Vidya Pratishthan's
Kamalnayan Bajaj Institute of Engineering and Technology
(Autonomous Institute)

Faculty of Science and Technology

Board of Studies

Information Technology

Syllabus

Multi-Disciplinary Minor

(2023 Pattern)
(w.e.f. AY: 2024-25)

Syllabus: Multidisciplinary Minor Information Technology
w. e. f. AY:2024-2025

SEMESTER-
III,IV,V,VI,VII

Course Code	Courses Name	Teaching Scheme			Examination Scheme and Marks							Credits			
		TH	PR	TUT	Activity	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
IT23051	Cyber Security	2	2		20	20	50	20			110	2	1		3
IT23052	Full Stack Development	2	2		20	20	50	20			110	2	1		3

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Principal
Vidya Pratishthan's
Kamalnayan Bajaj Institute of
Engineering & Technology, Baramati
Vidyanagari, Baramati-413133

Bucket of Multidisciplinary Minor Course

Multidisciplinary Minor Subjects	
Subject Code	**Subject Name**
AI23051	AI & Machine Learning
AI23052	Data Science
AI23053	Generative AI (Sem V+)
CO23051	Cloud Computing
CO23052	High Performance Computing (Sem V+)
CO23053	Computer Graphics & Gaming
IT23051	Cyber security
IT23052	Full Stack Development
ET23051	Embedded Systems
ET23052	Drone Technology
ET23053	Internet of Things
CE23051	Waste Management
CE23052	Green building & smart cities
ME23051	3-D Printing
ME23052	Robotics & Automation
EL23051	Solar Technology
EL23052	Industrial Automation
GS23051	Nanotechnology
GS23052	Linear Algebra and Statistics

IT23051: Cyber Security

Course Code : IT23051	Course Credits: 03	Course type: MDM

Teaching Scheme			Evaluation Scheme					
TH	PR	TUT	ACTIVITY	ISE	ESE	TW	PR	OR
2	1	-	20	20	50	20	-	-

Prerequisite Course Mapping:

1. Basics of Computer Network
2. Basics of Computer Programming

Future Course Mapping: Cryptography and Network Security

Importance of Course: Students will able to learn terms in cyber security

Course Objectives:

1. To understand the basic approaches in cyber security and Information Security
2. To analyze the cryptography and networking terms
3. To understand about different types of hacking and cyber-crimes
4. To apply and analyze the issues related to cyber forensics

Course Outcomes:

1. Understand various basic approaches in cyber security and Information Security
2. Understand Cryptography and network basics
3. To analyze the types of hacking and cybercrimes.
4. Understand cyber forensics

Syllabus

Unit No.	Syllabus	Teaching Hours
I	**Introduction to Cyber Security,Information Security Basics** **Computer Security Concepts**: Confidentiality, Integrity & Availability (CIA), additional Security considerations, The challenges of Security, Threats, Attacks and Assets, Operational Model of Security; **Basics:** Symmetric and Asymmetric Cipher Model; Cryptography; Cryptanalysis and Brute-Force Attack. **Cyber Security Basics**: Introduction to Cyber Security, Need, Importance and challenges in Cyber Security, Cyberspace, Cyber threats, Cyber-warfare, Cyber Terrorism	6
II	**Network Fundamentals, Cryptography Basics** LAN, MAN, WAN, Wi-Fi, Network Protocols (TCP/IP, DNS, HTTP), Network Devices (Routers, Switches, Firewalls) **Cryptography Basics**: Encryption, Decryption, Types of Encryption (Symmetric Cipher-DES, Asymmetric Cipher-RSA, Diffie Hellman, Cryptographic Hash functions and Message Authentication codes)	6
III	**Cyber Crimes and Hacking** **Overview** of Cyber-Attacks and Vulnerabilities, Types of Threats – Malware, spyware, Sniffing, Gaining Access, Escalating Privileges, Executing Applications, Hiding Files, Covering Tracks, Worms, Trojans, Viruses, Backdoors. **Types of Cyber Crime**: cyber stalking, forgery, software piracy, cyber terrorism, phishing, computer vandalism, computer hacking, creating and distributing viruses over the internet, spamming, cross site scripting, online auction fraud, cyber-squatting,	6

	logic bombs, web jacking, internet time thefts, DoS attack, salami attack, data diddling, email spoofing. Types of Hacker, Hacking and Cracking, Hacking: Ethical issues, Ethical Hacking	
IV	**Cyber Forensics** **Introduction to Cyber Forensics:** What are cyber forensics, cyber forensics investigation process, digital evidence, challenges in cyber forensics; Web Attack Forensics: Intrusion forensics, database forensics, preventive forensics; Anti- forensics practices, Anti-forensics detection techniques, Network forensics analysis tools; Malware Forensics: Malware types, Malware Analysis, Tools for analysis; Email Forensics: e-mail Protocols, email crimes, email forensics; Bitcoin Forensics: crypto currency, crimes related to bitcoin	6

LIST OF PRACTICAL ASSIGNMENTS

1. Study of the features of firewalls in providing network security and to set Firewall Security in windows.
2. Steps to ensure Security of any one web browser (Mozilla Firefox/Google Chrome)
3. Web Security Labs: set up a vulnerable web application (eg .OWASP WebGoat),Test for SQL injection and cross site scripting(XSS).Use Burp suite to scan for vulnerabilities. Study of different types of vulnerabilities for hacking a websites / Web Applications
4. Malware analysis labs: Analyse malware samples using tools like IDA Pro and OllyDbg .Understand malware behaviors and detection techniques.
5. Installation of Wire shark, tcp dump and observe data transferred in client server communication
6. Study of various attacks on mobile phones, laptops, web applications and IOT devices.
7. Case Study Kali Linux Operating system and security tools in it
8. Case study: Study nmap tool
9. Vulnerability analysis using Nessus tool
10. Packet scanning using Nessus tool

Text Books-

1. Nima Godbole, Sunit Belapure, Cyber Security- Understand Cyber Crimes, Computer Forensics and Legal Perspectives, Wiely India Pvt. Ltd, ISBN- 978-81-265-2179-1
2.K. Kumar, "Cyber Laws: Intellectual property & E Commerce, Security",1st Edition, Dominant Publisher, 2011.

Reference Books-

1. William Stallings, "Cryptography and network security principles and practices", Pearson, 6th Edition, ISBN: 978-93-325-1877-3
2. Atul Kahate, "Cryptography and Network Security", Mc Graw Hill Publication, 2nd Edition, 2008, ISBN: 978- 0-07-064823-4
3. Raghu Santanam, M. Sethumadhavan, "Cyber Security, Cyber Crime and Cyber Forensics: Applications and Perspectives", Information Science Reference Douglas Thomas; Brian Loader, "Cybercrime: Security and Surveillance in the Information Age", 1st Edition, Routledge, 2013.
4. D. Icove, K. Seger, and W. Von Storch, "Computer Crime: A Crime-Fighter's Handbook", O'Reilly, 1995.

IT23052: Full Stack Development

Course Code : IT23052	Course Credits: 03	Course type: MDM

Teaching Scheme			Evaluation Scheme					
TH	PR	TUT	ACTIVITY	ISE	ESE	TW	PR	OR
2	1	-	20	20	50	20	-	-

Prerequisite Course Mapping:

1. Academic level web application knowledge.

Future Course Mapping:

1. Website development
2. Core java programming and advanced java programming.

Importance of Course:

This course provides you hands-on experience and exposure to developing single page application for browsers. This course builds strong foundation which will help developer to use concepts for building responsive web application.

Course Objectives:

1. To familiarize students with Web Programming basic concepts.
2. To learn and understand Web scripting languages Develop java programming skill.
3. To explore the Front end & Backend web programming skills.
4. To understand and learn Mobile web development.
5. To understand the Java object oriented concepts.

Course Outcomes:

1. Develop Static and Dynamic website using technologies like HTML, CSS.
2. Demonstrate the use of web scripting languages.
3. Develop web application with AJAX Technologies.
4. Develop mobile website using JQuery Mobile.
5. Develop simple console based application using java.

Syllabus

Unit No.	Syllabus	Teaching Hours
I	**INTRODUCTION TO WEB:** Web Design Principles, Planning process, Five Golden rules of web designing, Designing navigation bar, Page design, Home Page Layout, Design Concept, Brief History of Internet, What is World Wide Web, Why create a web site, Web Standards, Audience requirement.	6 Hrs

II	**WEB TECHNOLOGIES** **HTML:** Getting started with HTML, Why HTML, Tags and Elements, Attributes, Properties, Headings list, Links, Tables, Images, HTML Form, Media (Audio, Video), Semantic HTML5 Elements. **CSS:** Why CSS, Types of CSS, How to use CSS, Properties, Classes, Child-Class (Nested CSS), Colours, Text, Background, Border, Margin, Padding, Positioning (flex, grid, inline, block), Animation, Transition. **W3C:** What is W3C; How W3C handles/Supports Web Technologies.	**6 Hrs**
III	**WEB SCRIPTING LANGUAGES** **JavaScript:** Introduction to Scripting languages, Introduction to JavaScript (JS), JS Variables and Constants. **AJAX:** Why AJAX, Call HTTP Methods Using AJAX, Data Sending, Data Receiving, AJAX Error Handling. **JQUERY: Why** JQuery, How to Use, DOM Manipulation with JQuery.	**6 Hrs**
IV	**INTRODUCTION TO JAVA:** Features of java, JVM, compile time and run time environment, simple java program, data types, java class, object creation, defining method, constructor, inheritance, polymorphism, interface and abstract class.	**6 Hrs**

LIST OF PRACTICAL ASSIGNMENTS

1. Create a simple HTML file to demonstrate the use of various tags used.
2. Create a simple webpage of your choice using HTML.
3. Create a website/page using HTML/CSS/ Java Script about poultry and poultry products. Use photographs wherever required.
4. Write a JavaScript program to display the result of a student.
5. Create a simple webpage using AJAX.
6. Create a simple Mobile Website using jQuery Mobile.
7. Create a single inheritance.
8. Create a multiple inheritance.

Text Books:

1. Kogent Learning Solutions Inc, Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, XML and AJAX, Blackbook, Dreamtech Press, Second Edition, ISBN: 9788177228496.
2. Raymond Camden, Andy Matthews, JQuery Mobile Web Development Essentials, Packt Publishing, Second Edition, 9781782167891.
3. "Herbert Schildt, "Java: The complete reference", Tata McGraw Hill, 7th Edition.

Reference Books:

1. Steven M. Schafer, "HTML, XHTML and CSS", Wiley India Edition, Fourth Edition,978- 81- 265-1635-3
2. Dr.Hiren Joshi, Web Technology and Application Development, DreamTech, First,ISBN:978-93- 5004-088-1.
3. Steven M. Schafer, "HTML, XHTML and CSS", Wiley India Edition, Fourth Edition,978- 81-265- 1635-3
4. T. Budd, "Understanding OOP with Java", Pearson Education, 2nd Updated Edition.

Online Resources:

1. https://www.tutorialspoint.com/ajax/index.htm.
2. https://www.udemy.com/ajax/online-course.
3. https://archive.nptel.ac.in/courses/106/105/106105185/#

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