)**

Item No. : BoS/ UG/ CSE 9.10

Any other item with the permission of chair.

The panel discussed about bringing up new research topic in curriculum

The meeting for the above Agenda regarding B.Tech – Computer Science and Engineering was concluded by 3:00 pm with by **Dr. K.Premkumar**, Chairperson-BoS and Head of Department, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College.

2. A. 3. 10

Department of Computer Science and Engineering

Minutes of 9th Board of Studies Meeting
(M.Tech – Computer Science and Engineering)
M.Tech- Computer Science Engineering (Big Data and Analytics)

Agenda of the Meeting	
Item No. : BoS/ PG/CSE/BDA 9.1	Welcome Address and to confirm the minutes of the eighth meeting of Board of Studies held on 30.08.2024.
Item No. : BoS/ PG/CSE/BDA 9.2	To discuss and approve the Curriculum for 1 to 4 semesters and syllabi: (Already discussed)
Item No. : BoS/ PG/CSE/BDA 9.3	To apprise the End Semester Results of the students admitted in the Academic Year 2023-2025 (III sem), 2024-2026 (I sem) and to discuss about Extra-Curricular and Co-Curricular activities
Item No. : BoS/ PG/CSE/BDA 9.4	To apprise about the List of Courses for Professional Electives / Ability Enhancement Courses / Mandatory Courses under R-2023 for the students admitted from the academic Year 2023-24: (Already Discussed)
Item No. : BoS/ PG/CSE/BDA 9.5	Any other item with the permission of chair

Minutes of the Meeting

Dr. K.Premkumar, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item No. : BoS/ PG/ CSE 9.1

Confirmation of minutes of 8th BoS meeting held on 30.08.2024.

Item No. : BoS/ PG/ BDA 9.2

To discuss and approve the Curriculum for 1 to 4 semesters and syllabi:
(Already discussed)

Discussed about the Curriculum and Syllabi for all four semesters of M.Tech (CSE) and M.Tech(BDA) and the curriculum is enclosed in **Annexure-VI**

Item No.:BoS/PG/BDA 9.3

To apprise the End Semester Results of the students admitted in the Academic Year 2023-2025 (III sem), 2024-2026 (I sem) and to discuss about Extra-Curricular and Co-Curricular activities

The panel discussed about Results of III and I semester and encouraged students to participate in Extra-Curricular and Co-Curricular activities

2.A.3.11

Item No.:BoS/PG/BDA 9.4

To apprise about the List of Courses for Professional Electives / Ability Enhancement Courses / Mandatory Courses under R-2023 for the students admitted from the academic Year 2023-24: (Already Discussed)

Discussed about the offering of List of Courses for Professional Electives / Ability Enhancement Courses / Mandatory Courses under R-2023 for the students admitted from the academic Year 2024-25 for M.Tech(CSE) and the same was approved by BoS members

Item No.:BoS/PG/BDA 9.5

Any other item with the permission of chair

The panel discussed about bringing up new research topic in curriculum and to increase admission

The meeting for the above Agenda regarding **M.Tech – Computer Science and Engineering** and **M.Tech- Computer Science Engineering (Big Data and Analytics)** was concluded by 3:15 pm with by **Dr. K.Premkumar**, Chairman-BoS and Head of Department, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College.

2. A. 3. 12

Department of Computer Science and Engineering

Minutes of 9th Board of Studies Meeting
(Ph.D in Computer Science and Engineering)

Agenda of the Meeting	
Item No. : BoS/ Ph.D/CSE 9.1	Welcome Address and to confirm the minutes of the eighth meeting of Board of Studies held on 30.08.2024.
Item No. : BoS/ Ph.D/CSE 9.2	To discuss about the Various Scholars doing Ph. D. in the department of Computer Science and Engineering
Item No. : BoS/ Ph.D/CSE 9.3	To discuss about the progress of the Scholars
Item No. : BoS/ Ph.D/CSE 9.4	Any other item with the permission of chair

Minutes of the Meeting

Dr. K.Premkumar, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item No. : BoS/ Ph.D/CSE 9.1

Welcome Address and to confirm the minutes of the eighth meeting of Board of Studies held on 30.08.2024.

Chairman, BoS, apprised the minutes of 9th BoS, its implementation and then it is confirmed with the approval in 8th BoS meeting for the incorporation without any revision

Item No. : BoS/ Ph.D/CSE 9.2

To discuss about the Various Scholars doing Ph. D. in the department of Computer Science and Engineering

The details about Scholars is discussed .

Item No. : BoS/ Ph.D/CSE 9.3

To discuss about the progress of the Scholars

The Details of Scholars and their Progress is discussed and details is enclosed in **Annexure-VII**

Item No. : BoS/ Ph.D/CSE 9.4

Any other item with the permission of chair

The panel discussed about the publication of scholar

The meeting for the above Agenda regarding B.Tech – Computer Science and Engineering was concluded by 3:30 pm with by **Dr. K.Premkumar**, Chairperson-BoS and Head of Department, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College.

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Sl.No	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1.	**Dr.K. Premkumar, M.E., Ph.D.,** Professor and Head Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry hodcse@smvec.ac.in 9842127679	Chairperson	10/4/24
2.	**Dr. M. Shanmugam, M.E.,Ph.D** Associate Professor, Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry shanmugam.mm@smvec.ac.in 9444370963	Member Secretary	
3.	**Dr. T. CHITHRALEKHA** Professor, Department of Computer Science, School of Technology, Pondicherry University, Puducherry tchithralekha.csc@pondiuni.edu.in	Subject Expert (Pondicherry University Nominee)	T. Chithralekha
4.	**Dr. M. Ramakrishnan** Professor and Head, School of Information Technology, Department of Computer Applications, Madurai Kamaraja University, Madurai. Ph:8939432261 Mail id: ramkrishod@gmail.com	Subject Expert (Academic Council Nominee)	
5.	**Dr. A. Kalaivani** Professor, Department of Information Technology, Rajalakshmi Engineering College, Chennai. 7904977893 Mail: kalaivanianbarasan@rediffmail.com	Subject Expert (Academic Council Nominee)	A. Kalaivani
6.	**Aroulvel S** Technical leader, Cisco,Bangalore aroshanm@cisco.com, 9003898387	Representative from Industry	
7.	Shakin Banu. H Design Engineer Specialist British Telecommunication, UK shakin2cse@gmail.com 9791854301	Postgraduate Alumnus (nominated by the Principal)	H Shakin
8.	**Dr. M. Ganesan, M.E., Ph.D.,**	Internal Member	

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	Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry ganesan@smvec.ac.in 9486341535		
9.	**Dr. R. Ramachandiran, M.Tech., Ph.D.,** Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry ramachandiran@smvec.ac.in 7639031674	Internal Member	
10.	**Dr. T. Megala, M.Tech., Ph.D.,** Associate Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email :Megalag26@gmail.com 9789722271	Internal Member	
11.	**Dr. N. Pazhaniraja** Associate Professor, Computer Science and Engineering, Sri Manakula Vinayagar Engineering College Email:pazhaniraja.cse@smvec.ac.in	Internal Member	
12.	**Mr. P. Karthikeyan** Associate Professor, Computer Science and Engineering, Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:karthikcse@smvec.c.in	Internal Member	
13.	**Mr.B.Thiyagarajan** Assistant Professor Sri Manakula Vinayagar Engineering College Email:thiyagarajan@smvec.ac.in	Internal Member	
14.	**Mr.S.Kumarakrishnan** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Skumarakrishnan@smvec.acin	Internal Member	
15.	**Mrs.C.Kalpana** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:ckalpana@ smvec.ac.in	Internal Member	

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16.	**Mrs.P.Bhavani** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Bhavani@ smvec.ac.in	Internal Member	
17.	**Mr.D.Rajesh** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:successraju@gmail.com	Internal Member	
18.	**Mr.Arokiaraj Christian Hubert** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Arokiaraj@smvec.ac.in	Internal Member	
19.	**Ms.Swathilakshmi.V** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Swathilakshmi@gmail.com	Internal Member	
20.	**Mrs.S.Subasree** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:Subasree@smvec.ac.in	Internal Member	
21.	**Mrs.S.Deeba** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:deebacse@smvec.ac.in	Internal Member	
22.	**Mrs. R. Deepa** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:deepa.cse@smvec.ac.in	Internal Member	
23.	**Mrs.C.Karthika** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Email:karthikacse@smvec.ac.in	Internal Member	
24.	**Mr.K. Anbuthiruvarangan** Assistant Professor Sri Manakula Vinayagar Engineering College	Internal Member	

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	Madagadipet,Puducherry Anbuthiruvarangan.cse@smvec.ac.in		
25.	**Mrs.N.Suganya** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Suganaya.cse@smvec.ac.in	Internal Member	
26.	**Ms.N.Pavithra** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry Pavithra.cse@smvec.ac.in	Internal Member	
27.	**Mrs.M.Hemalatha** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry hemalatha.cse@smvec.ac.in	Internal Member	
28.	**Ms.V.Nivetha** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry nivetha.cse@smvec.ac.in	Internal Member	
29.	**Ms.A.Mohanapriya** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry mohanapriya.cse@smvec.ac.in	Internal Member	
30.	**Ms.A.Amala Margret** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry amalamargret.cse@smvec.ac.in	Internal Member	
31.	**Mrs.Renu** Assistant Professor Sri Manakula Vinayagar Engineering College Madagadipet,Puducherry renu.cse@smvec.ac.in	Internal Member	
32.	**Mr.M.Elamaran** Associate Professor, Department of English, SMVEC	Internal Member	

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33.	**Dr.T.Jayavarthanan** Professor, Department of Physics, SMVEC	Internal Member	
34.	**Dr.S.Savithiri** Professor and Head, Department of Chemistry, SMVEC	Internal Member	
35.	**Dr.K.Raja** Assistant Professor, Department of Mathematics, SMVEC	Internal Member	

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ANNEXURE-I

2.A.3.19

2. A. 3. 20

Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category Code: **PC**				*End Semester Exam Type: **TE**		
Course Code	**U23CST707**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**INTERNET OF THINGS AND ITS APPLICATIONS**	**3**	**0**	**0**	**3**	**25**	**75**	**100**
CSE								
Prerequisite	Basic knowledge of Sensors and Networks							

Course Outcome	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
CO1	Explain the basic concepts, architecture, and applications of IoT.	**K2**
CO2	Identify and utilize various IoT communication protocols.	**K3**
CO3	Interface sensors, actuators, and microcontrollers for IoT applications.	**K5**
CO4	Analyze security challenges and solutions in IoT.	**K1**
CO5	Design and implement real-world IoT solutions.	**K2**

Unit- I	**Introduction to IoT**	**Periods: 09**
Introduction to IoT - Characteristics of IoT - IoT Functional Blocks - IoT vs. Traditional Networks - Applications of IoT in Various Domains - IoT Architecture - Sensors, Actuators, and Edge Devices - Role of Cloud Computing in IoT - Challenges in IoT Deployment - Future Trends in IoT.		**CO1**
Unit- II	**IoT Communication Technologies**	**Periods: 09**
Wireless Communication Protocols for IoT - Wi-Fi, Bluetooth, and Zigbee - LoRa and LPWAN - 6LoWPAN and Thread - MQTT and CoAP Protocols - HTTP and WebSocket Communication - RFID and NFC - Edge Computing and Fog Computing - Data Acquisition and Processing - Message Queueing in IoT.		**CO2**
Unit- III	**IoT Hardware and Programming**	**Periods: 09**
Overview of IoT Development Boards (Arduino, Raspberry Pi, ESP8266) - Sensors and Actuators Interfacing - Introduction to Embedded C and Python for IoT - IoT Data Collection and Processing - Connectivity with Cloud Services - IoT System Debugging - Energy Efficiency in IoT Devices - Real-time Monitoring and Control - IoT Development Frameworks - Hands-on: Building a Simple IoT Prototype.		**CO3**
Unit- IV	**IoT Security and Privacy**	**Periods: 09**
IoT Security Threats and Vulnerabilities - Cryptographic Techniques in IoT - Secure Communication Protocols - Authentication and Access Control - Blockchain for IoT Security - Intrusion Detection in IoT Networks - Data Privacy Challenges - GDPR and IoT Compliance - Secure IoT Device Management - Case Studies on IoT Security Attacks.		**CO4**
Unit- V	**IoT Applications and Case Studies**	**Periods: 09**
Smart Home and Building Automation - Smart Healthcare and Wearables - Smart Cities and Transportation - Industrial IoT (IIoT) and Smart Manufacturing - IoT in Agriculture - IoT in Environmental Monitoring - IoT in Supply Chain and Retail - Predictive Maintenance using IoT - AI and Machine Learning in IoT - Future Trends and Research Directions.		**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. S. Misra, A. Mukherjee, A. Roy, A. Obaid, "Introduction to Internet of Things (IoT)", River Publishers, 1st Edition, 2023.
2. S. Misra, M. S. Obaidat, A. V. Vasilakos, "Security Challenges and Approaches in Internet of Things", Springer, 1st Edition, 2023.
3. Fotios Chantzis, Ioannis Stais, Paulino Calderon, Evangelos Deirmentzoglou, Beau Woods, "Practical IoT Hacking: The Definitive Guide to Attacking the Internet of Things", No Starch Press, 1st Edition, 2021.
4. Peter Waher, "Mastering Internet of Things: Design and create your own IoT applications using Raspberry Pi 3", Packt Publishing, 1st Edition, 2018.
5. Rajkumar Buyya, Amir Vahid Dastjerdi, "Internet of Things: Principles and Paradigms", Morgan Kaufmann, Latest Edition, 2016.

Reference Books

1. Ovidiu Vermesan, Peter Friess, "Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems", River Publishers, 1st Edition, 2013.
2. Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things", Wiley, 1st Edition, 2013.
3. Samuel Greengard, "The Internet of Things", MIT Press, 1st Edition, 2015.
4. Klaus Schwab, "The Fourth Industrial Revolution", Crown Business, 1st Edition, 2016.

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5. Cuno Pfister, "Getting Started with the Internet of Things", O'Reilly Media, 1st Edition, 2011.

Web References

1. https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot
2. https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/
3. https://www.geeksforgeeks.org/IoT/
4. https://www.i-scoop.eu/internet-of-things-guide/iot/
5. https:\\www.abouttheInternetofThings.com

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
2	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
3	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
4	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
5	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

- Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VII**	Course Category: **PC**				End Semester Exam Type: **T**		
Course Code	**U23CST708**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**T**
Course Name	**Data Analytics**	3	-	-	3	25	75	10
		CSE						

Prerequisite	NIL		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Leve
	CO1	Demonstrate a comprehensive understanding of data analytics concepts and methodologies.	**K2**
	CO2	Effectively preprocess and visualize data using appropriate tools.	**K3**
	CO3	Apply statistical techniques to draw meaningful insights from data.	**K2**
	CO4	Implement machine learning models for classification and regression tasks.	**K3**
	CO5	Utilize programming languages like Python and R for data analysis projects.	**K4**

UNIT - I	**Introduction to Data Analytics**	**Periods:09**
Definition and scope of data analytics - Types of data: structured, semi-structured, unstructured - Data collection methods and sources - Data quality and preprocessing - Exploratory data analysis (EDA) - Descriptive statistics - Data visualization principles - Introduction to data ethics and privacy - Overview of data analytics applications in various industries.		**C**
UNIT - II	**Data Manipulation and Visualization**	**Periods:09**
Data cleaning and transformation techniques - Handling missing data and outliers - Data integration and aggregation - Introduction to data visualization tools (e.g., Tableau, Power BI) - Creating effective charts and graphs - Dashboard design principles - Geospatial data visualization - Interactive data visualization techniques - Storytelling with data - Best practices for data presentation.		**C**
UNIT - III	**Statistical Analysis for Data Analytics**	**Periods:09**
Probability theory and distributions - Inferential statistics: hypothesis testing, confidence intervals - Correlation and regression analysis - ANOVA and chi-square tests - Time series analysis Reddit - Introduction to Bayesian statistics - Non-parametric methods - Resampling techniques: bootstrapping and permutation tests - Multivariate statistical methods - Statistical software tools (e.g., SPSS, SAS)		**C**
UNIT - IV	**Machine Learning for Data Analytics**	**Periods:09**
Supervised vs. unsupervised learning - Linear and logistic regression - Decision trees and random forests - Support vector machines - Clustering techniques: k-means, hierarchical clustering - Association rule mining - Dimensionality reduction methods: PCA, LDA - Model evaluation and validation techniques - Overfitting and regularization - Introduction to deep learning.		**C**
UNIT - V	**Data Analytics Tools and Programming**	**Periods:09**
Introduction to Python for data analytics - Data manipulation with Pandas - Data visualization with Matplotlib and Seaborn - Introduction to R programming for data analysis - Data wrangling and visualization in R - SQL for data querying and manipulation - NoSQL databases and big data technologies - Introduction to cloud-based data analytics platforms - Developing reproducible data analysis workflows - Collaborative tools for data science projects.		**C**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

. Wes McKinney, "Python for Data Analysis", O'Reilly Media, 3rd Edition, 2022.

. Ivo D. Dinov, "Data Science and Predictive Analytics: Biomedical and Health Applications Using R", Springer, 2nd Edition, 023.

. Joseph M. Manzo, "Data Analytics Using Excel Microsoft 365: With Accounting and Finance Datasets", FlatWorld, Latest dition, 2023.

. Foster Provost and Tom Fawcett, "Data Science for Business: What You Need to Know about Data Mining and Data-Analytic hinking", O'Reilly Media, Latest Edition, 2013.

. Peter Bruce and Andrew Bruce, "Practical Statistics for Data Scientists: 50 Essential Concepts", O'Reilly Media, 2nd Edition, 020.

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Reference Books

1.Anil Maheshwari, Data Analytics Made Accessible, Amazon Digital Services, Latest Edition, 2020.
2. Phil Simon, Too Big to Ignore: The Business Case for Big Data, Wiley, Latest Edition, 2013.
3. Christopher Bishop, Pattern Recognition and Machine Learning, Springer, Latest Edition, 2006.
4. Trevor Hastie, Robert Tibshirani, and Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Springer, 2nd Edition, 2009.
5. Davy Cielen, Arno D. B. Meysman, and Mohamed Ali, Introducing Data Science: Big Data, Machine Learning, and More, Us Python Tools, Manning Publications, Latest Edition, 2016.

Web References

1. https://www.ibm.com/topics/data-analytics
2. https://www.datacamp.com/courses/data-manipulation-with-pandas
3. https://www.khanacademy.org/math/statistics-probability
4. https://ai.google/education/
5. https://www.w3schools.com/sql

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	2	1	2	2	3	3	2	1	2	3	3	3	1	3
2	1	2	1	2	2	3	3	2	1	2	3	3	3	3	2
3	1	2	1	2	2	3	3	2	1	3	3	3	2	1	3
4	2	2	2	3	2	3	3	2	1	3	3	3	1	1	2
5	1	2	1	2	2	3	3	2	1	2	3	3	3	1	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category Code: **PC**				*End Semester Exam Type: **TE**		
Course Code	**U23CST709**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Neural Networks and Deep Learning**	**3**	**0**	**0**	**3**	**25**	**75**	**100**
CSE								
Prerequisite	Artificial Intelligence							

Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
CO1	Demonstrate a comprehensive understanding of neural network architectures and their components	**K2**
CO2	Implement and train neural networks using appropriate algorithms and optimization techniques	**K3**
CO3	Evaluate the performance of deep learning models and apply regularization methods to mitigate overfitting	**K4**
CO4	Design and analyze advanced neural network models, such as convolutional and recurrent networks, for specific applications	**K4**
CO5	Utilize deep learning frameworks to address complex problems in areas like computer vision and natural language processing	**K4**

Unit - I	**Introduction to Neural Networks**	**Periods: 09**
Biological inspiration of neural networks - Artificial neurons and perceptrons - Activation functions and their properties - Feedforward neural networks - Backpropagation algorithm - Loss functions and performance metrics - Gradient descent and its variants - Overfitting and underfitting in neural networks.		**CO1**
Unit - II	**Deep Learning Fundamentals**	**Periods: 09**
Introduction to deep learning and its significance - Deep feedforward networks - Regularization techniques: dropout, batch normalization - Optimization algorithms: Adam, RMSprop - Hyperparameter tuning and model selection - Data preprocessing and augmentation - Transfer learning concepts - Evaluation strategies for deep learning models		**CO2**
Unit - III	**Convolutional Neural Networks (CNNs)**	**Periods: 09**
Concept and architecture of CNNs - Convolution and pooling layers - Popular CNN architectures: LeNet, AlexNet, VGG - Applications of CNNs in image processing - Techniques to prevent overfitting in CNNs - Visualization and interpretation of CNN features - Object detection and segmentation basics - Recent advancements in CNN architectures		**CO3**
Unit - IV	**Recurrent Neural Networks (RNNs) and Sequence Modeling**	**Periods: 09**
Structure and functioning of RNNs - Backpropagation through time (BPTT) - Long Short-Term Memory (LSTM) networks - Gated Recurrent Units (GRUs) - Applications in natural language processing - Sequence-to-sequence models and attention mechanisms - Challenges in training RNNs and solutions - Bidirectional RNNs and their applications		**CO4**
Unit - V	**Advanced Deep Learning Algorithms**	**Periods: 09**
Generative Adversarial Networks (GANs) - Autoencoders and variational autoencoders - Deep reinforcement learning fundamentals - Capsule networks and their applications - Deep learning for graph data: Graph Neural Networks (GNNs) - Ethical considerations in deep learning - Emerging trends and future directions in deep learning.		**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. Charu C. Aggarwal, "Neural Networks and Deep Learning: A Textbook," Springer, 2nd Edition, 2023.
2. Michael Nielsen, "Neural Networks and Deep Learning," Determination Press, 2015.
3. François Chollet, "Deep Learning with Python," Manning Publications, 2nd Edition, 2021.
4. Ian Goodfellow, Yoshua Bengio, and Aaron Courville, "Deep Learning," MIT Press, 2016.
5. Simon Haykin, "Neural Networks and Learning Machines," Pearson, 3rd Edition, 2008

Reference Books

1. Yoshua Bengio, "Learning Deep Architectures for AI," Now Publishers Inc., 2009.
2. Li Deng and Dong Yu, "Deep Learning: Methods and Applications," Now Publishers Inc., 2014.
3. Bishop, C. M., "Pattern Recognition and Machine Learning," Springer, 2006.
4. Zhang, C., et al., "Dive into Deep Learning," 2020.
5. Aurelien Géron, "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow," O'Reilly Media, 2nd Edition, 2019.Michael A. Arbib, "The Handbook of Brain Theory and Neural Networks", The MIT Press, 2022.

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1. https://neuralnetworksanddeeplearning.com
2. https://www.deeplearningbook.org/
3. https://www.tensorflow.org/tutorials
4. https://pytorch.org/tutorials/
5. https://www.kaggle.com/learn/intro-to-deep-learning

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	2	2	1	1	-	2	1	1	1	3	3	3
2	2	2	2	3	2	1	1	-	-	1	1	1	2	2	2
3	3	2	3	2	2	2	1	-	-	2	1	2	3	3	3
4	2	2	2	2	2	1	1	-	2	1	1	1	2	2	3
5	3	2	1	2	2	2	1	-	3	2	1	2	2	3	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

*Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category: **PC**				End Semester Exam Type: **LE**		
Course Code	**U23CSP706**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**INTERNET OF THINGS AND ITS APPLICATIONS LABORATORY**	**0**	**0**	**2**	**1**	**50**	**50**	**100**
Prerequisite	Basic knowledge of programming, microcontrollers and network communication							

Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Analyse the performances of IOT devices	**K2**
	CO2	Design IoT applications in different domain	**K5**
	CO3	Implement basic IoT applications on embedded platform	**K5**
	CO4	Use of the cloud tool kits	**K3**
	CO5	Design and Implement applications on the Cloud.	**K5**

List of Exercises

Use Raspberry Pi or ESP32

Section 1: Fundamentals of IoT

1. Flash an LED at a given on time and off time cycle, where the two times are taken from a file.
2. Retrieve Sensor data and practice conditional processing of the data.
3. Familiarizing Sensors, Actuators and practicing the initialization and interfacing of the kit with different components.
4. Establish and understand communication protocols (MQTT and HTTP) to a IoT cloud server.
5. Bluetooth Low Energy (BLE) Communication. (Send and receive data using a smartphone BLE app (e.g., nRF Connect)).
6. Utilize Data visualization tools (ThingsBoard, Grafana, or Google Sheets) and present a real-time graph of the data and alert user based on sensor thresholds.

Section 2: Advanced IoT Applications

7. Implement IoT-based automation to control actuators using a mobile app (Blynk app)
8. Develop an IoT system monitoring industry environmental parameters to generate alerts and predict machine maintenance.
9. Build a heart monitor using pulse sensor and visualize the data to end-device via Bluetooth.
10. Implement IoT security measures by understanding and identifying threats, authenticated and authorized users and communicate with encryption.

Lecture Periods: -	**Tutorial Periods: -**	**Practical Periods:30**	**Total Periods:30**

Reference Books

1. Jonathan Follett, "Designing for Emerging - UX for Genomics, Robotics, and the Internet of Things Technologies", O'Reilly, 2014.
2. Charalampos Doukas, "Building Internet of Things with the Arduino", Create space, April 2012.
3. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), "Architecting the Internet of Things", Springer, 2011.
4. Michael Margolis, "Arduino Cookbook, Recipes to Begin, Expand, and Enhance Your Projects", 2nd Edition, O'Reilly Media, 2011.
5. Colin Dow, "Mastering IoT: How to Architect IoT Solutions with Edge and Cloud", Packet Publishing, 2019.

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1. https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot
2. https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/
3. https://www.geeksforgeeks.org/edge-computing/
4. https://www.i-scoop.eu/internet-of-things-guide/edge-computing-iot/
5. https:\\www.abouttheInternetofThings.com

* TE – Theory Exam, LE – Lab Exam

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COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
2	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
3	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
4	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2
5	2	1	1	1	2	2	3	2	2	2	2	2	2	3	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category: **PC**				End Semester Exam Type: **LE**		
Course Code	**U23CSP707**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Data Analytics Laboratory**	**0**	**0**	**2**	**1**	**50**	**50**	**100**
Prerequisite								

			BT Mapping (Highest Level)
Course Outcomes	**On completion of the course, the students will be able to**		
	CO1	Design programs using Python functionality and features	**K3**
	CO2	Developing Query Data Frame structures for cleaning and processing	**K4**
	CO3	Construct programming environment to analysis Facebook	**K4**
	CO4	Analyse about the sentiments in twitter.	**K4**
	CO5	Learn how Google Tools using for consumer's reactions	**K5**

List of Exercises

1. Categorize given datasets into structured, semi-structured, and unstructured.
2. Use Python (Pandas) to compute summary statistics and visualize trends.
3. Use Pandas to detect, fill, or drop missing values in a dataset.
4. Use Tableau or Power BI to visualize sales trends.
5. Conduct a t-test to compare two sample means using Python (Scipy).
6. Use Python to compute correlation and fit a regression model on a dataset.
7. Train a logistic regression model to predict customer churn using Scikit-learn.
8. Apply K-means clustering on a dataset and visualize clusters.
9. Retrieve and filter customer data from a SQL database.
10. Create bar plots, histograms, and scatter plots to analyze trends.

Lecture Periods: -	**Tutorial Periods: -**	**Practical Periods:30**	**Total Periods:30**

Reference Books

1. Wes McKinney, "Python for Data Analysis", O'Reilly Media, 3rd Edition, 2022.

2. Ivo D. Dinov, "Data Science and Predictive Analytics: Biomedical and Health Applications Using R", Springer, 2nd Edition, 2023.

3. Joseph M. Manzo, "Data Analytics Using Excel Microsoft 365: With Accounting and Finance Datasets", FlatWorld, Latest Edition, 2023.

Web References

1. https://www.ibm.com/topics/data-analytics
2. https://www.datacamp.com/courses/data-manipulation-with-pandas
3. https://www.khanacademy.org/math/statistics-probability
4. https://ai.google/education/
5. https://www.w3schools.com/sql

* TE – Theory Exam, LE – Lab Exam

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COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	1	1	2	2	3	1	2	1	2	3	3	3	1	3
2	1	2	1	2	2	3	2	2	1	2	3	3	3	3	2
3	1	2	1	2	2	3	1	2	1	3	3	3	2	1	3
4	2	2	2	3	2	3	2	2	1	3	3	3	1	1	2
5	3	1	2	3	2	3	3	2	1	3	3	3	2	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – H igh

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

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Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VIII**	Course Category: **PA**				End Semester Exam Type: **LE**		
Course Code	**U23CSW703**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**TM**
Course Name	**Project phase – I**	-	-	4	2	50	50	100

Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	State the problem definition clearly.	**K3**
	CO2	Prepare SRS for projects.	**K3**
	CO3	Prepare SDS for projects.	**K3**
	CO4	Develop presentation skills.	**K3**
	CO5	Develop project management skills.	**K3**

List of Exercise

The project group is required to do the following

- literature survey,
- Problem formulation
- Forming a methodology of arriving at the solution of the problem.
- Documentation of each step

Lecture Periods:-	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods:30**

Reference Books

- Papers published in reputed journals, conferences related to the project

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Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VII**	Course Category: **PA**				End Semester Exam Type: =		
Course Code	**U23CSW704**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**TM**
Course Name	**Internship / Inplant Training**	-	-	2	1	100	-	100

In the course of study, during 6th semester holidays, each student is expected to undertake a minimum of 4 Industrial visits (leading hardware manufacturing / software development companies) and 2-week training or undertake a minimum of one month of industry internship (in a reputed concern). Based on the industrial internships / training/visits, the student has to submit a report at the end of seventh semester highlighting the exposure he/she gained. The report will be evaluated by the departmental committee for 100 marks. More weightage will be given for Internship. The proofs for having undergone visits / training are to be enclosed along with report as enclosures.

Lecture Periods:-	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods:30**

Reference Books

- Papers published in reputed journals, conferences related to the project

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PROFESSIONAL ELECTIVES

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Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VII**	Course Category: **PE**				End Semester Exam Type: **TE**		
Course Code	**U23CSE715**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**TM**
Course Name	**Go Programming**	3	-	-	3	25	75	100
CSE								
Prerequisite	Any Programming Language							

Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
CO1	Illustrate the concepts of Go programming	**K1**
CO2	Demonstrate the Structures and Composite data types of Go programming	**K2**
CO3	Outline Functions and Methods of Go programming	**K3**
CO4	Interfaces and Channels of Go programming	**K3**
CO5	Make use of Packages and Concurrency in Go programming	**K4**

UNIT - I	**Introduction to Basic Data Types**	**Periods:09**
Introduction To Go Program- Names, Declarations, Variables, Assignments, Type Declarations, Numbers - Integers, Floating-Point Numbers, Complex Numbers, Constants, Strings, Booleans.		**CO1**
UNIT - II	**Program Structures and Composite Types**	**Periods:09**
Control Structures – The for Statement, the if Statement, the switch Statement, Arrays, Slices, Maps, structs, JSON, TEXT and HTML Templates.		**CO2**
UNIT - III	**Functions and Methods**	**Periods:09**
Functions: Function Declarations, Recursion, Multiple Return Values, Variadic Functions, Deferred Function Calls, Panic, And Recover, Methods: Declaration, Methods with A Pointer Receiver, Composing Types By Struct Embedding, Methods Values And Expressions.		**CO3**
UNIT - IV	**Interface and Channels**	**Periods:09**
Interface: Contracts, Types, Satisfaction, Values – Error Interface – Type Assertion - Discriminating Error with Type Assertion – Channels: Looping in Parallel – Multiplexing – Cancellation.		**CO4**
UNIT - V	**Concurrency and Packages**	**Periods:09**
Concurrency: Race conditions – Mutual Exclusion – Memory synchronisation – Race Detector, Packages: Import Paths – Package Declaration – Import Declaration – Blank Imports – Packages and Naming.		**CO5**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Katherine Cox-Buday, "Concurrency in Go" Publisher: O'Reilly Media, 1st Edition, 2017.
2. Alan A. A. Donovan, Brian W. Kernighan, "The Go Programming Language," Publisher: Addison-Wesley Professional, 1st Edition, 2015.
3. William Kennedy, Brian Ketelsen, Erik St. Martin - "Go in Action," Publisher: Manning Publications, 1st Edition, 2015.

Reference Books

1. Jon Bodner, "Learning Go, 2nd Edition", O'Reilly Media, 2024.
2. Jay McGavren, "Head First Go", O'Reilly Media, 1st Edition, 2019.
3. Mat Ryer, "Go Programming Blueprints", Packt Publishing, 2nd Edition, 2016.
4. Mark Summerfield - Programming in Go: Creating Applications for the 21st Century, Addison-Wesley, 1st Edition, 2012.
5. Ivo Balbaert,"The Way to Go: A Thorough Introduction to the Go Programming Language", iUniverse, 2012.

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- https://golang.org/doc/
- https://gobyexample.com/
- https://www.udemy.com/
- https://www.coursera.org/
- https://www.codecademy.com/

2.A.3. 35

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	2	2	1	1	-	2	1	1	1	3	3	3
2	2	2	2	3	2	1	1	-	-	1	1	1	2	2	2
3	3	2	3	2	2	2	1	-	-	2	1	2	3	3	3
4	2	2	2	2	2	1	1	-	2	1	1	1	2	2	3
5	3	2	1	2	2	2	1	-	3	2	1	2	2	3	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

2.A.3.36

Department	**Computer Science and Engineering**	**Programme: B.Tech**						
Semester	**VII**	Course Category: **PE**			End Semester Exam Type: **TE**			
Course Code	**U23CSE716**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**TM**
Course Name	**Augmented Reality**	3	-	-	3	25	75	100

CSE

Prerequisite	Familiarize yourself with UI design		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understand Augmented Reality.	**K3**
	CO2	Paraphrase models with textures.	**K3**
	CO3	Articulate 3D Programming and Augmented Reality.	**K2**
	CO4	Correlate with FLARManager.	**K4**
	CO5	Illustrate with jMonkeyEngine and NyARToolkit.	**K2**

UNIT - I	**Getting Started with Augmented Reality**	**Periods:09**	
Introduction: Augmented Reality - Tools and Technologies - AR Necessities. Introduction to Processing: The Processing Programming Environment - Drawing in Processing - Working with Classes.			**CO1**
UNIT - II	**Blender Modeling and Texturing Basics**	**Periods:09**	
Blender: Modeling with Blender - Baking a Smooth AO Texture - Creating a Finished Texture with GIMP. Creating a Low-Poly Animated Characters: Texturing Your Low-Poly Alien - Rigging the Model - Keying a Simple Walk Cycle.			**CO2**
UNIT - III	**Processing With 3D Programming and Augmented Reality**	**Periods:09**	
3D Programming: The P3D and OpenGL Environments - Working with OBJ files - Simple Animation with OBJ Arrays. Augmented Reality with Processing: The NyAR4psg Library - Digging into the Sample Code - Controlling Transformations with Multiple Markers.			**CO3**
UNIT - IV	**Interacting with the Physical World and Flarmanager**	**Periods:09**	
Physical World: Physical Computing with Arduino - Sensors and Circuits - Communicating Between Arduino and Processing. FLARManager: AR Toolset for ActionScript - Getting FLARManager Up and Running - Creating Your Own Projects.			**CO4**
UNIT - V	**Prototyping AR with Jmonkeyengine and Nyartoolkit**	**Periods:09**	
JMonkeyEngine and ARMonkeyKit - Exploring ARMonkeyKit - Thoughts from the Developer. NyARToolkit: Android and the Android SDK - NyARToolkit for Android - Going Further with Android. Working with Blender 2.58: Mesh Modeling - Texturing, Baking, and Materials - Rigging and Animation.			**CO5**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Alan B. Craig, "Understanding Augmented Reality: Concepts and Applications," Morgan Kaufmann, 2nd Edition, 2023.
2. Steve Aukstakalnis, "Practical Augmented Reality: A Guide to the Technologies, Applications, and Human Factors for AR and VR," Addison-Wesley Professional, 2nd Edition, 2022.
3. Dr. Helen Papagiannis, "Augmented Human: How Technology Is Shaping the New Reality", O'Reilly Media, 1st edition, 2017.
4. Tony Mullen, "Prototyping Augmented Reality", Sybex, 1st Edition, 2011.
5. Dieter Schmalstieg and Tobias Hollerer, "Augmented Reality: Principles and Practice", Addison-Wesley Professional, 1st Edition, ISBN 978-0321883575.

Reference Books

1. Sean Morey and John Tinnell, "Augmented Reality: Innovative Perspectives Across Art, Industry, and Academia", Parlor Press, 2017.
2. Charles Taylor and Editors of Kingfisher, "The Kingfisher Science Encyclopedia: With 80 Interactive Augmented Reality Models!", Kingfisher, 1st edition, 2024.
3. Adam Greenfield, "Radical Technologies: The Design of Everyday Life", Verso Books, 1st edition, 2017.
4. Greg Kipper and Joseph Rampolla, "Augmented Reality: An Emerging Technologies Guide to AR," Elsevier Science & Technology, 1st Edition, 2021.
5. Mark Billinghurst, Adrian Clark, and Gun Lee, "Wearable AR: Designing and Developing Augmented Reality Experiences," Addison-Wesley Professional, 1st Edition, 2021.

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1. https://en.wikipedia.org/wiki/Augmented_reality?utm_source=chatgpt.com
2. https://urish.medium.com/web-powered-augmented-reality-a-hands-on-tutorial-9e6a882e323e
3. https://www.practically.com/web/ar.php
4. https://www.geeksforgeeks.org/basics-augmented-reality/
5. https://www.meltwater.com/en/blog/augmented-reality
6. https://www.youtube.com/watch?v=wPJ6LHtV844

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
2	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
3	2	2	3	-	2	1	-	1	-	-	-	-	-	1	2
4	2	2	3	2	2	2	-	2	-	-	-	-	-	1	2
5	2	2	3	1	-	1	-	2	-	-	-	-	-	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

2.A.3.38

Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VII**	Course Category: **PE**				End Semester Exam Type: **TE**		
Course Code	**U23CSE717**	Periods/Week			Credit	Maximum Marks		
		L	**T**	**P**	**C**	**CAM**	**ESE**	**TM**
Course Name	**Fundamentals of 5G Networks**	3	-	-	3	25	75	100

Prerequisite	**Computer Programming and Data Structures**		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Leve
	CO1	Explain the motivations and advancements leading to 5G networks.	**K2**
	CO2	Describe the structural design and key components of 5G architecture.	**K3**
	CO3	Evaluate the functionalities and performance of 5G radio access technologies.	**K3**
	CO4	Assess the operations and services provided by the 5G core network.	**K2**
	CO5	Identify and discuss the diverse applications and emerging trends in 5G.	**K3**

UNIT - I	**Introduction to 5G Networks**	**Periods:09**	
Evolution from 1G to 5G - Key drivers and motivations for 5G - 5G use cases and applications - Performance targets and requirements - Standardization bodies and processes - Spectrum allocation and management - Regulatory considerations - Global initiatives and deployments.			**CO**
UNIT - II	**5G Network Architecture**	**Periods:09**	
Overall architecture and design principles - 5G New Radio (NR) interface - Network slicing concepts - Service-based architecture (SBA) - Control and user plane separation - Interworking with previous generations - Deployment options and scenarios - Security considerations in 5G architecture.			**CO**
UNIT - III	**5G Radio Access Technologies**	**Periods:09**	
Overview of 5G NR physical layer - Waveforms and modulation techniques - Massive MIMO and beamforming - Carrier aggregation and dual connectivity - Millimeter-wave communication - Non-orthogonal multiple access (NOMA) - Channel coding and error correction - Mobility management in 5G RAN.			**CO**
UNIT - IV	**5G Core Network and Services**	**Periods:09**	
Next Generation Core (NGC) architecture - Network Function Virtualization (NFV) - Software-Defined Networking (SDN) integration - Session and mobility management - Policy control and charging functions - Edge computing and Multi-access Edge Computing (MEC) - Data analytics and network automation - Security and privacy in the 5G core. .			**CO4**
UNIT - V	**Applications and Future Trends in 5G**	**Periods:09**	
Internet of Things (IoT) integration - Vehicle-to-Everything (V2X) communications - Ultra-Reliable Low Latency Communications (URLLC) - Enhanced Mobile Broadband (eMBB) services - Massive Machine Type Communications (mMTC) - 5G in smart cities and industrial automation - Augmented Reality (AR) and Virtual Reality (VR) applications - Roadmap towards 6G and future networks.			**CO5**
Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Shyam Varan Nath, Ananya Simlai, Oğuzhan Kara, "Mastering 5G Network Design, Implementation, and Operations, Packt Publishing, 1st Edition, 2023.
2. Abdulrahman Yarali, "5G: The 5th Generation Mobile Networks," De Gruyter STEM, 1st Edition, 2023.
3. William Stallings, "5G Wireless: A Comprehensive Introduction," Pearson, 1st Edition, 2021.
4. Martin Sauter, "From GSM to LTE-Advanced Pro and 5G: An Introduction to Mobile Networks and Mobile Broadband, Wiley, 3rd Edition, 2017.
5. Afif Osseiran, Jose F. Monserrat, Patrick Marsch, "5G Mobile and Wireless Communications Technology," Cambridge University Press, 1st Edition, 2016.

2.A.3.39

Reference Books

1. Erik Dahlman, Stefan Parkvall, Johan Skold, "5G NR: The Next Generation Wireless Access Technology," Academic Press, 2nd Edition, 2020.
2. Mischa Dohler, Takehiro Nakamura, "5G Mobile and Wireless Communications Technology," Cambridge University Press, 1st Edition, 2016.
3. Jonathan Rodriguez, "Fundamentals of 5G Mobile Networks," Wiley, 1st Edition, 2015.
4. Larry Peterson, Bruce Davie, "Computer Networks: A Systems Approach," Morgan Kaufmann, 5th Edition, 2011.
5. Andrew S. Tanenbaum, David J. Wetherall, "Computer Networks," Pearson, 5th Edition, 2010

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1. https://www.3gpp.org/
2. https://www.itu.int/en/ITU-R/study- groups/rsg5/rwp5d/Pages/default.aspx
3. https://www.gsma.com/futurenetworks/
4. https://www.nist.gov/communications-technology-laboratory/5g
5. https://www.qualcomm.com/research/5g

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
2	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
3	2	2	3	-	2	1	-	1	-	-	-	-	-	1	2
4	2	2	3	2	2	2	-	2	-	-	-	-	-	1	2
5	2	2	3	1	-	1	-	2	-	-	-	-	-	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

2.A.3. 40

Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category Code: **PE**				*End Semester Exam Type: **TE**		
Course Code	**U23CSE718**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**DIGITAL SECURITY**	**3**	**-**	**-**	**3**	**25**	**75**	**100**
		CSE						
Prerequisite								

Course Outcome	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
CO1	Understand the Fundamentals of Digital Security.	**K2**
CO2	Apply Security Technologies to prevent Vulnerabilities.	**K3**
CO3	Develop Secure Infrastructure and Localhost to assess system security	**K4**
CO4	Learn the basics of Safe and Secure Cyberspace	**K2**
CO5	Analyze the Cybercrime and Cyberlaws using different Methods.	**K3**

UNIT-I	**Fundamentals of Digital Security**	**Periods: 9**	
Introduction to Digital Security – Confidentiality – Integrity and Availability - Foundations - Fundamental concepts, CIA, CIA triangle- Data breach at target - Security Governance - Challenges and Constraints, Security Models and Risk Management, Legacy Cyber security systems - Transformations in Cyber security.			**CO1**
UNIT-II	**Security Technologies**	**Periods: 9**	
Mobile Security - Advanced Data Security - Cloud Security, IoT Security - Incident detection response - Penetration testing - User Behavior Analytics (UBA) - Endpoint Detection and Response (EDR).			**CO2**
UNIT-III	**Securing Infrastructure and Local Host**	**Periods: 9**	
Infrastructure security in the real world and challenges - Understanding access control and monitoring systems: Access control security policies, Physical security controls - Intrusion detection and Reporting systems - Securing host device and challenges - Protecting the inner perimeter - Protecting remote access: Local protection tools, local intrusion detection tools, configuring browser security, Hardening operating systems.			**CO3**
UNIT-IV	**Safe and Secure Cyberspace**	**Periods: 9**	
Online security and privacy - Threats in the digital world: Data breach and Cyber Attacks - Blockchain Technology - Ethical Issues in Digital World.			**CO4**
UNIT-V	**Cybercrime and Cyberlaws**	**Periods: 9**	
Cybercrime Investigation - Digital Forensics-Cyber Laws and Legal Framework - Intellectual Property Rights (IPR) in Cyberspace-Privacy and Data Protection Laws-Emerging Trends in Cybercrime and Cyber Laws.			**CO5**
Lecture Periods: 45	**Tutorial Periods:**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. Michael E. Whitman, Herbert J. Mattord, "Principles of Information Security", Cenage Learning, N., 7th edition 2022.
2. William Stallings, "Effective Cybersecurity", Pearson Education, 2019.
3. Yuri Diogenes,Erdal Ozkaya," Cyber security - Attack and Defense Strategies", Packt Publishers, First Edition, 2018.
4. Charles J. Brooks, Christopher Grow, Philip A. Craig, Donald Short, "Cybersecurity Essentials", Wiley Publisher,First Edition, 2018.
5. Pavan Duggal ,"Cyberlaw: The Indian Perspective", Saakshar Law Publications , 2014.

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Reference Books

1. Charles P. Pfleeger, Shari Lawrence Pfleeger, Lizzie Coles-Kemp"Security in Computing',Addison Wesley,6th Edition,2024.
2. Noor Zaman Jhanjhi, Khalid Hussain, Mamoona Humayun, Azween Bin Abdullah, João Manuel R.S. Tavares, "Information Security Handbook",CRC Press,1st Edition,2022.
3. Bharat S. Rawal, Gunasekaran Manogaran, Alexender Peter," Cybersecurity and Identity Access Management",Springer Nature Singapore,2022.
4. Renee Dudley and Daniel Golden,"The Ransomware Hunting Team", Farrar, Straus and Giroux, 2022.
5. Dietmar P.F.Moller,"Cybersecurity in Digital Transformation Scope and Applications",Springer International Publishing,2020.

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2. https://cyberpedia.reasonlabs.com/EN/context-aware%20security.html.
3. https://atos.net/en-gb/united-kingdom/digital-vision-programme/digital-vision-cyber-security 3/context-aware-security
4. ala.org/sites/default/files/advocacy/content/privacyconfidentiality/DigitalSecurityBasics-Privacy-Advocacy-Guides_v2.pdf
5. cetic.br/media/docs/publicacoes/7/20221011154720/sectoral_studies-digital_security.pdf

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	2	2	-	-	-	1	-	-	1	2	3	3
2	3	3	3	3	3	-	-	-	2	-	-	1	3	3	3
3	3	3	3	3	3	-	-	-	2	-	-	1	3	3	3
4	3	3	3	3	3	-	-	-	2	-	-	1	3	3	3
5	3	2	3	2	3	-	-	-	3	-	-	2	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

2.A.3.A2

Department	**Computer Science and Engineering**	Programme: **B.Tech**						
Semester	**VII**	Course Category: **PE**				End Semester Exam Type: **TE**		
Course Code	**U23CSE719**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Drone Technology**	**3**	**-**	**-**	**3**	**25**	**75**	**100**
Prerequisite	NIL							

Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
CO1	Describe the various components and terminologies of drones	**K2**
CO2	To explore the different components of drone design.	**K2**
CO3	Describe the various Drone Motors and ESC	**K4**
CO4	Analyze drone performance and flight characteristics.	**K4**
CO5	Evaluate drone deployment for surveillance and delivery	**K5**

UNIT - I	**Introduction to Drones**	**Periods:09**	
Definition and history of drones - Types of drones and their applications - Drone components and terminology - Regulations and Guidelines for drone usage.			**CO1**
UNIT - II	**Drone Design and Assembly**	**Periods:09**	
Design considerations for drone airframe and propulsion systems - Selecting and assembling drone components such as motors – batteries - flight controllers - and cameras - Basic wiring and soldering techniques.			**CO2**
UNIT - III	**Drone Motors and ESC**	**Periods:09**	
Working - Types: Brush and Brushless Motors - motor sizing and identification - mounting patterns and thread size - Thrust to Weight ratio- KV ratings - advanced motor selection - Electronic Speed Controller (ESC).			**CO3**
UNIT - IV	**Flight Mechanics and Dynamics**	**Periods:09**	
Basic principles of flight mechanics - flight controller board - Selection of drone controller with example - Factors affecting drone flight performance and efficiency			**CO4**
UNIT - V	**Drone Applications and Case Studies**	**Periods:09**	
Overview of commercial and industrial drone applications - Case studies and examples of successful drone deployments - GPS based navigation system - Drone Camera Systems - Agro application - Drone Delivery - Future trends and developments in the drone industry.			**CO5**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. K. Sundar and R. V. Rajakumar, Multicopters: Principles and Applications, Springer, 2021.
2. E. Tooley, Practical Drones: Building, Programming, and Applications, Apress, 2021.
3. D. Levy, Drone Programming: A Guide to Code Your Own Drones, Packt Publishing, n.d,2021
4. S. K. Kopparthy, Drone Technology: Theory and Practice, Springer, 2020.
5. P. Horowitz and W. Hill, The Art of Electronics, Cambridge University Press, 2015.

Reference Books

1. D. McLeod, Getting Started with Drone: How to Build, Fly, and Program Your Own Drone, Apress, 2019.
2. D. Saxby, Drone Aerial Photography and Video: Techniques and Stories from the Field, Cengage Learning, 2018.
3. G. C. Camara Leal, Flying Robots: An Introduction to Autonomous Aerospace Systems, Springer, 2017.
4. M. A. Banks, Building and Flying Electric Model Aircraft, O'Reilly Media, Inc., 2014.
5. M. LaFay, Building Drones for Dummies, John Wiley & Sons, Inc., n.d.

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2. https://www.techtarget.com/iotagenda/definition/drone
3. https://www.technologyreview.com/2024/08/16/1096517/whats-next-for-drones/
4. https://www.tribuneindia.com/news/punjab/punjab-police-to-get-cutting-edge-anti-drone-technology-to-combat-trans-border-drug-smuggling/

* TE – Theory Exam, LE – Lab Exam

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Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	1	-	1	1	1	1	-	-	-	-	-	2	1	2
2	-	2	-	2	2	2	2	-	-	-	-	2	2	1	2
3	2	2	2	2	2	-	-	-	-	-	2	-	2	1	2
4	3	3	-	3	3	3	3	3	-	-	3	3	2	1	2
5	3	3	3	3	3	3	3	3	-	3	-	3	2	1	2

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

2. A. 3. 44

OPEN ELECTIVES

2. A. 3. 45

Department	Computer Science and Engineering	Programme: **B.Tech**						
Semester	VII	Course Category: **OE**			End Semester Exam Type: **TE**			
Course Code	U23CSOC03	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Web Programming**	3	-	-	3	25	75	100

(Common to EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics)

Prerequisite	Familiarize yourself with UI design	
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 To study the fundamentals of web application development.	**K3**
	CO2 To understand the design components and tools using CSS.	**K3**
	CO3 Implement client-side programming using JavaScript for web page creation.	**K2**
	CO4 Explain the basic concepts in PHP and Forms Design and build database in PHP.	**K4**
	CO5 Design and create effective web pages.	**K2**

UNIT - I	**Web Basics, HTML**	**Periods:09**
Web Basics: The Internet – World wide web - HTTP – web client and web server - Web browser- Dynamic IP. Web Design: Web site design principles. Introduction to HTML: HTML Syntax – Structure of HTML Documents – HTML Elements: Headings – Links – Images – Lists – Tables – Forms.		**CO1**
UNIT - II	**CSS**	**Periods:09**
Introduction to CSS: Need for CSS – Basic syntax and structure using CSS – Background images – Colors and properties – Manipulating texts using fonts, borders and boxes – Margins, padding lists, positioning using CSS.		**CO2**
UNIT - III	**Javascripts**	**Periods:09**
Client-side scripting: Basic JavaScript – Variables – Functions – Conditions – Loops. Applications: Page Validation – Reporting.		**CO3**
UNIT - IV	**Introduction to PHP and Forms**	**Periods:09**
Introduction to PHP: Variables – Data Types – Constants – Echo / Print. Operators: Arithmetic – Comparison – Logical – String – If...Else...Elseif – Switch – Loops – Arrays – Functions. PHP Form: Form Handling – GET/POST – Using Bootstrap – Form Validation – Form Required – Form Submission - Cookies – Sessions – Introduction to Database: Creating a MySQL Database – Creating a New Table – Putting Data into the New Database – Accessing the Database in PHP – Updating Databases – Inserting New Data Items into a Database – Deleting Records.		**CO4**
UNIT - V	**Web Hosting**	**Periods:09**
Introduction to Web Hosting: Creating the website – Working on the site – Sending email and access other websites – Registering domains – Themes Publishing web sites – Maintaining a website.		**CO5**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Randy Connolly and Ricardo Hoar, "Fundamentals of Web Development", Pearson Education Inc, Third Edition, 2022.
2. Steven Holzner, "PHP: The Complete Reference", McGraw Hill Education, 3rd Edition, 2017.
3. Jon Dukett, "JavaScript and JQuery: Interactive Front–End Web Development", Paperback, 2014.

Reference Books

1. Lyza Danger Gardner, "Java Script on Things: Hacking Hardware for Web Developers", Dreamtech Press,1st edition, 2018.
2. Laura Lemay, Rafe Colburn, "Mastering HTML, CSS & Javascript Web" ,BPB Publications, First edition, 2016.
3. Bassett, Lindsay, "Introduction to JavaScript object notation: a to-the-point guide to JSON", O'Reilly Media, 2015.
4. Joel Murach, "PHP & MySQL", Mike Murach Publications, 2nd edition, 2014.
5. Paul Deitel, Harvey Deitel and Abbey Deitel, "Internet and World Wide Web-How to Program", Pearson Education, Fifth Edition, 2012.

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1. https://www.w3schools.com/html/default.asp
2. https://www.w3schools.com/css/default.asp
3. https://www.w3schools.com/js/default.asp
4. https://www.tutorialspoint.com/php/php_introduction.html
5. https://www.w3schools.com/php/php_intro.asp

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
2	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
3	2	2	3	-	2	1	-	1	-	-	-	-	-	1	2
4	2	2	3	2	2	2	-	2	-	-	-	-	-	1	2
5	2	2	3	1	-	1	-	2	-	-	-	-	-	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment *	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	Computer Science and Engineering	Programme: **B.Tech.**						
Semester	**VII**	Course Category Code: **OE**			*End Semester Exam Type: **TE**			
Course Code	**U23CSOC04**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**CLOUD TECHNOLOGY**	**3**	**-**	**-**	**3**	**25**	**75**	**100**

(Common to ECE, EEE, ICE, MECH, CIVIL, BME and MECHTRONICS)

Prerequisite	Basic Electrical Engineering, Laplace Transform	
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Understand the basic concept of Cloud Computing	**K3**
	CO2 Gain knowledge on technologies used to build cloud computing	**K3**
	CO3 Thorough knowledge on various services in cloud.	**K3**
	CO4 Understand to manage resources and to maintain security.	**K3**
	CO5 Illustrate the various cloud technologies and latest advancement.	**K3**

UNIT-I	**Introduction**	**Periods: 9**
Introduction to Cloud Computing –Definition of Cloud –Evolution of Cloud Computing –Underlying Principles of Parallel and Distributed Computing –Cloud Characteristics –Elasticity in Cloud –On-demand Provisioning.		**CO1**
UNIT-II	**Cloud Enabling Technologies**	**Periods: 9**
Service Oriented Architecture – RESTful Systems – Web Services – Publish- Subscribe Model – Basics of Virtualization – Types of Virtualizations – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms – Virtualization of CPU – Memory – I/O Devices – Virtualization Support and Disaster Recovery.		**CO2**
UNIT-III	**Cloud Architecture, Services and Storage**	**Periods: 9**
Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds - IaaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3.		**CO3**
UNIT-IV	**Resource Management and Security In Cloud**	**Periods: 9**
Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources – Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Virtual Machine Security – IAM – Security Standards.		**CO4**
UNIT-V	**Cloud Technologies and Advancements**	**Periods: 9**
Hadoop – MapReduce – Virtual Box -- Google App Engine – Programming Environment for Google App Engine – Open Stack – Federation in the Cloud – Four Levels of Federation – Federated Services and Applications – Future of Federation.		**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. Thomas Erl and Eric Barceló Monroy, . Cloud Computing: Concepts, Technology, Security & Architecture, 2nd Edition – Pearson,2024.
2. Ritting house, John W., and James F, —Cloud Computing: Implementation, Management and Security, CRC Press, 2017.
3. Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012.

Reference Books

1. Garry Turkington ,"Hadoop Beginner's Guide",1st Edition, Packt Publishing Limited, 2013.
2. Pete Warden, "Big Data Glossary", O'Reily, 2011.
3. John W. Rittinghouse and james F. Ransome, "Cloud Computing Implementation, Management and Security", CRC Press, Taylor & Francis Group, Boca Raton London New York, 2010.
4. Alfredo Mendoza, "Utility Computing Technologies, Standards, and Strategies", Artech House INC, 2007.
5. Bunker and Darren Thomson, "Delivering Utility Computing", 2006, John Wiley & Sons Ltd.

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Web References
1. www.coltdatacentres.net/Cloud Technology.
2. www.zdnet.com/article/what-is-cloud-computing-everything-you-need-to-know-about-the-cloud/
3. www.digitalocean.com/community/tutorials/an-introduction-to-big-data-concepts-and-terminology
4. www.tutorialspoint.com/hadoop/hadoop_introduction
5. www.oracle.com/in/big-data/what-is-big-data.html

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	2	2	3	2	1	3	2	3	1	1	1	2	3
2	2	2	2	2	3	3	1	3	2	3	1	1	3	3	3
3	3	3	3	3	3	3	2	3	2	2	2	1	3	3	3
4	3	3	3	3	3	3	2	3	3	2	2	1	3	3	3
5	3	3	3	3	3	2	2	3	3	3	3	2	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

ASSESSMENT PATTERN - THEORY							
Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	10	20	70	-	-	-	100
CAT2	10	20	70	-	-	-	100
ESE	10	30	60	-	-	-	100
* ±3% may be varied							

ANNEXURE-II

2. A. 3. 51

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

Puducherry

HONOURS /MINORS IN CYBER SECURITY

ACADEMIC REGULATIONS 2023
(R - 2023)

CURRICULUM AND SYLLABUS

25 years of ACADEMIC EXCELLENCE

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HONORS IN CYBER SECURITY

COURSE DETAILS											
Sl. No.	Semester	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
					L	T	P		CAM	ESM	Total
Theory											
1	IV	U23KXB401	Cryptography and Cyber Security	PC	2	0	2	4	50	50	100
2	V	U23KXT502	Cyber Security Essentials	PC	3	0	0	3	25	75	100
3	VI	U23KXT603	Ethical Hacking	PC	2	0	2	3	25	75	100
4	VII	U23KXB704	Artificial Intelligence for Cyber Security	PC	3	0	0	4	50	50	100
5	VIII	U23KXT805	Security Incident and Response Management	PC	3	0	0	3	25	75	100
6	VIII	U23KXW806	Project	PW	0	0	0	2	50	50	100
	Total							**19**	**225**	**375**	**600**
Equivalent NPTEL courses##											
1	IV to VII Semester	U23KXN01	Cyber Security **Equivalent NPTEL courses**					**3**	**12 Weeks' Course**		

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**IV**	Course Category: **PC**				End Semester Exam Type: **TE**		
Course Code	**U23KXB401**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Cryptography and Cyber Security**	**2**	**-**	**2**	**4**	**50**	**50**	**100**

Prerequisite	NIL		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understand cyber security concepts, threats, and encryption techniques.	**K4**
	CO2	Apply symmetric and asymmetric cryptographic algorithms for secure communication.	**K2**
	CO3	Use authentication methods like hash functions and digital signatures for security.	**K5**
	CO4	Implement cryptographic algorithms.	**K3**
	CO5	Develop and apply hashing and digital signatures for data integrity.	**K2**

UNIT - I	**Introduction To Security**	**Periods:10**	
Cyber security goals and objectives - Security principles- cyber security threats and attack - Malware, phishing Security Services and Mechanisms Classical encryption techniques: Substitution techniques, Transposition techniques, Steganography - Cryptanalysis.			**CO1**
UNIT - II	**Symmetric and Asymmetric Cryptography**	**Periods:10**	
SDES-Block Ciphers- Block cipher mode of operation - AES - Pseudorandom Number Generators-RC4-Key distribution- RSA cryptosystem - Key distribution - Key management - Diffie Hellman key exchange - Elliptic curve cryptography -DSA.			**CO2**
UNIT - III	**Message Authentication and Integrity**	**Periods:10**	
Authentication requirement - Authentication function Hash function - Security of hash function - MACSHA Digital signature - authentication protocols Elgamal Digital Signature Techniques-DSS-Entity Authentication: Biometrics, Passwords, Challenge Response protocols.			**CO3**
UNIT - IV	**Laboratory Exercises**	**Periods:15**	
• Write a program to implement the following Caesar Cipher techniques to perform encryption and decryption. • Write a program to implement Playfair Cipher. • Write a program to implement Hill Cipher • Write a program to implement DES algorithm • Write a program to implement AES algorithm.			**CO4**
UNIT - V	**Laboratory Exercises**	**Periods:15**	
• Write a program to implement RSA Encryption algorithm. • Write a program to implement the Diffie-Hellman Key Exchange mechanism. Consider one of the parties as Alice and the other party as bob. • Write a program to calculate the message digest of a text using the SHA-1 algorithm. • Write a program to calculate the message digest of a text using the MD-5 algorithm. • Write a program to implement digital signature standard.			**CO5**

Lecture Periods:30	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods:60**

Text Books

1. "Cryptography and Network Security: Principles and Practice" – William Stallings 2017
2. "Introduction to Modern Cryptography" – Jonathan Katz & Yehuda Lindell 2014.
3. "Understanding Cryptography: A Textbook for Students and Practitioners" – Christof Paar & Jan Pelzl 2010.

Reference Books

1. "Handbook of Applied Cryptography" – Alfred J. Menezes, Paul C. van Oorschot, and Scott A. Vanstone 2022
2. "Cryptography Engineering: Design Principles and Practical Applications" – Niels Ferguson, Bruce Schneier, and Tadayoshi Kohno 2022
3. "Security Engineering: A Guide to Building Dependable Distributed Systems" – Ross J. Anderson 2022
4. "Applied Cryptography: Protocols, Algorithms, and Source Code in C" – Bruce Schneier.2021
5. "The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography" – Simon Singh2021

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Web References
1. https://www.crypto-textbook.com/ 2. https://crypto101.io 3. https://crypto.stackexchange.com 4. https://csrc.nist.gov/projects/cryptography 5. https://www.tools4noobs.com/online_tools/

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
2	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
3	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
4	3	3	3	3	2	-	-	-	2	1	2	-	2	1	2
5	3	3	3	3	2	-	-	-	3	1	2	-	2	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

EVALUATION METHODS

Assessment	Continuous Assessment Marks (CAM) – Maximum 50 Marks										##End Semester Examination (ESE) Marks (Theory)	Total Marks (CAM+ESE)
	Continuous Assessment (Theory)					Continuous Assessment (Practical)						
	CAT 1	CAT 2	Model##	Attendance##	Total	Conduction of Practical	Report	Viva	Total	End Semester Examination (ESE) Marks (Practical)		
Portion for Test	1 ½ Units	1 ½ Units	All 3 Units							Practical Exam	All 3 Units	
Assessment Methodology	MCQ Test	MCQ Test	Written Exam								Written Exam	
	50 Questions for Analytical Course 75 Questions for Theory Course											
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours							3 hours	3 hours	
Marks	50	50	75	5		15	10	5	30*	30	75 *(To be weighted for 50 Marks)*	
Weightage of CAM	2.5	2.5	2.5	2.5	**10**	**To be weighted for 10 Marks*			**10**	**30**		
CAM / ESE Marks	***CAM Marks =10+10+30=50***										***ESE Marks = 50***	**100**

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**V**	Course Category: **PC**				End Semester Exam Type: **TE**		
Course Code	**U23KXT502**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Cyber Security Essentials**	**3**	**-**	**-**	**3**	**25**	**75**	**100**

(Common to All Branches)

Prerequisite	NIL		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Explain the basics of cyber security, cyber-crime and cyber law.	**K2**
	CO2	Classify various types of attacks and learn the tools to launch the attacks.	**K2**
	CO3	Apply various tools to perform information gathering.	**K3**
	CO4	Apply intrusion techniques to detect intrusion.	**K3**
	CO5	Apply intrusion prevention techniques to prevent intrusion.	**K3**

UNIT - I	**Introduction to Cyber Security and Cyber Laws**	**Periods:09**	
Cyber Security – History of Internet – Impact of Internet – CIA Triad - Reason for Cyber Crime – Need for Cyber Security – History of Cyber Crime - Cybercriminals – Classification of Cybercrimes – A Global Perspective on Cyber Crimes - Cyber Laws – The Indian IT Act – Cybercrime and Punishment.			**CO1**
UNIT - II	**Attacks and Countermeasures**	**Periods:09**	
OSWAP - Malicious Attack Threats and Vulnerabilities - Scope of Cyber-Attacks – Security Breach – Types of Malicious Attacks – Malicious Software – Common Attack Vectors – Social engineering Attack – Wireless Network Attack – Web Application Attack – Attack Tools – Countermeasures.			**CO2**
UNIT - III	**File System and Peer to Peer Service**	**Periods:09**	
Harvester – Whois – Netcraft – Host – Extracting Information from DNS – Extracting Information from E-mail Servers – Social Engineering Reconnaissance - Scanning – Port Scanning – Network Scanning and Vulnerability Scanning – Scanning Methodology – Ping Sweer Techniques – Nmap Command Switches – SYN – Stealth – XMAS – NULL – IDLE – FIN Scans – Banner Grabbing and OS Finger printing Techniques.			**CO3**
UNIT - IV	**Intrusion Detection**	**Periods:09**	
Host -Based Intrusion Detection – Network -Based Intrusion Detection – Distributed or Hybrid Intrusion Detection – Intrusion Detection Exchange Format – Honeypots – Example System Snort.			**CO4**
UNIT - V	**Intrusion Prevention**	**Periods:09**	
Firewalls and Intrusion Prevention Systems - Need for Firewalls – Firewall Characteristics and Access Policy – Types of Firewalls – Firewall Basing – Firewall Location and Configurations – Intrusion Prevention Systems – Example Unified Threat Management Products.			**CO5**
Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Anand Shinde, "Introduction to Cyber Security Guide to the World of Cyber Security", Notion Press, 2021
2. J. Brooks and Christopher Grow, "Cyber security Essentials",Jones & Bartlett Learning Publishers, 2018
3. Nina Godbole, Sunit Belapure, "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley Publishers, 2011

Reference Books

1. William Stallings, Lawrie Brown – "Computer Security Principles and Practice", Third Edition, Pearson Education, 2015
2. Timothy J. Shimeall, Jonathan Spring, Vincent Nestler – "Introduction to Cybersecurity", CRC Press, 2014
3. David Kim, Michael G. Solomon – "Fundamentals of Information Systems Security", Jones & Bartlett Learning Publishers, 2013
4. Patrick Engebretson – "The Basics of Hacking and Penetration Testing: Ethical Hacking and Penetration Testing Made Easy", Elsevier, 2011
5. Kimberly Graves – "CEH Official Certified Ethical Hacker Review Guide", Wiley Publishers, 2007

Web References

1. https://www.geeksforgeeks.org/cyber security
2. www.tutorialspoint.com/cyber security
3. https://owasp.org/www-project-top-ten/

* TE – Theory Exam, LE – Lab Exam

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COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	1	1	1	1	1	-	-	-	-	1	1	1	2	3
2	1	3	1	3	2	-	-	-	-	-	-	-	2	2	3
3	2	1	1	1	-	1	-	-	-	-	1	-	2	2	3
4	3	3	2	2	2	1	-	-	-	-	-	-	2	2	3
5	3	2	1	1	1	1	-	1	-	-	1	-	2	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

EVALUATION METHODS

	Continuous Assessment Marks (CAM)					End Semester Examination##	Total Marks (CAM+ESE)
	CAT 1	CAT 2	Model##	Assignment#	Attendance##		
Portion for Test	2 Units	2 Units	All 5 Units			All 5 Units	
Assessment Methodology	MCQ Test 50 Questions for Analytical Course 75 Questions for Theory Course	MCQ Test	Written Exam	Individual Task #		Written Exam	
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours			3 hours	
Test Marks	50	50	75	20	5	75	
Weightage for CAM	5	5	5	5	5		
CAM / ESE Marks	CAM Marks = 25					ESE Marks = 75	100

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VI**	Course Category: **PC**				End Semester Exam Type: **TE**		
Course Code	**U23KXT603**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**ETHICAL HACKING**	**3**	**-**	**-**	**3**	**25**	**75**	**100**
(Common to All Branches)								
Prerequisite	NIL							

Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	To understand the basics of computer based vulnerabilities.	**K2**
	CO2	To explore different foot printing, reconnaissance and scanning methods.	**K2**
	CO3	To expose the enumeration and vulnerability analysis methods.	**K3**
	CO4	To understand hacking options available in Web and wireless applications.	**K3**
	CO5	To explore the options for network protection.	**K3**

UNIT - I	**Periods:09**	
Ethical Hacking Overview - Role of Security and Penetration Testers .- Penetration-Testing Methodologies- Laws of the Land - Overview of TCP/IP- The Application Layer - The Transport Layer - The Internet Layer - IP Addressing .- Network and Computer Attacks - Malware - Protecting Against Malware Attacks.- Intruder Attacks - Addressing Physical Security		**CO1**
UNIT - II	**Periods:09**	
Footprinting Concepts - Footprinting through Search Engines, Web Services, Social Networking Sites, Website, Email - Competitive Intelligence - Footprinting through Social Engineering - Footprinting Tools - Network Scanning Concepts - Port-Scanning Tools - Scanning Techniques - Scanning Beyond IDS and Firewal		**CO2**
UNIT - III	**Periods:09**	
Enumeration Concepts - NetBIOS Enumeration – SNMP, LDAP, NTP, SMTP and DNS Enumeration - Vulnerability Assessment Concepts - Desktop and Server OS Vulnerabilities - Windows OS Vulnerabilities - Tools for Identifying Vulnerabilities in Windows- Linux OS Vulnerabilities- Vulnerabilities of Embedded Oss		**CO3**
UNIT - IV	**Periods:09**	
Hacking Web Servers - Web Application Components- Vulnerabilities - Tools for Web Attackers and Security Testers Hacking Wireless Networks - Components of a Wireless Network – Wardriving- Wireless Hacking - Tools of the Trade		**CO4**
UNIT - V	**Periods:09**	
Access Control Lists. - Cisco Adaptive Security Appliance Firewall - Configuration and Risk Analysis Tools for Firewalls and Routers - Intrusion Detection and Prevention Systems - Network Based and Host-Based IDSs and IPSs - Web Filtering - Security Incident Response Teams – Honeypots.		**CO5**

Lecture Periods:45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods:45**

Text Books

1. Anand Shinde, "Introduction to Cyber Security Guide to the World of Cyber Security", Notion Press, 2021
2. Allen Harper, Shon Harris, Jonathan Ness, Chris Eagle, Gideon Lenkey, and Terron Williams, Gray Hat Hacking The Ethical Hacker's Handbook, McGraw-Hill, 5th Edition, 2018.
3. Rafay Baloch, "Ethical Hacking and Penetration Testing Guide", CRC Press, 2014.
4. The Basics of Hacking and Penetration Testing - Patrick Engebretson, SYNGRESS, Elsevier, 2013.
5. The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, Dafydd Stuttard and Marcus Pinto, 2011.

Reference Books

1. Sean-Philip Oriyano, Hacker Techniques, Tools, and Incident Handling, Jones and Bartlett Learning LLC, 3rd Edition, 2018.
2. Michael T. Simpson, "Hands-on Ethical Hacking & Network Defense", Course Technology, 2010.
3. CEH official Certified Ethical Hacking Review Guide, Wiley India Edition, 2007.
4. Rajat Khare, "Network Seuciryt and Ethical Hacking", Luniver Press, 2006.
5. Thomas Mathew, "Ethical Hacking", OSB publishers, 2003.

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1. https://freedomhacker.net › Internet Security.
2. https://www.guru99.com/c-sharp-tutorial.html.
3. https://www.w3schools.in/ethical-hacking/
4. https://www.javatpoint.com/ethical-hacking-tutorial
5. https://www.tutorialspoint.com/ethical_hacking/index.htm

* TE – Theory Exam, LE – Lab Exam

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COs/POs/PSOs Mapping

CO's	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	3	3	2	2	3
2	3	2	1	1	3	-	-	-	-	-	3	3	2	2	3
3	3	3	2	2	3	-	-	3	-	-	3	3	2	2	3
4	3	3	2	2	3	-	-	-	-	-	3	3	2	2	3
5	3	3	2	2	3	-	-	-	-	-	3	3	2	2	3

Correlation Level: 1-Low, 2-Medium, 3- High

EVALUATION METHODS

	Continuous Assessment Marks (CAM)					End Semester Examination##	Total Marks (CAM+ESE)
	CAT 1	CAT 2	Model##	Assignment#	Attendance##		
Portion for Test	2 Units	2 Units	All 5 Units			All 5 Units	
Assessment Methodology	MCQ Test 50 Questions for Analytical Course 75 Questions for Theory Course	MCQ Test	Written Exam	Individual Task #		Written Exam	
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours			3 hours	
Test Marks	50	50	75	20	5	75	
Weightage for CAM	5	5	5	5	5		
CAM / ESE Marks	CAM Marks = 25					ESE Marks = 75	100

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VII**	Course Category: **PC**				End Semester Exam Type: **TE**		
Course Code	**U23KXB704**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Artificial Intelligence for Cyber Security**	**2**	**-**	**2**	**4**	**50**	**50**	**100**

Prerequisite	NIL		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understand AI and ML techniques for cybersecurity applications.	**K2**
	CO2	Implement ML-based models for intrusion and anomaly detection.	**K3**
	CO3	Explore adversarial AI and develop defense mechanisms.	**K4**
	CO4	Gain practical skills in security automation and threat intelligence.	**K3**
	CO5	Work on real-world cybersecurity datasets.	**K5**

UNIT - I	**Foundations of AI in Cyber Security**	**Periods:10**	
Introduction to Cybersecurity and AI – Machine Learning (ML) & Deep Learning (DL) Basics – Role of AI in Threat Detection & Cyber Defense – Supervised & Unsupervised Learning in Cybersecurity – AI in Network Security & Intrusion Detection			**CO1**
UNIT - II	**Advanced AI Techniques for Cyber Security**	**Periods:10**	
Deep Learning for Malware Detection & Classification - AI for Endpoint- Network and Cloud Security - Adversarial Machine Learning & AI Security Threats - Generative Adversarial Networks (GANs) for Cyber Attacks - AI-Powered Digital Forensics-Poisoning Attacks,Model Inversion and Evasion Attacks			**CO2**
UNIT - III	**AI for Security Automation & Ethical Considerations**	**Periods:10**	
AI in Security Operations Centers (SOC) - Incident Response - AI-Based Risk Management and Automated Threat Hunting - Explainable AI (XAI) in Cybersecurity - Ethical AI and Bias in Security Models - Future Trends: AI in Zero Trust Architecture and Next-gen Security-AI –Driven Identity &Access Management(IAM)-Behavioral Biometrics			**CO3**
UNIT - IV	**Laboratory Exercises**	**Periods:15**	
• Setting Up AI Security Lab (Python, Jupyter Notebooks, Cybersecurity Datasets). • Building a Machine Learning-Based Intrusion Detection System (IDS) (Scikit-Learn). • Anomaly Detection in Network Traffic (Autoencoders, Isolation Forest). • Phishing Website Detection using AI (NLP & Feature Engineering). • Training a Deep Learning Model for Malware Classification (TensorFlow/Keras).			**CO4**
UNIT - V	**Laboratory Exercises**	**Periods:15**	
• Adversarial Attack on AI Models & Defense Strategies (FGSM, PGD Attacks). • AI-Based Detection of Ransomware & Botnets (Supervised ML). • Real-time Threat Intelligence using Natural Language Processing (NLP) (Open-source Threat Feeds). • Automating Threat Analysis using AI & Threat Intelligence APIs (VirusTotal API, Shodan). • Bias Detection & Explainability in AI-Based Security Models (SHAP, LIME). • Students will work on an AI-driven cybersecurity project using real-world datasets (e.g., NSL-KDD, CICIDS2017, VirusTotal, etc.).			**CO5**

Lecture Periods:30	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods:60**

Text Books

1. "Deep Learning for Cybersecurity" – Chet Hosmer(2022).
2. "Artificial Intelligence for Cybersecurity: Techniques, Advances, and Applications" – Mark Stamp(2020).
3. "Machine Learning and Security: Protecting Systems with Data and Algorithms" – Clarence Chio & David Freeman(2018).

Reference Books

1. "Cybersecurity Data Science" – Scott Mongeau & Andrzej Hajdasinski (2021)
2. "Artificial Intelligence in Cybersecurity: A Comprehensive Guide to the Application of AI in Security" – Aladdin Ayesh (2020)
3. "The Threat Intelligence Handbook: A Practical Guide for Security Teams" – Chris E. Cochran & Richard Bejtlich (2019)
4. "Adversarial Machine Learning" – Battista Biggio & Fabio Roli (2018)
5. "Information Security Analytics: Finding Security Insights, Patterns, and Anomalies in Big Data" – Mark Ryan M. Talabis, Robert McPherson, Jason Martin, & Inez Miyamoto (2014)

2.A.3.63

Web References
1. https://www.ll.mit.edu/research/artificial-intelligence-cybersecurity 2. https://ai.googleblog.com/search/label/security 3. https://www.cylab.cmu.edu/ 4. https://openai.com/research/ 5. https://www.unb.ca/cic/datasets/

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
2	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
3	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
4	3	3	3	3	2	-	-	-	2	1	2	-	2	1	2
5	3	3	3	3	2	-	-	-	3	1	2	-	2	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

EVALUATION METHODS

Assessment	Continuous Assessment Marks (CAM) – Maximum 50 Marks										##End Semester Examination (ESE) Marks (Theory)	Total Marks (CAM+ESE)
	Continuous Assessment (Theory)					Continuous Assessment (Practical)						
	CAT 1	CAT 2	Model##	Attendance##	Total	Conduction of Practical	Report	Viva	Total	End Semester Examination (ESE) Marks (Practical)		
Portion for Test	1 ½ Units	1 ½ Units	All 3 Units							Practical Exam	All 3 Units	
Assessment Methodology	MCQ Test	MCQ Test	Written Exam								Written Exam	
	50 Questions for Analytical Course 75 Questions for Theory Course											
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours							3 hours	3 hours	
Marks	50	50	75	5		15	10	5	30*	30	75 *(To be weighted for 50 Marks)*	
Weightage of CAM	2.5	2.5	2.5	2.5	**10**	**To be weighted for 10 Marks*			**10**	**30**		
CAM / ESE Marks	***CAM Marks =10+10+30=50***										***ESE Marks = 50***	**100**

2. A. 3. 64

Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**VIII**	Course Category: PC				End Semester Exam Type:TE		
Course Code	**U23KXT805**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**SECURITY INCIDENT AND RESPONSE MANAGEMENT**	**3**	**1**	**0**	**3**	**25**	**75**	**100**

Prerequisite	Cryptography		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understanding inevitable incident and incident detection and characterization	**K1**
	CO2	To get an exposure to live data collection, Forensic duplication.	**K2**
	CO3	Understanding network evidence	**K3**
	CO4	Analyze the concept of data analysis in various file system	**K4**
	CO5	To gain knowledge on Investigation including Windows and Mac OS Systems	**K5**

UNIT - I	**Introduction to Incident Response and Investigation Fundamentals**	**Periods:12**	
Introduction: Preparing for the Inevitable incident: Real world incident- IR management incident handbook-Pre incident preparation- Preparing the Organization for Incident Response-Preparing the IR team-Preparing the Infrastructure for Incident Response. Incident Detection and Characterization: Getting the investigation started on the right foot- collecting initial facts- Maintenance of Case Notes- Understanding Investigative Priorities. Discovering the scope of incident: Examining initial data- Gathering and reviewing preliminary evidence- determining a course of action- Customer data lossscenario-Automated clearing fraud scenario.			**CO1**
UNIT - II	**Data Collection**	**Periods:12**	
Data Collection: Live Data Collection: When to perform live response- selecting a live response tool-what to collect-collection best practices- Live data collection on Microsoft Windows Systems- Live Data Collection on Unix-Based Systems. Forensic Duplication: Forensic Image Formats- Traditional Duplication-Live system duplication-Duplication of Enterprise Assets.			**CO2**
UNIT - III	**Network Evidence**	**Periods:12**	
Network Evidence: The case for network monitoring- Types for network monitoring- Setting Up a Network Monitoring System- Network Data-Analysis-Collect Logs Generated from Network Events. Enterprise Services: Network Infrastructure Services- Enterprise Management Applications- Web servers- Database Servers			**CO3**
UNIT - IV	**Data Analysis**	**Periods:12**	
Data Analysis: Analysis Methodology: Define Objectives-Know your data- Access your data-Analyse your data- Evaluate Results. Investigating Windows Systems: NTFS and File System analysis- Prefetch- Event logs- Scheduled Tasks- The Windows Registry- Other Artifacts of Interactive Sessions- Memory Forensics- Alternative Persistence Mechanisms.			**CO4**
UNIT - V	**Investigation**	**Periods:12**	
Investigating Mac OS X Systems: HFS+ and File System Analysis- Core Operating systems data. Investigating Applications: What is Application Data?-Where is application data stored?- General Investigation methods-Web Browser-Email Clients- Instant Message Clients.			**CO5**

Lecture Periods:45	**Tutorial Periods: 15**	**Practical Periods: 0**	**Total Periods:60**

Text Books

1. Jason T. Luttgens, Mathew Pepe and Kevin Mandia ,"Incident Response and Computer Forensics", 3rd Edition, Tata McGraw-Hill Education,2021
2. Eric. C. Thompson,"Cyber Security Incident Response-How to Contain, Eradicate, and Recover from Incidents", Apress,2020
3. Eric C. Thompson, "Security Incident Management: A Comprehensive Guide to Planning, Response, and Recovery," Apress, 2019

Reference Books

1. Nadean H. Tanner – "Cybersecurity Incident Response: How to Contain, Eradicate, and Recover from Incidents", Wiley, 2020
2. Gerard Johansen – "Digital Forensics and Incident Response: Incident response techniques and procedures to respond to modern cyber threats", Packt Publishing, 2020
3. Steve Anson – "Applied Incident Response", Wiley, 2020
4. Andrew Gorecki – "Effective Cybersecurity Incident Response: Expert tools and techniques for defending the network infrastructure and responding to cybersecurity incidents", Packt Publishing, 2018
5. Jason Luttgens, Matthew Pepe, and Kevin Mandia – "Incident Response & Computer Forensics", McGraw-Hill Education, 2014

Web References

1. www.ibm.com/ incident response
2. https://www.coursera.org/cyber-incident response
3. https://www.crowdstrike.com/cybersecurity-101/incident-response/
4. https://www.cybercourse.org/cyber-incident response

* TE – Theory Exam, LE – Lab Exam

Q. A. 3. 65

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	1	-	-	-	-	-	1	1	1	2	3
2	2	2	3	3	1	-	-	-	-	-	-	-	2	2	3
3	3	3	3	2	3	1	-	-	-	-	1	-	2	2	3
4	2	3	3	2	3	1	-	-	-	-	-	-	2	2	3
5	3	2	1	1	1	1	-	1	-	-	1	-	2	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

EVALUATION METHODS

	Continuous Assessment Marks (CAM)					End Semester Examination##	Total Marks (CAM+ESE)
	CAT 1	CAT 2	Model##	Assignment#	Attendance##		
Portion for Test	2 Units	2 Units	All 5 Units			All 5 Units	
Assessment Methodology	MCQ Test 50 Questions for Analytical Course 75 Questions for Theory Course	MCQ Test	Written Exam	Individual Task #		Written Exam	
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours			3 hours	
Test Marks	50	50	75	20	5	75	
Weightage for CAM	5	5	5	5	5		
CAM / ESE Marks	CAM Marks = 25					ESE Marks = 75	100

2. A.3. 66

23KXW806	PROJECT	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives

- To make literature survey.
- To identify problem definition.
- To build a project design.
- To carry out project implementation.
- To perform project testing and documentation.

Course Outcomes

After completion of the course, the students will be able to

CO1 - Use the techniques and skills for the project. **(K3)**

CO2 - Identify, formulate, and solve engineering problems.**(K3)**

CO3 - Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health care, safety and sustainability **(K4) CO4** - Develop presentation skills. **(K4)**

CO5 - Develop project management skills. **(K4)**

Exercises

The Candidate are required to do the following

- literature survey,
- Problem formulation
- Forming a methodology of arriving at the solution of the problem.
- Documentation of each step

Reference Books

- Papers published in reputed journals, conferences related to the project

COs/POs/PSOs Mapping

CO's	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	3	3	2	2	3
2	3	2	1	1	3	-	-	-	-	-	3	3	2	2	3
3	3	3	2	2	3	-	-	3	-	-	3	3	2	2	3
4	3	3	2	2	3	-	-	-	-	-	3	3	2	2	3
5	3	3	2	2	3	-	-	-	-	-	3	3	2	2	3

Correlation Level: 1-Low, 2-Medium, 3- High

2.A.3.67

2. A. 2. 68

SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

HONOURS/MINORS IN CYBERSECURITY

ENROLLED NAMELIST

EVEN SEMESTER: 2024-2025

S.NO	ENROLL NO	REG.NO	NAME
			EEE
1	231274	23UEE013	ATCHAYAKUMAR S
2	230381	23UEE023	DEVANADAN K
3	231577	23UEE038	GUNANIDHI
4	230901	23UEE074	PUSHPARAJ V
5	231230	23UEE104	VAHEENDRANE R
6	231026	23UEE105	VASANTHAKUMAR S
			CSE
7	231300	23UCS055	GOWRI A
8	230925	23UCS134	RUJULA B
9	230848	23UCS158	SUSHMITHAA S
10	230818	23UCS068	JAGADISWARI S
11	230198	23UCS046	FAUSTINA J
12	231103	23UCS041	DHIVYA R
13	230253	23UCS127	RAMYA R SENGUTTUVAN
14	231359	23UCS137	SADHIKA S M
15	231085	23UCS160	THIRUMURUGAN T
16	230847	23UCS080	KARTHIK M
17	230107	23UCS004	ABISHEK M
18	230907	23UCS010	AKSHAYA KRITHIKA A
19	230833	23UCS049	GAYATHRI J
20	230526	23UCS054	GOPIKA R
21	231338	23UCS058	HARINI A
22	231196	23UCS075	KAAVIYA SALLUSTRE R
23	230831	23UCS078	KALAIVANI A
24	230294	23UCS084	KAVYA B
25	230286	23UCS098	MANI MUGILAN S
26	230140	23UCS142	SHAAME US
27	231533	23UCS144	SHALINI S
28	231017	23UCS145	SHARAN T
29	231367	23UCS150	SIVADARANI L
30	230835	23UCS172	WILSON BERNARD W

2.A.2. 69

31	230754	23UCS067	ISHWARYALAKSHMI D
		MCTR	
32	230884	23UMT008	BHUWANESH A
33	230045	23UMT037	VIGNESH H
34	230440	23UMT038	VISHNU PRIYAN S T
		CCE	
35	231415	23UCC005	AKSHAYA T
36	231231	23UCC010	DEEPAK S
37	231203	23UCC045	SOUNDARIYA S
38	231476	23UCC047	SUBASHINI M
39	231339	23UCC050	SWETHA K
40	231585	23UCC053	VISHAALI R
41	230868	23UCC054	YAMINEE LAKSHAYA S
42	230899	23UCC055	YAMINI S
43	230911	23UCC056	YUVARAJ S
		CSBS	
44	231449	23UCB001	ABARNAA
45	231082	23UCB003	ARTHI SANTHANALAKSHMI
46	230954	23UCB005	BALAJI SAKTHIVEL T
47	231296	23UCB006	CAMILLUS PREMKUMAR Y
48	231503	23UCB012	EDISON JAMES F
49	230695	23UCB015	GUHAN R
50	230212	23UCB019	HARISH S
51	231212	23UCB021	HARRI KRISHNAA K
52	230321	23UCB024	JEEVEASH K
53	230837	23UCB030	KEERTHANA K
54	230430	23UCB034	MADHUMITHA R
55	231215	23UCB035	MADHUMITHA V
56	231285	23UCB039	MONISHA K
57	231286	23UCB042	POOJA R
58	231313	23UCB044	RAGUL D
59	231187	23UCB045	ROSHAN P
60	231573	23UCB049	SHAKIL S
61	231008	23UCB051	SRI VARTHINY P
62	230474	23UCB050	P.B. SHRINIVAS
63	230476	23UCB054	SWATHI J
64	230891	23UCB055	SWETHA S

2. A. 3. 70

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME LIST ENROLLED STUDENTS FOR THE HONOURS DEGREE PROGRAMME

Name of the Honours degree programme: ARTICIAL INTELLIGENCE AND MACHINE LEARNING

Offering department: DEPARTMENT OF ARTICIAL INTELLIGENCE AND DATA SCIENCE

Year / Sem: II/IV
Batch:2023-2027

Sl. No.	Register No.	Enroll No.	Name of the Student
1.	23UCS042	230937	DHIVYASREE A
2.	23UCS097	230827	MAHESWARI M
3.	23UCS050	231120	GEANT REMO RADJOU
4.	23UCS060	230826	HARIRUTHRESHWAR D
5.	23UCS093	230875	LOGESHKANNA P
6.	23UCS002	230139	ABDULLAH N
7.	23UCS032	230075	DEEPAK T
8.	23UCS059	230443	HARINI S
9.	23UCS091	230643	LAKSHITA M
10.	23UCS094	231046	MADHUMITHA
11.	23UCS115	230873	PAVITHRA S
12.	23UCS120	230325	PRAVEEN P
13.	23UCS125	230933	RAKSHYA DEVI R
14.	23UCS133	230228	ROSHINI M
15.	23UCS169	231244	VISHNU P A
16.	23UCS170	231557	VISHNUPRIYAA K
17.	23UCS113	231061	PAKALAPATI NAGA MAHA ADARSH VARMA
18.	23UCS064	230692	HEMASANKAR P
19.	23UCS035	231489	DHANALAKSHMI D
20.	23UCS128	230947	RAMYA S
21.	23UCS076	231076	KAKINADA SRI TANUJA
22.	23UCS092	231070	LAKSHMANAN S

HoD
[Dr. K. Premkumar]

2.A.3.71

SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

DETAILS OF HONOURS AND MINOR DEGREE

2.A.3.73

HONORS IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

COURSE DETAILS										
Sl. No.	Semester	Course Code	Course Title	Category	Periods			Credits	Name(s) of the staff available in the department to handle the course	Staff Specialization/ Expertise
					L	T	P			
		Theory								
1	IV	U23MXT401	Parallel Programming and High Performance Computing	PC	3	0	0	3	Dr. M. Auxilia	Machine Learning, NLP and HPC
2	V	U23MXB501	Advanced Deep Learning	PC	3	0	2	4	Mr.K. Pragash	Deep Learning
3	VI	U23MXB602	Reinforcement Learning	PC	3	0	2	4	Mrs. Maragadhavalli Meenakshi	Deep Learning and NLP
4	VII	U23MXT702	Image and Video Analytics	PC	3	0	0	3	Mrs. P. Kanchanadevi	Deep Learning and Computer Vision
5	VIII	U23MXT803	Prompt Engineering	PC	3	0	0	3	Mr. R. Rajan	Artificial intelligence and Machine Learning
6	VIII	U23MXW801	Project	PA	0	0	2	2	Mr. K. Muthukumaran	Artificial intelligence and Machine Learning
	Total							19		
		Equivalent NPTEL courses##								
1	IV	U23MXTN01	Parallel Programming					3	NPTEL *Students can opt for any of these courses instead of theory papers in IV, VII and VIII semester	12 WEEKS Course
2	VII	U23MXTN02	Deep Learning for Computer Vision					3		
3	VIII	U23MXTN03	Introduction to Large Language Models (LLMs)					3		

2. A. 3. 74

HONORS IN ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

COURSE DETAILS											
Sl. No.	Semester	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
					L	T	P		CAM	ESM	Total
Theory											
1	IV	U23MXT401	Parallel Programming and High Performance Computing	PC	3	0	0	3	25	75	100
2	V	U23MXB501	Advanced Deep Learning	PC	3	0	2	4	50	50	100
3	VI	U23MXB602	Reinforcement Learning	PC	3	0	2	4	50	50	100
4	VII	U23MXT702	Image and Video Analytics	PC	3	0	0	3	25	75	100
5	VIII	U23MXT803	Prompt Engineering	PC	3	0	0	3	25	75	100
6		U23MXW801	Project	PA	0	0	2	2	100	-	100
	Total							**19**	**275**	**325**	**500**
Equivalent NPTEL courses##											
1	IV, VII, VIII Semester	U23MXTN01	**AI and ML Equivalent NPTEL courses**					**3**	**12 WEEKS Course**		

HOD

(AI & DS)

HOD

(CSE)

HOD

(IT)

HOD

(CSBS)

HOD

(CCE)

DEAN ACADEMICS

(Dr. S. Anbumalar)

2. A. 3. 75

ANNEXURE-III

2.A.3. 77

SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

Department of Computer Science and Engineering

Evaluation System for Honours and Minor Degree Programmes

Assessment and Examinations

(i) The total marks for each course (comprising of two components namely Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM). Assessment and Examination procedures for the theory courses, theory cum practical and project courses under Honours Degree programmes shall be assessed as per Table 7.15.1, 7.15.2 and 7.15.3.

Table 7.15.1 Assessment Procedure for theory courses for Honours Degree Programmes

	Continuous Assessment Marks (CAM)					End Semester Examination##	Total Marks (CAM+ESE)
	CAT 1	CAT 2	Model##	Assignment#	Attendance##		
Portion for Test	2 Units	2 Units	All 5 Units			All 5 Units	
Assessment Methodology	MCQ Test	MCQ Test	Written Exam	Individual Task #		Written Exam	
	50 Questions for Analytical Course 75 Questions for Theory Course						
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours			3 hours	
Test Marks	50	50	75	20	5	75	
Weightage for CAM	5	5	5	5	5		
CAM / ESE Marks	CAM Marks = 25					ESE Marks = 75	100

Open Book Analytical Exam/Analyse Real world problems and propose solutions/ Tool or Subject Proficiency Analysis – Test the Students skill by giving individual task/ Paper Presentation/Micro Project Presentation/Idea Presentation for the Societal Problem;(Questions standard shall be of level 3 or more in Blooms Taxonomy)

2. A. 3. 79

Table 7.15.2 Assessment procedure for theory cum practical courses for Honours Degree Programmes

Assessment	Continuous Assessment Marks (CAM) – Maximum 50 Marks										##End Semester Examination (ESE) Marks (Theory)	Total Marks (CAM+ESE)
	Continuous Assessment (Theory)					Continuous Assessment (Practical)						
	CAT 1	CAT 2	Model##	Attendance##	Total	Conduction of Practical	Report	Viva	Total	End Semester Examination (ESE) Marks (Practical)		
Portion for Test	1 ½ Units	1 ½ Units	All 3 Units								All 3 Units	
Assessment Methodology	MCQ Test	MCQ Test	Written Exam							Practical Exam	Written Exam	
	50 Questions for Analytical Course 75 Questions for Theory Course											
Duration of the Test	1 hour 30 Minutes	1 hour 30 Minutes	3 hours							3 hours	3 hours	
Marks	50	50	75	5		15	10	5	30*	30	75 *(To be weighted for 50 Marks)*	
Weightage of CAM	2.5	2.5	2.5	2.5	**10**	**To be weighted for 10 Marks*			**10**	**30**		
CAM / ESE Marks	***CAM Marks =10+10+30=50***										***ESE Marks = 50***	**100**

Distribution of Marks for Attendance, the Question Paper Pattern for Model and ESE are same as given in B. Tech. Regulations R2023 for Theory cum practical Courses

(ii) **Project Evaluation:** The project evaluation shall be carried out by a Project evaluation committee comprising the Head of the Department or his/her nominee (Chairperson), Project coordinator (Professor / Associate Professor) and the project guide(s) as per the evaluation given in table 7.15.3.

Table 7.15.3 CAM and ESM break-up for Project Work

Sl. No	Description			Weightage
1	**Continuous Assessment Marks**			
a	Review 1	Review Committee	15	25
		Supervisor	10	
b	Review 2	Review Committee	15	25
		Supervisor	10	
			Total CAM	50
2	**End Semester Marks**			
a	Evaluation of project work report and Viva-voce	Report	15	50
		Presentation and Viva	20	
		Demonstration	15	
			Total ESM	50
			Total Marks	100

HOD/CSE
(Dr.K.Premkumar)

2.A.3.80

ANNEXURE-IV

२. A. 3. ४१

2.A.3.82

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)
(APPROVED BY AICTE, NEW DELHI AND AFFILIATED TO PONDICHERRY UNIVERSITY)
(ACCREDITED BY NBA-AICTE, NEW DELHI, ACCREDITED BY NAAC WITH "A" GRADE)
MADAGADIPET, PUDUCHERRY – 605 107

IV year / VIII Sem

Academic Calendar for B. Tech. Programmes
December 2024 - May 2025

December 2024

Date	Day	Schedule	Working Day
1	Sun		
2	Mon		
3	Tue		
4	Wed		
5	Thu		
6	Fri		
7	Sat		
8	Sun		
9	Mon		
10	Tue		
11	Wed		
12	Thu		
13	Fri		
14	Sat		
15	Sun		
16	Mon		
17	Tue		
18	Wed		
19	Thu		
20	Fri		
21	Sat		
22	Sun		
23	Mon		
24	Tue		
25	Wed		
26	Thu		
27	Fri	Commencement of classes for VIII sem	1
28	Sat		2
29	Sun		Holiday
30	Mon		3
31	Tue		4

Total number of working days :04
Total number of holidays :01

January 2025

Date	Day	Schedule	Working Day
1	Wed	New Year	Holiday
2	Thu		5
3	Fri		6
4	Sat		Holiday
5	Sun		Holiday
6	Mon		7
7	Tue		8
8	Wed	Online Feedback 1	9
9	Thu	Assignment 1	10
10	Fri	Submission of QCM 1 & Syllabus Coverage	11
11	Sat	Graduation Day	12
12	Sun		Holiday
13	Mon	Bhogi	Holiday
14	Tue	Pongal	Holiday
15	Wed	Thiruvalluvar Dinam	Holiday
16	Thu	Uzhavar Thirunal	Holiday
17	Fri		13
18	Sat		Holiday
19	Sun		Holiday
20	Mon	CAT 1 Starts (1st &2nd hour)	14
21	Tue	CAT 1(1st &2nd hour)	15
22	Wed	CAT 1 Ends (1st &2nd hour)	16
23	Thu		17
24	Fri	World Guiness Record Event (Asoka Chakra)	18
25	Sat	Sigarathai Nokki	19
26	Sun	Republic Day	Holiday
27	Mon		20
28	Tue		21
29	Wed	Submission of Attendance and Assessment Record	22
30	Thu	Submission of CAT 1 Result Analysis	23
31	Fri	Project Phase II – Review-1	24

Cultural Week

Total number of working days :20
Total number of holidays :11

February 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon	Online feedback-2/ Assignment-2	25
4	Tue	Submission of QCM 2 / Syllabus Coverage	26
5	Wed	CAT 2 Starts (1st &2nd hour)	27
6	Thu	CAT 2(1st &2nd hour)	28
7	Fri	CAT 2 Ends (1st &2nd hour)	29
8	Sat		30
9	Sun		Holiday
10	Mon		31
11	Tue		32
12	Wed	Submission of CAT 2 Result Analysis	33
13	Thu		34
14	Fri		35
15	Sat		Holiday
16	Sun		Holiday
17	Mon		36
18	Tue		37
19	Wed		38
20	Thu		39
21	Fri		40
22	Sat		41
23	Sun		Holiday
24	Mon	Submission of Attendance and Assessment Record	42
25	Tue		43
26	Wed		44
27	Thu		45
28	Fri	Project Phase II- Review - 2	46

Total number of working days :22
Total number of holidays :06

March 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon		47
4	Tue		48
5	Wed		49
6	Thu		50
7	Fri		51
8	Sat		52
9	Sun		Holiday
10	Mon		53
11	Tue		54
12	Wed		55
13	Thu		56
14	Fri		57
15	Sat		Holiday
16	Sun		Holiday
17	Mon		58
18	Tue		59
19	Wed		60
20	Thu		61
21	Fri	Project Phase II - Review - 3	62
22	Sat		63
23	Sun		Holiday
24	Mon	Online Feedback 3	64
25	Tue	Assignment 3	65
26	Wed	Submission of QCM 3 / Syllabus Coverage	66
27	Thu		67
28	Fri		68
29	Sat		69
30	Sun		Holiday
31	Mon	Ramzan	Holiday

Total number of working days :23
Total number of holidays :08

April 2025

Date	Day	Schedule	Working Day
1	Tue		70
2	Wed	Model Exam Starts	71
3	Thu	Model Exam	72
4	Fri	Model Exam Ends	73
5	Sat		Holiday
6	Sun		Holiday
7	Mon	Tentative Model Practical Exam / Project Review	74
8	Tue		75
9	Wed		76
10	Thu	Submission of Model Exam Result Analysis	77
11	Fri		78
12	Sat	Declaration of Attendance / Internal Assessment/ Last Working Day	79
13	Sun		Holiday
14	Mon	Tamil New Year	Holiday
15	Tue	ESE Practical / Project	
16	Wed		
17	Thu		
18	Fri	Good Friday	Holiday
19	Sat		Holiday
20	Sun		Holiday
21	Mon		
22	Tue	Submission of Attendance and Assessment Record	
23	Wed		
24	Thu		
25	Fri		
26	Sat		
27	Sun		Holiday
28	Mon		
29	Tue		
30	Wed		

Total number of working days :10
Total number of holidays :02

May 2025

Date	Day	Schedule	Working Day
1	Thu	May Day	Holiday
2	Fri		
3	Sat		
4	Sun		Holiday
5	Mon	Tentative ESE Theory	
6	Tue		
7	Wed		
8	Thu		
9	Fri		
10	Sat		
11	Sun		
12	Mon		
13	Tue		
14	Wed		
15	Thu		
16	Fri		
17	Sat		
18	Sun		
19	Mon		
20	Tue		
21	Wed		
22	Thu		
23	Fri		
24	Sat		
25	Sun		
26	Mon		
27	Tue		
28	Wed		
29	Thu		
30	Fri		
31	Sat		

Total number of working days:03
Total number of holidays:02

8.A.3.23

Use of Cell Phones

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Working hours

I hour	09.00 a.m	to	09.50 a.m
II hour	09.50 a.m	to	10.40 a.m
Break	10.40 a.m	to	10.55 a.m
III hour	10.55 a.m	to	11.45 a.m
IV hour	11.45 a.m	to	12.35 p.m
V hour	01.15 p.m	to	02.05 p.m
VI hour	02.05 p.m	to	02.55 p.m
Break	02.55 p.m	to	03.10 p.m
VII hour	03.10 p.m	to	04.00 p.m
VIII hour	04.00 p.m	to	04.50 p.m

Lunch break 12.35 p.m. to 1.15 p.m.

Marks Distribution of Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM)

Scheme for Continuous Assessment Test (CAT)

S. No	Course Type	Continuous Assessment components									
		Test Marks	Average of pre/post test/ viva for each experiment	Average of marks for experiment report for each experiment	Model Exam / Report	Assignment	Review - 1	Review - 2	Review - 3	Attendance	Total
1.	Theory	15	-	-	-	5	-	-	-	5	25
2.	Practical	-	10	15	15	-	-	-	-	10	50
3.	Project Phase-I	-	-	-	-	-	15	15	20	-	50
4.	Project Phase-II	-	-	-	-	-	10	10	20	-	40

The internal marks will be provided fully based on the continuous assessment tests

Weightage of Assessment for Theory Course

S. No.	Test	Portion for Test	Test Marks	Duration of Test	Weightage for Internal
1	CAT 1	1½ Units	50	1 ½ hours	10
2	CAT 2	1½ Units	50	1 ½ hours	
3	Model	5 Units	75	3 hours	05
	Continuous Assessment for Theory Course				15

Question Paper Pattern

Question paper for CAT and ESE will be based on the pattern shown in Table (a) and (b)

Table (a) Question Paper pattern for CAT/Model Exam

Test Type	2 Marks	5 Marks	10 Marks	Total Marks
CAT 1 / CAT 2	5(questions) (10 Marks)	4(questions) (20 Marks)	2 (questions) (20 Marks)	50
Model	End Semester Examination Question Pattern			75

Table (b) Question paper pattern for End semester Examination(ESE)

2 Marks	5 Marks	10 Marks	Total Marks
10(20 Marks)	5 (25 Marks) (one question from each unit)	3 (30 Marks) (out of 5 questions, one question from each unit)	75

End Semester Examination Question Paper Pattern for Six Units Courses

Course	2 Mark	5 Mark	8 / 9 Mark	Total Marks
Part A	5	2 (out of 3 questions, one from each unit)	one 8 mark question (out of 2 questions from Unit I and Unit II)	37
			One 9 mark question (compulsory question from unit III)	
Part B	5	2 (out of 3 questions, one from each unit)	Two 9 mark questions (out of 3 questions from IV, V & VI)	38

Requirements for Appearing End Semester Examination

A student is expected to maintain 100% attendance in all courses as attendance also carries internal marks. A student will be qualified to appear for end semester examinations of a semester only if he/she satisfies the below mentioned requirements.

The student is permitted to appear for End Semester Examinations, only if he/she maintains minimum 75% of attendance. If he/she secured attendance greater than or equal to 60 % and less than 75 % has to pay the necessary condonation prescribed by the college authority with necessary supporting documents for his/her absence.

Redo Category

A student who secures overall attendance less than 60% has to repeat the course with the approval, when it is next offered. A student secures attendance greater than or equal to 60% and less than 75% will be promoted to next higher semester only if lapse of attendance is due to medical reasons (hospitalization/ accident/illness) or participation in sports event or any competitions or NCC or NSS activities with prior permission from the Head of Institution through the Head of the department with necessary supporting documents and payment of necessary condonation fee as prescribed by the college authority. However, student secures more than 75 % of attendance in the current semester will be moved to next higher semester only if he/she registered for the current semester examinations.

Women Empowerment Cell

For the Welfare of the girl students, a Women Cell has been constituted in the college. The girl students may approach the member secretary for assistance.
Mail id : **wec@smvec.ac.in**

Grievance Redressal Committee

There is a Grievance Redressal committee in our college and the details are available in the website. Students can approach the member of the committee to redress their grievances if any. Mail id : **grievance@smvec.ac.in**

Internal Complaints Committee

The objective of this committee is to avoid sexual harassment of students and women employees in the college by preventing it, recording complaints, and taking appropriate action in response. It also aims to eliminate gender-based discrimination by creating a safe physical and social environment that deters sexual harassment and enforcing the necessary disciplinary actions. For complaints :
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(An Autonomous Institution)
(Accredited by NBA-AICTE, New Delhi and Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

Academic Calendar

December 2024 to May 2025

Programme / Regulations: **B. Tech / R-2020**
Year / Sem: IV year / VIII Sem

About Autonomous

Sri Manakula Vinayagar Engineering College has been conferred with Autonomous Status by the University Grants Commission on 26th September 2019 and the same was approved by Pondicherry University on 19th June 2020.

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education: To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation: To foster value- based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

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MADAGADIPET, PUDUCHERRY - 605 107

III year / VI Sem

Academic Calendar for B. Tech. Programmes
December 2024 - May 2025

December 2024

Date	Day	Schedule	Working Day
1	Sun		Holiday
2	Mon		
3	Tue		
4	Wed		
5	Thu		
6	Fri		
7	Sat		Holiday
8	Sun		Holiday
9	Mon		
10	Tue		
11	Wed		
12	Thu		
13	Fri		
14	Sat		
15	Sun		
16	Mon		
17	Tue		
18	Wed		
19	Thu		
20	Fri		
21	Sat		Holiday
22	Sun		Holiday
23	Mon		
24	Tue		
25	Wed	Christmas	Holiday
26	Thu		
27	Fri	Commencement of classes for VI sem	1
28	Sat		2
29	Sun		Holiday
30	Mon		3
31	Tue		4

Total number of working days :04
Total number of holidays :01

January 2025

Date	Day	Schedule	Working Day
1	Wed	New Year	Holiday
2	Thu		5
3	Fri		6
4	Sat		Holiday
5	Sun		Holiday
6	Mon	Cultural Week	7
7	Tue		8
8	Wed		9
9	Thu		01
10	Fri		11
11	Sat	Graduation Day	12
12	Sun		Holiday
13	Mon	Bhogi	Holiday
14	Tue	Pongal	Holiday
15	Wed	Thiruvalluvar Dinam	Holiday
16	Thu	Uzhavar Thirunal	Holiday
17	Fri		13
18	Sat		Holiday
19	Sun		Holiday
20	Mon		14
21	Tue		15
22	Wed		16
23	Thu		17
24	Fri	World Guiness Record Event (Asoka Chakra)	18
25	Sat	Sigarathai Nokki	19
26	Sun	Republic Day	Holiday
27	Mon		20
28	Tue	Online feedback - 1	21
29	Wed	Assignment – 1	22
30	Thu	Submission of QCM-1/Syllabus Coverage	23
31	Fri		24

Total number of working days :20
Total number of holidays :11

February 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon	CAT – 1 Starts (1st &2nd hour)	25
4	Tue	CAT – 1(1st &2nd hour)	26
5	Wed	CAT – 1(1st &2nd hour)	27
6	Thu	CAT – 1(1st &2nd hour)	28
7	Fri	CAT – 1(1st &2nd hour)	29
8	Sat	CAT – 1 Ends (1st &2nd hour)	30
9	Sun		Holiday
10	Mon		31
11	Tue	Submission of Attendance &Assessment Record	32
12	Wed	Submission of CAT 1 Result Analysis	33
13	Thu		34
14	Fri		35
15	Sat		Holiday
16	Sun		Holiday
17	Mon		36
18	Tue		37
19	Wed		38
20	Thu		39
21	Fri		40
22	Sat		41
23	Sun		Holiday
24	Mon		42
25	Tue		43
26	Wed		44
27	Thu		45
28	Fri		46

Total number of working days :22
Total number of holidays :06

March 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon	Online Feedback – 2	47
4	Tue	Assignment – 2	48
5	Wed	Submission of QCM-2 / Syllabus Coverage	49
6	Thu		50
7	Fri		51
8	Sat		52
9	Sun		Holiday
10	Mon	CAT-2 Starts (1st &2nd hour)	53
11	Tue	CAT-2(1st &2nd hour)	54
12	Wed	CAT-2 (1st &2nd hour)	55
13	Thu	CAT-2(1st &2nd hour)	56
14	Fri	CAT-2(1st &2nd hour)	57
15	Sat		Holiday
16	Sun		Holiday
17	Mon	CAT-2 Ends (1st &2nd hour)	58
18	Tue		59
19	Wed		60
20	Thu		61
21	Fri	Submission of Attendance & Assessment Record	62
22	Sat	Submission of CAT 2 Result Analysis	63
23	Sun		Holiday
24	Mon		64
25	Tue	Online Feedback – 3	65
26	Wed	Assignment – 3	66
27	Thu	Submission of QCM-3 / Syllabus Coverage	67
28	Fri		68
29	Sat	Model Exam Starts	69
30	Sun		Holiday
31	Mon	Ramzan	Holiday

Total number of working days :23
Total number of holidays :08

April 2025

Date	Day	Schedule	Working Day
1	Tue	Model Exam	70
2	Wed	Model Exam	71
3	Thu	Model Exam	72
4	Fri	Model Exam	73
5	Sat		Holiday
6	Sun		Holiday
7	Mon	Model Exam Ends	74
8	Tue		75
9	Wed		76
10	Thu	Tentative Model Practical Exam starts	77
11	Fri		78
12	Sat		79
13	Sun		Holiday
14	Mon	Tamil New Year	Holiday
15	Tue		80
16	Wed		81
17	Thu	Declaration of Attendance / Internal Assessment /Model Practical Exam Ends / Last Working Day	82
18	Fri	Good Friday	Holiday
19	Sat		Holiday
20	Sun		Holiday
21	Mon	Tentative ESE Practical Starts	
22	Tue	Submission of Model Exam Result Analysis	
23	Wed		
24	Thu		
25	Fri		
26	Sat	Tentative ESE Practical Ends	
27	Sun		Holiday
28	Mon		
29	Tue		
30	Wed	Submission of Attendance & Assessment Record	

Total number of working days :13
Total number of holidays :04

May 2025

Date	Day	Schedule	Working Day
1	Thu	May Day	Holiday
2	Fri		
3	Sat		
4	Sun		Holiday
5	Mon	Tentative ESE Theory	
6	Tue		
7	Wed		
8	Thu		
9	Fri		
10	Sat		
11	Sun		
12	Mon		
13	Tue		
14	Wed		
15	Thu		
16	Fri		
17	Sat		
18	Sun		
19	Mon		
20	Tue		
21	Wed		
22	Thu		
23	Fri		
24	Sat		
25	Sun		
26	Mon		
27	Tue		
28	Wed		
29	Thu		
30	Fri		
31	Sat		

Total number of working days:00
Total number of holidays:00

2.D.2.2

Use of Cell Phones

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I hour	09.00 a.m	to	09.50 a.m
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Break	10.40 a.m	to	10.55 a.m
III hour	10.55 a.m	to	11.45 a.m
IV hour	11.45 a.m	to	12.35 p.m
V hour	01.15 p.m	to	02.05 p.m
VI hour	02.05 p.m	to	02.55 p.m
Break	02.55 p.m	to	03.10 p.m
VII hour	03.10 p.m	to	04.00 p.m
VIII hour	04.00 p.m	to	04.50 p.m

Lunch break 12.35 p.m. to 1.15 p.m.

Marks Distribution of Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM)

Scheme for Continuous Assessment Test (CAT)

S. No	Course Type	Continuous Assessment components									
		Test Marks	Average of pre/post test/ viva for each experiment	Average of marks for experiment report for each experiment	Model Exam / Report	Assignment	Review - 1	Review - 2	Review - 3	Attendance	Total
1.	Theory	15	-	-	-	5	-	-	-	5	25
2.	Practical	-	10	15	15	-	-	-	-	10	50
3.	Project Phase-I	-	-	-	-	-	15	15	20	-	50
4.	Project Phase-II	-	-	-	-	-	10	10	20	-	40

The internal marks will be provided fully based on the continuous assessment tests

Weightage of Assessment for Theory Course

S. No.	Test	Portion for Test	Test Marks	Duration of Test	Weightage for Internal
1	CAT 1	1½ Units	50	1 ½ hours	10
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Continuous Assessment for Theory Course					15

Question Paper Pattern

Question paper for CAT and ESE will be based on the pattern shown in Table (a) and (b)

Table (a) Question Paper pattern for CAT/Model Exam

Test Type	2 Marks	5 Marks	10 Marks	Total Marks
CAT 1 / CAT 2	5(questions) (10 Marks)	4(questions) (20 Marks)	2 (questions) (20 Marks)	50
Model	End Semester Examination Question Pattern			75

Table (b) Question paper pattern for End semester Examination(ESE)

2 Marks	5 Marks	10 Marks	Total Marks
10(20 Marks)	5 (25 Marks) (one question from each unit)	3 (30 Marks) (out of 5 questions, one question from each unit)	75

End Semester Examination Question Paper Pattern for Six Units Courses

Course	2 Mark	5 Mark	8 / 9 Mark	Total Marks
Part A	5	2 (out of 3 questions, one from each unit)	one 8 mark question (out of 2 questions from Unit I and Unit II)	37
			One 9 mark question (compulsory question from unit III)	
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Academic Calendar

December 2024 to May 2025

Programme / Regulations: **B. Tech / R-2020**
Year / Sem: III year / VI Sem

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SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

II year / IV Sem

Academic Calendar for B. Tech. Programmes
December 2024 - May 2025

December 2024

Date	Day	Schedule	Working Day
1	Sun		Holiday
2	Mon		
3	Tue		
4	Wed		
5	Thu		
6	Fri		
7	Sat		Holiday
8	Sun		Holiday
9	Mon		
10	Tue		
11	Wed		
12	Thu		
13	Fri		
14	Sat		
15	Sun		
16	Mon		
17	Tue		
18	Wed		
19	Thu		
20	Fri		
21	Sat		Holiday
22	Sun		Holiday
23	Mon		
24	Tue		
25	Wed	Christmas	Holiday
26	Thu		
27	Fri	Commencement of classes for IV sem	1
28	Sat		2
29	Sun		Holiday
30	Mon		3
31	Tue		4

Total number of working days :04
Total number of holidays :01

January 2025

Date	Day	Schedule	Working Day
1	Wed	New Year	Holiday
2	Thu		5
3	Fri		6
4	Sat		Holiday
5	Sun		Holiday
6	Mon	Cultural Week	7
7	Tue		8
8	Wed		9
9	Thu		10
10	Fri		11
11	Sat	Graduation Day	12
12	Sun		Holiday
13	Mon	Bhogi	Holiday
14	Tue	Pongal	Holiday
15	Wed	Thiruvalluvar Dinam	Holiday
16	Thu	Uzhavar Thirunal	Holiday
17	Fri		13
18	Sat		Holiday
19	Sun		Holiday
20	Mon		14
21	Tue		15
22	Wed		16
23	Thu		17
24	Fri	World Guiness Record Event (Asoka Chakra)	18
25	Sat	Sigarathai Nokki	19
26	Sun	Republic Day	Holiday
27	Mon		20
28	Tue	Online feedback - 1	21
29	Wed	Assignment – 1	22
30	Thu	Submission of QCM-1/Syllabus Coverage	23
31	Fri		24

Total number of working days :20
Total number of holidays :11

February 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon	CAT – 1 Starts (1st &2nd hour)	25
4	Tue	CAT – 1(1st &2nd hour)	26
5	Wed	CAT – 1(1st &2nd hour)	27
6	Thu	CAT – 1(1st &2nd hour)	28
7	Fri	CAT – 1(1st &2nd hour)	29
8	Sat	CAT – 1 Ends (1st &2nd hour)	30
9	Sun		Holiday
10	Mon		31
11	Tue	Submission of Attendance &Assessment Record	32
12	Wed	Submission of CAT 1 Result Analysis	33
13	Thu		34
14	Fri		35
15	Sat		Holiday
16	Sun		Holiday
17	Mon		36
18	Tue		37
19	Wed		38
20	Thu		39
21	Fri		40
22	Sat		41
23	Sun		Holiday
24	Mon		42
25	Tue		43
26	Wed		44
27	Thu		45
28	Fri		46

Total number of working days :22
Total number of holidays :06

March 2025

Date	Day	Schedule	Working Day
1	Sat		Holiday
2	Sun		Holiday
3	Mon	Online Feedback – 2	47
4	Tue	Assignment – 2	48
5	Wed	Submission of QCM-2 / Syllabus Coverage	49
6	Thu		50
7	Fri		51
8	Sat		52
9	Sun		Holiday
10	Mon	CAT-2 Starts (1st &2nd hour)	53
11	Tue	CAT-2(1st &2nd hour)	54
12	Wed	CAT-2 (1st &2nd hour)	55
13	Thu	CAT-2(1st &2nd hour)	56
14	Fri	CAT-2(1st &2nd hour)	57
15	Sat		Holiday
16	Sun		Holiday
17	Mon	CAT-2 Ends (1st &2nd hour)	58
18	Tue		59
19	Wed		60
20	Thu		61
21	Fri	Submission of Attendance & Assessment Record	62
22	Sat	Submission of CAT 2 Result Analysis	63
23	Sun		Holiday
24	Mon		64
25	Tue	Online Feedback – 3	65
26	Wed	Assignment – 3	66
27	Thu	Submission of QCM-3 / Syllabus Coverage	67
28	Fri		68
29	Sat	Model Exam Starts	69
30	Sun		Holiday
31	Mon	Ramzan	Holiday

Total number of working days :23
Total number of holidays :08

April 2025

Date	Day	Schedule	Working Day
1	Tue	Model Exam	70
2	Wed	Model Exam	71
3	Thu	Model Exam	72
4	Fri	Model Exam	73
5	Sat		Holiday
6	Sun		Holiday
7	Mon	Model Exam Ends	74
8	Tue		75
9	Wed		76
10	Thu	Tentative Model Practical Exam starts	77
11	Fri		78
12	Sat		79
13	Sun		Holiday
14	Mon	Tamil New Year	Holiday
15	Tue		80
16	Wed		81
17	Thu	Declaration of Attendance / Internal Assessment /Model Practical Exam Ends / Last Working Day	82
18	Fri	Good Friday	Holiday
19	Sat		Holiday
20	Sun		Holiday
21	Mon	Tentative ESE Practical Starts	
22	Tue	Submission of Model Exam Result Analysis	
23	Wed		
24	Thu		
25	Fri		
26	Sat	Tentative ESE Practical Ends	
27	Sun		Holiday
28	Mon		
29	Tue		
30	Wed	Submission of Attendance & Assessment Record	

Total number of working days :13
Total number of holidays :04

May 2025

Date	Day	Schedule	Working Day
1	Thu	May Day	Holiday
2	Fri		
3	Sat		
4	Sun		Holiday
5	Mon	Tentative ESE Theory	
6	Tue		
7	Wed		
8	Thu		
9	Fri		
10	Sat		
11	Sun		
12	Mon		
13	Tue		
14	Wed		
15	Thu		
16	Fri		
17	Sat		
18	Sun		
19	Mon		
20	Tue		
21	Wed		
22	Thu		
23	Fri		
24	Sat		
25	Sun		
26	Mon		
27	Tue		
28	Wed		
29	Thu		
30	Fri		
31	Sat		

Total number of working days:00
Total number of holidays:00

29.12.24

Use of Cell Phones

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Maintenance of Discipline

Discipline is an important factor that shapes one's personality. It is considered as a golden key capable of opening many doors. This institution expects each and every student to follow the rules and regulations in total. Maintaining discipline in the campus will promote a conducive environment for studies.

Working hours

I hour	09.00 a.m	to	09.50 a.m
II hour	09.50 a.m	to	10.40 a.m
Break	10.40 a.m	to	10.55 a.m
III hour	10.55 a.m	to	11.45 a.m
IV hour	11.45 a.m	to	12.35 p.m
V hour	01.15 p.m	to	02.05 p.m
VI hour	02.05 p.m	to	02.55 p.m
Break	02.55 p.m	to	03.10 p.m
VII hour	03.10 p.m	to	04.00 p.m
VIII hour	04.00 p.m	to	04.50 p.m

Lunchbreak 12.35p.m. to1.15p.m.

Table 1 Assessment method for Theory Courses

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESM) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Table 2 Question Paper pattern for CAT 1 and CAT 2 - Theory Courses

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
5	4	2 (out of 3 question)	50

Table 3 Model and End Semester Examination Question Paper pattern for 5 unit courses

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
10 (two questions from each unit)	5 (one questions from each unit)	3 (out of 5 questions one from each unit)	75

Table 4 Model and End Semester Examination Question Paper pattern for 6-unit courses

Course	2 Mark Questions	5 Mark Questions	8/9 Mark Questions	Total Marks
Part A	5	2 (out of 3 questions, one from each unit)	2 9 mark questions (out of 3 questions, one from each unit)	38
Part B	5	2 (out of 3 questions, one from each unit)	1 8 mark questions (out of 2 questions, one from unit IV & unit V)	37
			1 9 mark questions (compulsory question from unit VI)	

Table 5 Assessment Method for Practical Courses

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESM) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	Model Exam				
Marks	15	5	5	15	10	50	100

Table 6 Assessment Method for Theory cum Practical Courses

Assessment	Continuous Assessment Marks (CAM) - Maximum 50 Marks										End Semester Examination (ESM) Marks (Theory)	Total Marks
	Continuous Assessment (Theory)					Continuous Assessment (Practical)						
	CAT 1	CAT 2	Model	Attendance	Total	Conduction of Practical	Report	Viva	Total	End Semester Examination (ESE) (Practical-Internal Evaluation)		
Marks	5	5	5	5	20*	15	10	5	30**	30	75**	
*To be weighted for 10 Marks					10	**To be weighted for 10 Marks			10		**To be weighted for 50 Marks	100

Table 7 Question Paper pattern for CAT 1 and CAT 2 (Theory cum Practical course)

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
5	4	2 (out of 3 question)	50

Table 8 Question paper pattern for Model and End Semester Examination (Theory cum Practical course)

2 Mark Questions	5 Mark Questions	14 Mark Questions	Total Marks
9 (3 questions from each unit)	3 (one question from each unit)	1 Compulsory question (with sub-section questions in any of the unit)	75
		2 (out of 3 questions, one from each unit with sub-section)	

Requirements for Appearing End Semester Examination

A student is expected to maintain 100% attendance in all courses as attendance also carries internal marks. A student will be qualified to appear for end semester examinations of a semester only if he/she satisfies the below mentioned requirements.

The student is permitted to appear for End Semester Examinations, only if he/she maintains minimum 75% of attendance. If he/she secured attendance greater than or equal to 60 % and less than 75 % has to pay the necessary condonation prescribed by the college authority with necessary supporting documents for his/her absence.

Redo Category

A student who secures overall attendance less than 60% has to repeat the course with the approval, when it is next offered. A student secures attendance greater than or equal to 60% and less than 75% will be promoted to next higher semester only if lapse of attendance is due to medical reasons(hospitalization/ accident/illness) or participation in sports event or any competitions or NCC or NSS activities with prior permission from the Head of Institution through the Head of the department with necessary supporting documents and payment of necessary condonation fee as prescribed by the college authority. However, student secures more than 75 % of attendance in the current semester will be moved to next higher semester only if he/she registered for the current semester examinations

Women Empowerment Cell

For the Welfare of the girl students, a Women Cell has been constituted in the college. The girl students may approach the member secretary for assistance.

Mail id : **wec@smvec.ac.in**

Grievance Redressal Committee

There is a Grievance Redressal committee in our college and the details are available in the website. Students can approach the member of the committee to redress their grievances if any. Mail id : **grievance@smvec.ac.in**

Internal Complaints Committee

The objective of this committee is to avoid sexual harassment of students and women employees in the college by preventing it, recording complaints, and taking appropriate action in response. It also aims to eliminate gender-based discrimination by creating a safe physical and social environment that deters sexual harassment and enforcing the necessary disciplinary actions.

For complaints:

Mail id: **icc@smvec.ac.in**

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Accredited by NBA-AICTE, New Delhi and Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107

Academic Calendar

December 2024 to May 2025

Programme/Regulations: **B.Tech/R-2023**

Year/Sem : II year/IV Sem

About Autonomous

Sri Manakula Vinayagar Engineering College has been conferred with Autonomous Status by the University Grants Commission on 26th September 2019 and the same was approved by Pondicherry University on 19th June 2020.

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education: To provide comprehensive academic system that amalgamates the cutting-edge technologies with best practices.

M2: Research and Innovation: To foster value- based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship: To inculcate the employability and entrepreneurial skills through value and skill-based training.

M4: Ethical Values: To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

I year / II Sem

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)
(APPROVED BY AICTE, NEW DELHI AND AFFILIATED TO PONDICHERRY UNIVERSITY)
(ACCREDITED BY NBA-AICTE, NEW DELHI; ACCREDITED BY NAAC WITH 'A' GRADE)
MADAGADIPET, PUDUCHERRY – 605 107

Academic Calendar for B. Tech. Programmes
January 2025 - May 2025

January 2025				February 2025				March 2025				April 2025				May 2025			
Date	Day	Schedule	Working Day	Date	Day	Schedule	Working Day	Date	Day	Schedule	Working Day	Date	Day	Schedule	Working Day	Date	Day	Schedule	Working Day
1	Wed	New Year	Holiday	1	Sat		Holiday	1	Sat		Holiday	1	Tue	CAT 2 starts (1st &2nd hour)	57	1	Thu	May Day	Holiday
2	Thu			2	Sun		Holiday	2	Sun		Holiday	2	Wed	CAT 2(1st &2nd hour)	58	2	Fri		79
3	Fri			3	Mon		12	3	Mon	CAT 1 Ends (1st &2nd hour)	34	3	Thu	CAT 2(1st &2nd hour)	59	3	Sat		80
4	Sat		Holiday	4	Tue		13	4	Tue		35	4	Fri	CAT 2(1st &2nd hour)	60	4	Sun		Holiday
5	Sun		Holiday	5	Wed		14	5	Wed	Submission of Attendance & Assessment Record	36	5	Sat		Holiday	5	Mon	Declaration of Attendance /Internal Assessment /Last Working Day	81
6	Mon			6	Thu		15	6	Thu		37	6	Sun		Holiday	6	Tue	Tentative ESE Practical	
7	Tue			7	Fri		16	7	Fri	Submission of CAT 1 Result Analysis	38	7	Mon	CAT 2(1st &2nd hour)	61	7	Wed		
8	Wed	Cultural Week		8	Sat		17	8	Sat		39	8	Tue	CAT 2 Ends (1st &2nd hour)	62	8	Thu	Submission of Model Exam Result Analysis	
9	Thu			9	Sun		Holiday	9	Sun		Holiday	9	Wed		63	9	Fri		
10	Fri			10	Mon		18	10	Mon		40	10	Thu	Submission of Attendance & Assessment Record	64	10	Sat		
11	Sat	Graduation Day		11	Tue		19	11	Tue		41	11	Fri		65	11	Sun		Holiday
12	Sun		Holiday	12	Wed		20	12	Wed		42	12	Sat	Submission of CAT 2 Result Analysis	66	12	Mon		
13	Mon	Bhogi	Holiday	13	Thu		21	13	Thu		43	13	Sun		Holiday	13	Tue		
14	Tue	Pongal	Holiday	14	Fri		22	14	Fri		44	14	Mon	Tamil New Year	Holiday	14	Wed		
15	Wed	Thiruvalluvar day	Holiday	15	Sat		Holiday	15	Sat		Holiday	15	Tue	Online Feedback 3	67	15	Thu		
16	Thu	Uzhavar Thirunal	Holiday	16	Sun		Holiday	16	Sun		Holiday	16	Wed	Assignment 3	68	16	Fri		
17	Fri			17	Mon		23	17	Mon		45	17	Thu	Submission of QCM – 3/ Syllabus Coverage	69	17	Sat		Holiday
18	Sat		Holiday	18	Tue		24	18	Tue		46	18	Fri	Good Friday	Holiday	18	Sun		Holiday
19	Sun		Holiday	19	Wed	Online feedback – 1	25	19	Wed		47	19	Sat		Holiday	19	Mon		
20	Mon	Commencement of Classes for II sem	1	20	Thu	Assignment – 1	26	20	Thu		48	20	Sun		Holiday	20	Tue		
21	Tue		2	21	Fri	Submission of QCM – 1/ Syllabus Coverage	27	21	Fri		49	21	Mon	Model Exam Starts	70	21	Wed		
22	Wed		3	22	Sat		28	22	Sat		50	22	Tue		71	22	Thu	Tentative ESE Theory	
23	Thu		4	23	Sun		Holiday	23	Sun		Holiday	23	Wed		72	23	Fri		
24	Fri	World Guiness Record Event (Asoka Chakra)	5	24	Mon	CAT 1 starts (1st &2nd hour)	29	24	Mon		51	24	Thu		73	24	Sat		
25	Sat	Sigarathai Nokki	6	25	Tue	CAT 1(1st &2nd hour)	30	25	Tue		52	25	Fri		74	25	Sun		Holiday
26	Sun		Holiday	26	Wed	CAT 1(1st &2nd hour)	31	26	Wed	Online feedback – 2	53	26	Sat	Model Exam Ends	75	26	Mon		
27	Mon		7	27	Thu	CAT 1(1st &2nd hour)	32	27	Thu	Assignment – 2	54	27	Sun		Holiday	27	Tue		
28	Tue		8	28	Fri	CAT 1 (1st &2nd hour)	33	28	Fri	Submission of QCM – 2/ Syllabus Coverage	55	28	Mon	Tentative Model Practical	76	28	Wed		
29	Wed		9					29	Sat		56	29	Tue		77	29	Thu		
30	Thu		10					30	Sun		Holiday	30	Wed	Submission of Attendance & Assessment Record	78	30	Fri		
31	Fri		11					31	Mon	Ramzan	Holiday					31	Sat		
Total number of working days:11				Total number of working days:22				Total number of working days:23				Total number of working days:22				Total number of working days:03			
Total number of holidays:01				Total number of holidays:06				Total number of holidays:08				Total number of holidays:08				Total number of holidays:02			

2.A.3.89

Use of Cell Phones

It has been decided **not to permit cell phones inside the college campus**. If any student is found using the cell phone inside the college campus, it would be confiscated and will not be returned back on any circumstances. Hence the students are instructed not to attend the college with the mobile phones.

Dress Code

The students are requested to attend the college neatly dressed. While the male students should attend the college with the shirts neatly tucked in and with the shoes, the female students are permitted to come with churidar and dupatta properly pined. Students wearing full hand shirts should wear it as such without folding it to half etc. Casual wears like jeans, T-shirts etc., both for boys and girls are strictly prohibited inside the campus. Each department has prescribed uniforms for the labs. The students are requested to strictly adhere to the dress codes as well as the rules and regulations of the college.

2.9.3.90

Maintenance of Discipline

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Working hours

I hour	08.45 a.m	to	09.35 a.m
II hour	09.35 a.m	to	10.25 a.m
III hour	10.25 a.m	to	11.15 a.m
Break	11.15 a.m	to	11.30 a.m
IV hour	11.30 a.m	to	12.20 p.m
V hour	12.20 p.m	to	01.10 p.m
VI hour	01.50 p.m	to	02.40 p.m
VII hour	02.40 p.m	to	03.30 p.m
VIII hour	03.30 p.m	to	04.20 p.m

Lunchbreak 01: 10 pm to 1: 50 p.m.

Table 1 Assessment method for Theory Courses

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESM) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Table 2 Question Paper pattern for CAT 1 and CAT 2 - Theory Courses

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
5	4	2 (out of 3 question)	50

Table 3 Model and End Semester Examination Question Paper pattern for 5 unit courses

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
10 (two questions from each unit)	5 (one questions from each unit)	3 (out of 5 questions one from each unit)	75

Table 4 Model and End Semester Examination Question Paper pattern for 6 unit courses

Course	2 Mark Questions	5 Mark Questions	8/9 Mark Questions	Total Marks
Part A	5	2 (out of 3 questions, one from each unit)	2 9 mark questions (out of 3 questions, one from each unit)	38
Part B	5	2 (out of 3 questions, one from each unit)	1 8 mark questions (out of 2 questions, one from unit IV & unit V)	37
			1 9 mark questions (compulsory question from unit VI)	

Table 5 Assessment Method for Practical Courses

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESM) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	Model Exam				
Marks	15	5	5	15	10	50	100

Table 6 Assessment Method for Theory cum Practical Courses

Assessment	Continuous Assessment Marks (CAM) - Maximum 50 Marks										End Semester Examination (ESM) Marks (Theory)	Total Marks
	Continuous Assessment (Theory)					Continuous Assessment (Practical)						
	CAT 1	CAT 2	Model	Attendance	Total	Conduction of Practical	Report	Viva	Total	End Semester Examination (ESE) (Practical-Internal Evaluation)		
Marks	5	5	5	5	20*	15	10	5	30**	30	75**	100
*To be weighted for 10 Marks					10	**To be weighted for 10 Marks			10		**To be weighted for 50 Marks	

Table 7 Question Paper pattern for CAT 1 and CAT 2 (Theory cum Practical course)

2 Mark Questions	5 Mark Questions	10 Mark Questions	Total Marks
5	4	2 (out of 3 question)	50

Table 8 Question paper pattern for Model and End Semester Examination (Theory cum Practical course)

2 Mark Questions	5 Mark Questions	14 Mark Questions	Total Marks
9 (3 questions from each unit)	3 (one question from each unit)	1 Compulsory question (with sub-section questions in any of the unit)	75
		2 (out of 3 questions, one from each unit with sub-section)	

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(An Autonomous Institution)
(Accredited by NBA-AICTE, New Delhi and Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

Academic Calendar

January 2025 to May 2025

Programme/Regulations: **B.Tech/R-2023**
Year/Sem : I year/II Sem

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MISSION

M1: Quality Education: To provide comprehensive academic system that amalgamates the cutting-edge technologies with best practices.

M2: Research and Innovation: To foster value- based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship: To inculcate the employability and entrepreneurial skills through value and skill-based training.

M4: Ethical Values: To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

ANNEXURE-V

2.A.3.91

2. A. 3. 92

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
Puducherry - 605 107

Panel of Examiners for Valuation of End Semester Examinations April 2025

Department of Computer Science and Engineering

SMVEC/ Dept/ Exam-Cell/Valuation/2024-2025/0051 Date:25.07.2024

Sl.No	Name of the Examiner	Specialization	Designation, Department and Institution in which currently working	Contact number and mail id	Experience
External Examiners					
1	**Dr. L.Arun raj**	Wireless Networks, Theory of Computation, Multimedia Applications, Python	Associate Professor Department of Computer Science and Engineering B.S. AbdurRahman Crescent Institute of Science and Technology |Vandalur |Chennai-48	**E-Mail ID:**arunraj@crescent.education **Contact No:**9941169805	**15Years**
2	**Dr. S. Thamizharasan**	Design and Analysis of Algorithms, Artificial Intelligence	**Assistant Professor / CSE RGCET, Puducherry.**	**E-Mail ID:**thamizharasans@rgcetpdy.ac.in, **Contact No:**9500211888	**17 Years**
3	**Dr. N. Manjunathan**	DBMS, Data Structures	Associate Professor / CSE, Vel Tech Rangarajan Dr. Sagunthala R & D institute of Science and Tecnology, Chennai	**E-Mail ID:**nmanjunathan@veltech.edu.in **Contact No:**9791060024	**16 Years**
4	**Dr T SENTHIL KUMAR**	DBMS, Computer Graphics	Associate Professor/ CSE, SRM Institute of Science and Technology Chennai	**E-Mail ID:**senthilt2@srmist.edu.in **Contact No:**9787565565	**15 Years**
5	**Dr.G.Balamurugan**	AI, Deep Learning	Assistant Professor Department of Computing	**E-Mail ID:** balamurg1@srmist.edu.in **Contact No:9629308990**	**6 Years**

2.A.3.93

ANNEXURE-VI

2. A. 3. 97

2.A.3.98

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

Puducherry

(As per UGC - 2018 Regulations and Affiliated to Pondicherry University)

PUDUCHERRY – 605107

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M.TECH.

COMPUTER SCIENCE AND ENGINEERING

(REGULATIONS - 2023)

CURRICULUM AND SYLLABI

25 years of ACADEMIC EXCELLENCE

Dr.K.PREMKUMAR
Professor & Head
Dept. of Computer Science and Engg.
Sri Manakula Vinayagar Engg. College
(An Autonomous Institution)

2.A.3.99

COLLEGE VISION AND MISSION

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education : To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation : To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship : To inculcate the employability and entrepreneurial skills through value and skill based training.

M4: Ethical Values : To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

DEPARTMENT VISION AND MISSION

VISION

To create a productive learning and research environment for graduates to become highly dynamic, competent, ethically responsible, professionally knowledgeable in the field of computer science and engineering to meet the industrial needs on par with global standards.

MISSION

M1: Quality Education: Empowering the students with the necessary technical skills through quality education to grow professionally.

M2: Innovative Research: Advocating the innovative research ideas by incorporating with industries for developing products and services.

M3: Placement and Entrepreneurship: Advancing the education by strengthening the Industry-academic relationship through hands-on training to seek placement in the top most industries or to develop a start-ups.

M4: Ethics and Social Responsibilities: Stimulating professional behaviour and good ethical values to improve the leadership skills and social responsibilities.

2. A. 3. 100

PROGRAMME OUTCOMES (POs)

PO1: Exploration of Research:
An ability to independently carry out research/investigation and development work to solve practical problems.

PO2: Technical Skill:
An ability to write and present a substantial technical report/document.

PO3: Expertise in Academics:
Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4: Problem solving:
An ability to discriminate, analyzes, evaluate and synthesize the technologies to provide solution for multidimensional engineering problems.

PO5: Usage of Modern Tools:
Create, select, learn 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: Ethical Practices and Social Responsibility:
Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Technical Knowledge: To acquire a comprehensive knowledge in computer science engineering concepts and apply them for the investigation of real world problems.

PEO2: Research and Development: To prepare graduates who will demonstrate analytical, research, design and implementation skills offering techno-commercially feasible and socially acceptable solutions.

PEO3: Leadership: To prepare graduates who will demonstrate analytical, research, design and implementation skills offering techno-commercially feasible and socially acceptable solutions

PEO4: Professional Behavior: To deliver graduates to design and implement solutions for rapidly changing computing problems and information system environments to adapt innovation.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Technical Knowledge in Computer Science and Engineering: Graduates with the ability to apply basic knowledge of Computer Science in solving the critical problems.

PSO2: Multidisciplinary Competency: Ability to convert innovative ideas into research or society oriented projects through current trending technologies.

PSO3: Employability: Acquire placement in highly reputed industries or accomplish new technical business skills with the contemporary trends in the industry.

2. A. 3. 101

STRUCTURE FOR POST GRADUATE ENGINEERING PROGRAM

Sl.No	Course Category	Breakdown of Credits
1	Humanities and Social Sciences (HS)	6
2	Basic Sciences(BS)	3
3	Engineering Sciences (ES)	-
4	Professional Core (PC)	25
5	Professional Electives (PE)	18
6	Open Electives (OE)	-
7	Project Work and Internship(PA)	20
8	Ability Enhancement Courses (AEC)	-
9	Mandatory courses (MC)	-
Total		**72**

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

Sl.No	Course Category	Credits per Semester				Total Credits
		I	II	III	IV	
1	Humanities and Social Sciences (HS)	4	2	-	-	6
2	Basic Sciences(BS)	3	-	-	-	3
3	Engineering Sciences (ES)	-	-	-	-	-
4	Professional Core (PC)	11	14	-	-	25
5	Professional Electives (PE)	3	6	9	-	18
6	Open Electives (OE)	-	-	-	-	-
7	Project Work and Internship(PA)			8	12	20
8	Ability Enhancement Courses (AEC)*	-	-	-	-	-
9	Mandatory Courses (MC)*	-	-	-	-	-
Total		**21**	**22**	**17**	**12**	**72**

**** AEC, MC Credits are not included for CGPA calculation***

2.A.3.102

CURRICULUM

SEMESTER – I										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23MAT103	Mathematical Foundation of Formal Approach	BS	2	1	0	3	40	60	100
2	P23CSTD01	Advanced Data Structures and Algorithms	PC	3	0	0	3	40	60	100
3	P23CST102	Cloud and Big Data Analytics	PC	3	0	0	3	40	60	100
4	P23CSTD02	Speech and Language Processing	PC	3	0	0	3	40	60	100
5	P23HSTC01	Research Methodology and IPR	HS	2	0	0	2	40	60	100
6	P23CSE1XX	Professional Elective – I *	PE	3	0	0	3	40	60	100
Practical										
7	P23CSP101	Advanced Data Structures and Algorithms Laboratory	PC	0	0	4	2	50	50	100
8	P23HSPC01	Technical Report Writing and Seminar	HS	0	0	4	2	100	-	100
Ability Enhancement Course										
9	P23CSC1XX	Certification Course-I #	AEC	0	0	4	-	100	-	100
10	P23ACT10X	Audit Course-I**	AEC	0	0	2	-	100	-	100
							21	590	410	1000

SEMESTER – II										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23CST203	Advanced Software Engineering and Testing	PC	3	0	0	3	40	60	100
2	P23CST204	Adhoc and Wireless Sensor Networks	PC	3	0	0	3	40	60	100
3	P23CST205	Advanced Operating Systems	PC	3	0	0	3	40	60	100
4	P23CST206	Advanced Python Programming	PC	3	0	0	3	40	60	100
5	P23CSE2XX	Professional Elective - II	PE	3	0	0	3	40	60	100
6	P23CSE2XX	Professional Elective - III	PE	3	0	0	3	40	60	100
Practical										
7	P23CSP202	Advanced Python Programming Laboratory	PC	0	0	4	2	50	50	100
8	P23HSPC02	Seminar on ICT: A Hands - On Approach	HS	0	0	4	2	100	-	100
Ability Enhancement Course										
9	P23CSC2XX	Certification Course-II #	AEC	0	0	4	-	100	-	100
10	P23ACT20X	Audit Course-II**	AEC	0	0	2	-	100	-	100
							22	590	410	1000

2. A. 3. 103

SEMESTER – III										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23CSE1XX	Professional Elective – IV *	PE	3	0	0	3	40	60	100
2	P23CSE1XX	Professional Elective – V *	PE	3	0	0	3	40	60	100
3	P23CSE1XX	Professional Elective – VI *	PE	3	0	0	3	40	60	100
Project Work										
4	P23CSW301	Project Phase - I	PA	0	0	12	6	50	50	100
5	P23CSW302	Internship	PA	0	0	0	2	100	-	100
Ability Enhancement Course										
6	P23CSC301	NPTEL/SWAYAM/MOOC	AEC	0	0	0	-	100	-	100
							17	370	230	600

SEMESTER – IV										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Project Work										
1	P23CSW403	Project Phase - II	PA	0	0	24	12	50	50	100
							12	50	50	100

*** Professional Elective Courses are to be selected from the list given in Annexure I**
 # Ability Enhancement Courses are to be selected from the list given in Annexure II
**** Audit Courses are to be selected from the list given in Annexure III**

BS- Basic Sciences

PC – Professional Core

PE – Professional Elective

HS - Humanities and Social Sciences

PA - Professional Activity

CC- Common Course

AC- Audit Course

AEC - Ability Enhancement Course

CREDIT DISTRIBUTION

Semester	I	II	III	IV	Total
Credits	21	22	17	12	72

Total number of credits required to complete
M.Tech in Computer Science and Engineering : 72 credits

2. A. 3. 104

ANNEXURE- I

PROFESSIONAL ELECTIVE COURSES

Sl. No.	Course Code	Course Title
Professional Elective-I		
1	P23CSE101	Programming for Data Science
2	P23CSE102	Cyber Attacks Detection and Prevention Systems
3	P23CSE103	Bio-Inspired Computing
4	P23CSE104	Block Chain and Crypto Currency
5	P23CSE105	IoT Applications Engineering
Professional Elective-II		
1	P23CSEC01	Information Visualization
2	P23CSE206	Malware Analysis
3	P23CSEC02	Soft Computing
4	P23BDEC01	Neural Networks
5	P23CSE207	Robotic Process Automation
Professional Elective-III		
1	P23CSEC03	Text, Web and Social Media Analytics
2	P23CSEC04	Data Storage Technologies and Networks
3	P23CSE208	Reinforcement Learning
4	P23CSE209	Mobile Application and Development
5	P23CSE210	Wireless Sensor Networks and IoT
Professional Elective-IV		
1	P23BDEC03	Analytics of Things
2	P23CSE311	Cloud Security and Analytics
3	P23CSE312	Pattern Recognition
4	P23CSEC05	Game Design and Augmented Reality
5	P23CSE313	IoT Security and Trust
Professional Elective-V		
1	P23CSEC06	Image and Video Analytics
2	P23CSE314	Web Application Security
3	P23CSE315	Cognitive Science
4	P23CSE316	Cloud Application Development and Management
5	P23CSE317	Intelligent Internet of Things
Professional Elective-VI		
1	P23CSE318	Big Data Technologies
2	P23CSE319	Digital Forensics
3	P23CSE320	Knowledge Engineering and Expert Systems
4	P23BDTD01	NoSQL Databases
5	P23CSE321	Industrial IoT

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ANNEXURE- II

ABILITY ENHANCEMENT COURSES

Sl. No.	Course Code	Course Title
1	P23XXCX01	Adobe Photoshop
2	P23XXCX02	Adobe Animate
3	P23XXCX03	Adobe Dreamweaver
4	P23XXCX04	Adobe After Effects
5	P23XXCX05	Adobe Illustrator
6	P23XXCX06	Adobe InDesign
7	P23XXCX07	Autodesk AutoCAD -ACU
8	P23XXCX08	Autodesk Inventor - ACU
9	P23XXCX09	Autodesk Revit - ACU
10	P23XXCX10	Autodesk Fusion 360 - ACU
11	P23XXCX11	Autodesk 3ds Max - ACU
12	P23XXCX12	Autodesk Maya - ACU
13	P23XXCX13	Cloud Security Foundations
14	P23XXCX14	Cloud Computing Architecture
15	P23XXCX15	Cloud Foundation
16	P23XXCX16	Cloud Practitioner
17	P23XXCX17	Cloud Solution Architect
18	P23XXCX18	Data Engineering
19	P23XXCX19	Machine Learning Foundation
20	P23XXCX20	Robotic Process Automation / Medical Robotics
21	P23XXCX21	Advance Programming Using C
22	P23XXCX22	Advance Programming Using C ++
23	P23XXCX23	C Programming
24	P23XXCX24	C++ Programming
25	P23XXCX25	CCNP Enterprise: Advanced Routing
26	P23XXCX26	CCNP Enterprise: Core Networking
27	P23XXCX27	Cisco Certified Network Associate - Level 2
28	P23XXCX28	Cisco Certified Network Associate- Level 1
29	P23XXCX29	Cisco Certified Network Associate- Level 3
30	P23XXCX30	Fundamentals Of Internet of Things
31	P23XXCX31	Internet Of Things / Solar and Smart Energy System with IoT
32	P23XXCX32	Java Script Programming
33	P23XXCX33	NGD Linux Essentials
34	P23XXCX34	NGD Linux I
35	P23XXCX35	NGD Linux II

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36	P23XXCX36	Advance Java Programming
37	P23XXCX37	Android Programming / Android Medical App Development
38	P23XXCX38	Angular JS
39	P23XXCX39	Catia
40	P23XXCX40	Communication Skills for Business
41	P23XXCX41	Coral Draw
42	P23XXCX42	Data Science Using R
43	P23XXCX43	Digital Marketing
44	P23XXCX44	Embedded System Using C
45	P23XXCX45	Embedded System with IOT / Arduino
46	P23XXCX46	English For IT
47	P23XXCX47	Plaxis
48	P23XXCX48	Sketch Up
49	P23XXCX49	Financial Planning, Banking and Investment Management
50	P23XXCX50	Foundation Of Stock Market Investing
51	P23XXCX51	Machine Learning / Machine Learning for Medical Diagnosis
52	P23XXCX52	IOT Using Python
53	P23XXCX53	Creo (Modelling & Simulation)
54	P23XXCX54	Soft Skills, Verbal, Aptitude
55	P23XXCX55	Software Testing
56	P23XXCX56	MX-Road
57	P23XXCX57	CLO 3D
58	P23XXCX58	Solid works
59	P23XXCX59	Staad Pro
60	P23XXCX60	Total Station
61	P23XXCX61	Hydraulic Automation
62	P23XXCX62	Industrial Automation
63	P23XXCX63	Pneumatics Automation
64	P23XXCX64	Agile Methodologies
65	P23XXCX65	Block Chain
66	P23XXCX66	Devops
67	P23XXCX67	Artificial Intelligence
68	P23XXCX68	Cloud Computing
69	P23XXCX69	Computational Thinking
70	P23XXCX70	Cyber Security
71	P23XXCX71	Data Analytics
72	P23XXCX72	Databases
73	P23XXCX73	Java Programming

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74	P23XXCX74	Networking
75	P23XXCX75	Python Programming
76	P23XXCX76	Web Application Development (HTML, CSS, JS)
77	P23XXCX77	Network Security
78	P23XXCX78	MATLAB
79	P23XXCX79	Azure Fundamentals
80	P23XXCX80	Azure AI (AI-900)
81	P23XXCX81	Azure Data (DP -900)
82	P23XXCX82	Microsoft 365 Fundamentals (SS-900)
83	P23XXCX83	Microsoft Security, Compliance and Identity (SC-900)
84	P23XXCX84	Microsoft Power Platform (PI-900)
85	P23XXCX85	Microsoft Dynamics Fundamentals 365 – CRM
86	P23XXCX86	Microsoft Excel
87	P23XXCX87	Microsoft Excel Expert
88	P23XXCX88	Securities Market Foundation
89	P23XXCX89	Derivatives Equinity
90	P23XXCX90	Research Analyst
91	P23XXCX91	Portfolio Management Services
92	P23XXCX92	Cyber Security
93	P23XXCX93	Cloud Security
94	P23XXCX94	PMI – Ready
95	P23XXCX95	Tally – GST & TDS
96	P23XXCX96	Advance Tally
97	P23XXCX97	Associate Artist
98	P23XXCX98	Certified Unity Programming
99	P23XXCX99	VR Development

2. A. 3. 108

ANNEXURE-III

AUDIT COURSES
(Common to all M.Tech Programme)

Sl. No.	Course Code	Course Title
1	P23ACTX01	English for Research Paper Writing
2	P23ACTX02	Disaster Management
3	P23ACTX03	Sanskrit for Technical Knowledge
4	P23ACTX04	Value Education
5	P23ACTX05	Constitution of India
6	P23ACTX06	Pedagogy Studies
7	P23ACTX07	Stress Management by Yoga
8	P23ACTX08	Personality Development Through Life Enlightenment Skills
9	P23ACTX09	Unnat Bharat Abhiyan

2.A.3.109

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

Puducherry

(As per UGC - 2018 Regulations and Affiliated to Pondicherry University)

PUDUCHERRY – 605107

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M.TECH.

COMPUTER SCIENCE ENGINEERING (BIG DATA ANALYTICS)

(REGULATIONS - 2023)

CURRICULUM AND SYLLABI

25 years of ACADEMIC EXCELLENCE

Dr.K.PREMKUMAR
Professor & Head
Dept. of Computer Science and Engg.
Sri Manakula Vinayagar Engg. College
[An Autonomous Institution]

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COLLEGE VISION AND MISSION

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education : To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation : To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship : To inculcate the employability and entrepreneurial skills through value and skill based training.

M4: Ethical Values : To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

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M2: Innovative Research: Advocating the innovative research ideas by incorporating with industries for developing products and services.

M3: Placement and Entrepreneurship: Advancing the education by strengthening the Industry-academic relationship through hands-on training to seek placement in the top most industries or to develop a start-ups.

M4: Ethics and Social Responsibilities: Stimulating professional behaviour and good ethical values to improve the leadership skills and social responsibilities.

2. A. 3. 112

STRUCTURE FOR POST GRADUATE ENGINEERING PROGRAM

Sl.No	Course Category	Breakdown of Credits
1	Humanities and Social Sciences (HS)	6
2	Basic Sciences(BS)	3
3	Engineering Sciences (ES)	-
4	Professional Core (PC)	25
5	Professional Electives (PE)	18
6	Open Electives (OE)	-
7	Project Work and Internship(PA)	20
8	Ability Enhancement Courses (AEC)	-
9	Mandatory courses (MC)	-
Total		**72**

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

Sl.No	Course Category	Credits per Semester				Total Credits
		I	II	III	IV	
1	Humanities and Social Sciences (HS)	4	2	-	-	6
2	Basic Sciences(BS)	3	-	-	-	3
3	Engineering Sciences (ES)	-	-	-	-	-
4	Professional Core (PC)	11	14	-	-	25
5	Professional Electives (PE)	3	6	9	-	18
6	Open Electives (OE)	-	-	-	-	-
7	Project Work and Internship(PA)			8	12	20
8	Ability Enhancement Courses (AEC)*	-	-	-	-	-
9	Mandatory Courses (MC)*	-	-	-	-	-
Total		**21**	**22**	**17**	**12**	**72**

**** AEC, MC Credits are not included for CGPA calculation***

2. A. 3. 113

CURRICULUM

SEMESTER – I										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23MAT104	Mathematical Foundations for Data Analytics	BS	3	0	0	3	40	60	100
2	P23BDT101	Big Data Acquisition	PC	3	0	0	3	40	60	100
3	P23BDT102	Exploratory Data Analysis	PC	3	0	0	3	40	60	100
4	P23BDT103	Big Data Frameworks	PC	3	0	0	3	40	60	100
5	P23HSTC01	Research Methodology and IPR	HS	2	0	0	2	40	60	100
6	P23BDE1XX	Professional Elective - I *	PE	3	0	0	3	40	60	100
Practical										
7	P23BDP101	Big Data Computing Laboratory	PC	0	0	4	2	50	50	100
8	P23HSPC01	Technical Report Writing and Seminar	HS	0	0	4	2	100	-	100
Ability Enhancement Course										
9	P23CSC1XX	Certification Course-I #	AEC	0	0	4	-	100	-	100
10	P23ACT10X	Audit Course-I**	AEC	0	0	2	-	100	-	100
							21	590	410	1000

SEMESTER – II										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23BDT204	Mining Massive Data	PC	3	0	0	3	40	60	100
2	P23BDT205	Streaming Data Analytics	PC	3	0	0	3	40	60	100
3	P23BDT206	Big Data with SQL	PC	3	0	0	3	40	60	100
4	P23BDTD01	No SQL Databases	PC	3	0	0	3	40	60	100
5	P23BDE2XX	Professional Elective - II*	PE	3	0	0	3	40	60	100
6	P23BDE2XX	Professional Elective - III*	PE	3	0	0	3	40	60	100
Practical										
7	P23BDP202	Big Data with SQL Laboratory	PC	0	0	4	2	50	50	100
8	P23HSPC02	Seminar on ICT a hands on approach	HS	0	0	4	2	100	-	100
Ability Enhancement Course										
9	P23BDC2XX	Certification Course-II #	AEC	0	0	4	-	100	-	100
10	P23ACT20X	Audit Course-II**	AEC	0	0	2	-	100	-	100
							22	590	410	1000

2. A. 3. 114

SEMESTER – III										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	P23BDE3XX	Professional Elective – IV *	PE	3	0	0	3	40	60	100
2	P23BDE3XX	Professional Elective – V *	PE	3	0	0	3	40	60	100
3	P23BDE3XX	Professional Elective – VI *	PE	3	0	0	3	40	60	100
Project Work										
4	P23BDW301	Project Phase – I	PA	0	0	12	6	50	50	100
5	P23BDW302	Internship	PA	0	0	0	2	100	-	100
Ability Enhancement Course										
6	P23BDC301	NPTEL/SWAYAM/MOOC	AEC	0	0	0	-	100	-	100
							17	370	230	600

SEMESTER – IV										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Project Work										
1	P23BDW403	Project Phase – II	PA	0	0	24	12	50	50	100
							12	50	50	100

*** Professional Elective Courses are to be selected from the list given in Annexure I**
 # Ability Enhancement Courses are to be selected from the list given in Annexure II
**** Audit Courses are to be selected from the list given in Annexure III**

BS- Basic Sciences

PC – Professional Core

PE – Professional Elective

HS - Humanities and Social Sciences

PA - Professional Activity

CC- Common Course

AC- Audit Course

AEC - Ability Enhancement Course

CREDIT DISTRIBUTION

Semester	I	II	III	IV	Total
Credits	21	22	17	12	72

Total number of credits required to complete
M.Tech in Computer Science and Engineering : 72 credits

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ANNEXURE- I
PROFESSIONAL ELECTIVE COURSES

Sl. No.	Course Code	Course Title
Professional Elective-I		
1	P23BDE101	Data Driven Decision Making
2	P23BDEC01	Neural Networks
3	P23BDE102	Multicore Architectures
4	P23CSTD01	Advanced Data Structures and Algorithms
5	P23BDE103	Machine Learning
Professional Elective-II		
1	P23CSEC01	Information Visualization
2	P23CSEC03	Text, Web and Social Media Analytics
3	P23CSTD02	Speech and Language Processing
4	P23BDEC02	Web Analytics and Development
5	P23BDE204	Expert System and Decision Making
Professional Elective-III		
1	P23BDE205	Information Retrieval
2	P23BDE206	Supply Chain Analytics
3	P23BDE207	Cryptography and Information Security
4	P23BDE208	Semantic Web and Knowledge Management
5	P23BDE209	Artificial Intelligence
Professional Elective-IV		
1	P23BDE310	Optimization Techniques for Analytics
2	P23CSEC04	Data Storage Technologies and Networks
3	P23BDE311	Models of Computation
4	P23CSEC02	Soft Computing
5	P23BDE312	Deep Learning
Professional Elective-V		
1	P23BDE313	Blockchain Technology
2	P23BDE314	Speech Recognition
3	P23ADEC01	Agile and Software Project Management
4	P23CSEC05	Game Design and Augmented Reality
5	P23CSEC06	Image and Video Analytics
Professional Elective-VI		
1	P23BDE315	Graphs – Algorithms and Mining
2	P23BDE316	Real-Time Systems
3	P23BDE317	Social Network Analysis
4	P23BDE318	Analytics of Things
5	P23BDE319	User Interface/ User Experience Design

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ANNEXURE- II

ABILITY ENHANCEMENT COURSES

Sl. No.	Course Code	Course Title
1	P23XXCX01	Adobe Photoshop
2	P23XXCX02	Adobe Animate
3	P23XXCX03	Adobe Dreamweaver
4	P23XXCX04	Adobe After Effects
5	P23XXCX05	Adobe Illustrator
6	P23XXCX06	Adobe InDesign
7	P23XXCX07	Autodesk AutoCAD -ACU
8	P23XXCX08	Autodesk Inventor – ACU
9	P23XXCX09	Autodesk Revit – ACU
10	P23XXCX10	Autodesk Fusion 360 – ACU
11	P23XXCX11	Autodesk 3ds Max – ACU
12	P23XXCX12	Autodesk Maya – ACU
13	P23XXCX13	Cloud Security Foundations
14	P23XXCX14	Cloud Computing Architecture
15	P23XXCX15	Cloud Foundation
16	P23XXCX16	Cloud Practitioner
17	P23XXCX17	Cloud Solution Architect
18	P23XXCX18	Data Engineering
19	P23XXCX19	Machine Learning Foundation
20	P23XXCX20	Robotic Process Automation / Medical Robotics
21	P23XXCX21	Advance Programming Using C
22	P23XXCX22	Advance Programming Using C ++
23	P23XXCX23	C Programming
24	P23XXCX24	C++ Programming
25	P23XXCX25	CCNP Enterprise: Advanced Routing
26	P23XXCX26	CCNP Enterprise: Core Networking
27	P23XXCX27	Cisco Certified Network Associate - Level 2
28	P23XXCX28	Cisco Certified Network Associate- Level 1
29	P23XXCX29	Cisco Certified Network Associate- Level 3
30	P23XXCX30	Fundamentals Of Internet of Things
31	P23XXCX31	Internet Of Things / Solar and Smart Energy System with IoT
32	P23XXCX32	Java Script Programming
33	P23XXCX33	NGD Linux Essentials

34	P23XXCX34	NGD Linux I
35	P23XXCX35	NGD Linux II
36	P23XXCX36	Advance Java Programming
37	P23XXCX37	Android Programming / Android Medical App Development
38	P23XXCX38	Angular JS
39	P23XXCX39	Catia
40	P23XXCX40	Communication Skills for Business
41	P23XXCX41	Coral Draw
42	P23XXCX42	Data Science Using R
43	P23XXCX43	Digital Marketing
44	P23XXCX44	Embedded System Using C
45	P23XXCX45	Embedded System with IOT / Arduino
46	P23XXCX46	English For IT
47	P23XXCX47	Plaxis
48	P23XXCX48	Sketch Up
49	P23XXCX49	Financial Planning, Banking and Investment Management
50	P23XXCX50	Foundation Of Stock Market Investing
51	P23XXCX51	Machine Learning / Machine Learning for Medical Diagnosis
52	P23XXCX52	IOT Using Python
53	P23XXCX53	Creo (Modelling & Simulation)
54	P23XXCX54	Soft Skills, Verbal, Aptitude
55	P23XXCX55	Software Testing
56	P23XXCX56	MX-Road
57	P23XXCX57	CLO 3D
58	P23XXCX58	Solid works
59	P23XXCX59	Staad Pro
60	P23XXCX60	Total Station
61	P23XXCX61	Hydraulic Automation
62	P23XXCX62	Industrial Automation
63	P23XXCX63	Pneumatics Automation
64	P23XXCX64	Agile Methodologies
65	P23XXCX65	Block Chain
66	P23XXCX66	Devops
67	P23XXCX67	Artificial Intelligence
68	P23XXCX68	Cloud Computing
69	P23XXCX69	Computational Thinking

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70	P23XXCX70	Cyber Security
71	P23XXCX71	Data Analytics
72	P23XXCX72	Databases
73	P23XXCX73	Java Programming
74	P23XXCX74	Networking
75	P23XXCX75	Python Programming
76	P23XXCX76	Web Application Development (HTML, CSS, JS)
77	P23XXCX77	Network Security
78	P23XXCX78	MATLAB
79	P23XXCX79	Azure Fundamentals
80	P23XXCX80	Azure AI (AI-900)
81	P23XXCX81	Azure Data (DP -900)
82	P23XXCX82	Microsoft 365 Fundamentals (SS-900)
83	P23XXCX83	Microsoft Security, Compliance and Identity (SC-900)
84	P23XXCX84	Microsoft Power Platform (PI-900)
85	P23XXCX85	Microsoft Dynamics Fundamentals 365 – CRM
86	P23XXCX86	Microsoft Excel
87	P23XXCX87	Microsoft Excel Expert
88	P23XXCX88	Securities Market Foundation
89	P23XXCX89	Derivatives Equinity
90	P23XXCX90	Research Analyst
91	P23XXCX91	Portfolio Management Services
92	P23XXCX92	Cyber Security
93	P23XXCX93	Cloud Security
94	P23XXCX94	PMI – Ready
95	P23XXCX95	Tally – GST & TDS
96	P23XXCX96	Advance Tally
97	P23XXCX97	Associate Artist
98	P23XXCX98	Certified Unity Programming
99	P23XXCX99	VR Development

ANNEXURE-III

AUDIT COURSES
(Common to all M.Tech Programme)

Sl. No.	Course Code	Course Title
1	P23ACTX01	English for Research Paper Writing
2	P23ACTX02	Disaster Management
3	P23ACTX03	Sanskrit for Technical Knowledge
4	P23ACTX04	Value Education
5	P23ACTX05	Constitution of India
6	P23ACTX06	Pedagogy Studies
7	P23ACTX07	Stress Management by Yoga
8	P23ACTX08	Personality Development Through Life Enlightenment Skills
9	P23ACTX09	Unnat Bharat Abhiyan

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ANNEXURE-VII

SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

Department of Computer Science and Engineering

Ph.D. Scholar Progress

S.NO	Name of the Candidate	Supervisor	Mode	Number of DC Conduced	Number of Course work completed
1.	Mrs.P.Bhavani	Dr.N.Danapaquiame	Part-Time(Internal)	1	4
2.	Mr.Arokiaraj St.Hubert	Dr.J.Madhusudanan	Part-Time(Internal)	1	4
3.	Mr.S.Diwahar	Dr.J.Madhusudanan	Part-Time(External)	2	4
4.	Mr.G.Aurobind	Dr.R.Ramachandiran	Part-Time(External)	2	4
5.	Ms.T.Prateesshma	Dr.R.Raju	Regular	Synopsis Completed	4

11/4/24

HOD/CSE

(Dr.K.Premkumar)

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