Dr. Vishwanath Karad
MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

S Y L L A B U S

DR VISHWANATH KARAD

MIT WORLD PEACE UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

SCHOOL OF COMPUTER ENGINEERING AND TECHNOLOGY

M. Tech (Computer Science & Engineering)

Cyber Security

BATCH 2024 – 2026

Preamble:

The Computer Engineering and Technology is the most sought-after branch of Engineering in today's world. With the advancements in hardware and software technologies, there is huge scope for development of a wide range of applications. The Internet and allied technologies have connected the world cohesively offering immense opportunities at national and international levels. The students of MITWPU will be tomorrow's global leaders, researchers, entrepreneurs and change-makers. MITWPU has the objective to make them competent for global scenarios.

The M. Tech, CSE, Cyber Security (CS) curriculum offers a varied range of subjects that fall into the core, specialization and basic sciences categories. The programme also has provisions for pursuing Industry projects, Internships, Foreign and National study tours, Interdisciplinary Projects as a prudential aspect of the course curriculum. The value-based education is ensured by offering Peace related subjects.

The curriculum is based on the theme of Continuous Evaluation. Theory and Laboratory components are given appropriate importance. The communication skills are enhanced through the component of Seminars. Industry exposure is given through Internships / Projects, and development of latest Technologies is achieved and enhanced through usage of latest Tools.

The curriculum will transform the students into winning personalities.

Dr. Vrushali Kulkarni
Head, School of Computer Engineering
Technology
and Technology

Vice Chairman
BoS for School of Computer Engineering
and Technology

Dr. Dinesh Seth
Dean, Faculty of Engineering and

Chairman,
BoS for School of Computer
Engineering
and Technology

Vision and Mission of the Programme

VISION

To be an academic centre of excellence in Computer Science and Engineering to cater to societal needs.

MISSION

- To create conducive environment for nurturing integrity, discipline and technical knowledge in emerging areas of computer science and engineering.
- To encourage students to work in trans-disciplinary domain in collaboration with industry and to inculcate research mindset.
- To develop globally competent graduates to provide solutions for societal problems.

Programme Educational Objectives

The Computer Engineering and Technology Graduate will:

PEO I

Competent Professionals - To mould the students with the technical knowledge and skills needed to protect and defend against cyber threats.

PEO II

Cyber Security Professionals - To develop skills in students that can help them plan, implement, and monitor cyber security mechanisms to ensure the protection of information technology assets.

PEO III

Ethical Professionals - To select suitable ethical principles and commit to professional responsibilities and human values for the benefit of the society.

Programme Outcomes (POs)

Upon completion of the degree program, students will be able to: -

1. **Understanding:** Understand the cyber security threat landscape.
2. **Capabilities:** Protect IT assets by designing/developing cyber security architecture, strategies and policies.
3. **Development:** Develop a deeper understanding and familiarity with various types of cyber attacks, cyber crimes, vulnerabilities and remedies thereto.
4. **Research skills:** Execute experimental, computational, theoretical and practical plan to implement and monitor cyber security mechanisms.
5. **Innovation:** Identify, analyze and remediate computer security breaches using innovative methods.
6. **Real World Problems:** Analyze and evaluate cyber security needs of an organization; Conduct cyber security risk assessment; Measure performance issues and troubleshoot cyber security systems.
7. **Employability:** Use cyber security, information assurance and related tools to apply immediately in their workplace or research areas.
8. **Scholarship:** Conduct independent and innovative research and/or apply an interdisciplinary approach.
9. **Communication skills:** Excel in delivering oral, written & presentation skills to various audiences.
10. **Teaching skills:** Gain knowledge, skills and ample opportunities to utilize their innate teaching skills.
11. **Professional skills:** Use collaborative skills, ability to write grants & articles for journals and sit in for various competitive and professional certifications in the field of Cyber security.
12. **Ethical standards:** Follow educational, personal and professional conduct and research.

Programme Specific Outcomes (PSOs)

Computer Engineering and Technology Graduates will be able to:

PSO I

Analyse and evaluate the security aspects of social media platforms and ethical aspects associated with use of social media.

PSO II

Acquire and apply new knowledge to implement computing systems using hardware and software modules in Networking, Internet of Things, Artificial Intelligence, Data Analytics and allied domains.

PSO III

Perform cyber security risk assessment troubleshoot performance issues, offer information assurance which can be applied immediately in their workplace or research areas.

M. Tech. (First Year) (Computer Science Engineering) (2023-25)
Cyber Security

Semester – I

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs.				Credits	Assessment Scheme Code
				L	T	P	J		
1	CSC40010	Research Methodology	PC	3	1	0	0	4	TT1
2	CSC40020	Mathematical Foundations for Security	PC	3	0	2	0	4	TL3
3	CSC40030	Applied Cryptography	PC	3	0	2	0	4	TL3
4	CSC40040	Cloud Security	PC	3	0	2	0	4	TL3
5	CSC40050	Applied Machine Learning	PC	3	0	2	0	4	TL3
6	PCE10040	Scientific Studies of Mind, Matter, Spirit and Consciousness	UC	2	0	0	0	2	TT1
7	YOG10030	Yoga	UC	0	0	2	0	1	PJ
			Total:	17	1	10	0	**23**	

****Assessment Marks are valid only if Attendance criteria are met**

L-Lecture, T-Tutorial, P-Practical, J-Project.

Weekly Teaching Hours: 28

Total Credits: 23

Academic Coordinator	Program Director/HoS	Associate Dean Academics	Dean	Dean Academics MITWPU	Registrar MITWPU

M. Tech. (First Year) (Computer Science Engineering) (2023-25)
Cyber Security

Semester – II

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs.				Credits	Assessment Scheme Code
				L	T	P	J		
1	CSC40060	Vulnerability Assessment and Penetration Testing	PC	3	0	2	0	4	TL3
2	CSC40070	Digital Forensics Analysis	PC	3	0	2	0	4	TL3
3	CSC40080 CSC40090	Program Elective-I A. Data Privacy and Compliances B. Advanced Security Management and Cyber Laws	PE	3	1	0	0	4	TT1
4	CSC40100	Software Lab I Cyber Security	PC	0	0	4	0	2	PJ
5	CSC40110	Seminar	PC	0	0	0	6	2	PJ
6	PCE10050	Peace Building: Global Initiatives	UC	2	0	0	0	2	TT1
			Total:	11	1	10	6	**18**	

****Assessment Marks are valid only if Attendance criteria are met**

L-Lecture, T-Tutorial, P-Practical, J-Project.

Weekly Teaching Hours: 28

Total Credits: 18

Academic Coordinator	Program Director/HoS	Associate Dean Academics	Dean	Dean Academics MITWPU	Registrar MITWPU

M. Tech. (Second Year) (Computer Science Engineering) (2023-25)
Cyber Security

Semester – III

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs.				Credits	Assessment Scheme Code
				L	T	P	J		
1	CSC50010	Network Management & Performance Evaluation	PC	3	0	2	0	4	TL3
2	CSC50020 CSC50030	Program Elective-II A. Identity Access and Management B. Mobile and Wireless Security	PE	3	1	0	0	4	TT1
3	CSC50040 CSC50050	Program Elective-III A. Distributed Networks and Blockchain Technology B. IoT Security	PE	3	1	0	0	4	TT1
4	CSC50060	Software Lab II Cyber Security	PC	0	0	2	0	1	PJ
5	CSC50070	Research Project I	PC	0	0	0	24	8	PJ
Total:				9	2	4	24	21	

****Assessment Marks are valid only if Attendance criteria are met**

L-Lecture, T-Tutorial, P-Practical, J-Project.

Weekly Teaching Hours: 39

Total Credits: 21

Academic Coordinator	Program Director/HoS	Associate Dean Academics	Dean	Dean Academics MITWPU	Registrar MITWPU

M. Tech. (Second Year) (Computer Science Engineering) (2023-25)
Cyber Security

Semester – IV

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs.				Credits	Assessment Scheme Code
				L	T	P	J		
1	CSC50080 CSC50090	Program Elective IV A. Software Defined Networks B. Web Security	PE	3	1	0	0	4	TT1
2	CSC50100	Internship	PC	0	0	0	12	4	PJ
3	CSC50110	Research Project II	PC	0	0	0	36	12	PJ
			Total:	3	1	0	48	20	

****Assessment Marks are valid only if Attendance criteria are met**

L-Lecture, T-Tutorial, P-Practical, J-Project.

Weekly Teaching Hours: 52

Total Credits: 20

Academic Coordinator	Program Director/HoS	Associate Dean Academics	Dean	Dean Academics MITWPU	Registrar MITWPU

M. Tech. (Computer Science Engineering) (2023-25)
Cyber security
Professional Elective Tracks

Semester	Course Code	Name of the Course	Type
II	CSC40080	Data Privacy and Compliances	Program Elect I
II	CSC40090	Advanced Security Management and Cyber Laws	Program Elect I
III	CSC50020	Identity Access and Management	Program Elect II
III	CSC50030	Mobile and Wireless Security	Program Elect II
III	CSC50040	Distributed Networks and Blockchain Technology	Program Elect III
III	CSC50050	IoT Security	Program Elect III
IV	CSC50080	Software Defined Networks	Program Elect IV
IV	CSC50090	Web Security	Program Elect IV

Academic Coordinator | Program Director/HoS | Associate Dean Academics | Dean | Dean Academics MITWPU | Registrar MITWPU

Associate Dean
Academics
(School of CET)

Dean Academics
MITWPU

Registrar
MITWPU