DSSEC246 Cyber Security

Semester: IV	Course Title: Cyber Security	Credit: 2
Course Code: DSSEC246		Hours: 2/week

Course Outcomes: On successful completion of the course the learner will be able to

CO	COGNITIVEABILITIES	COURSEOUTCOMES
CO1	REMEMBERING	Recall fundamental concepts, terminologies, and types of cyber threats.
CO2	UNDERSTANDING	Understand the role of cyber security in protecting information systems and data.
CO3	APPLYING	Demonstrate the use of basic tools and techniques for securing systems and networks.
CO4	ANALYSING	Analyze various types of cyberattacks and identify vulnerabilities in a system.
CO5	EVALUATING	Assess the effectiveness of cyber security measures and risk management strategies.
CO 6	CREATING	Design basic security solutions for mitigating cyber risks and securing networks.

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	2	1	1	-	-
CO 2	2	2	-	1	-
CO 3	1	2	2	-	-
CO 4	1	2	3	2	1
CO 5	1	2	3	1	1
CO 6	1	2	3	2	2

Unit	Detailed Syllabus	Teaching Hours
I	**Introduction to Cyber Security** • Basics of Cyber Security: Concepts, Importance, and Objectives • Types of Cyber Threats: Malware, Phishing, Ransomware, and Social Engineering • Cyber Security Frameworks and Standards: ISO 27001, NIST, and GDPR • Understanding Network Security: Firewalls, VPNs, and IDS/IPS • Basics of Cryptography: Symmetric and Asymmetric Encryption, Hashing • Authentication Mechanisms: Passwords, Biometrics, Multi-factor	15

	Authentication • Overview of Cyber Laws and Ethics	
II	**Practical Based on Unit-I** • Identifying and analyzing phishing emails • Configuring basic firewall settings for network security • Implementing encryption using tools like OpenSSL • Setting up multi-factor authentication for an online account • Using network scanning tools (e.g., Nmap) to identify vulnerabilities • Demonstrating secure password management techniques • Preparing a basic cyber security policy for an organization	30

Suggested Reference Books:

1. **"Cybersecurity Essentials"** by Charles J. Brooks, Christopher Grow, Philip Craig, and Donald Short, Wiley, 2018
2. **"Network Security Essentials: Applications and Standards"** by William Stallings, Pearson, 2016
3. **"Practical Cybersecurity Architecture"** by Ed Moyle and Diana Kelley, Wiley, 2020
4. **"The Art of Cybersecurity: Strategies and Techniques"** by Thomas J. Mowbray, Pearson, 2021
5. **"Ethical Hacking and Cybersecurity"** by Itsecurity.org Team, Packt Publishing, 2022

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DSSEC246 Digital Marketing

Semester: IV	Course Title: Digital Marketing	Credit: 2
Course Code: DSSEC246		Hours: 2/week

Course Outcomes: On successful completion of the course the learner will be able to

CO	COGNITIVEABILITIES	COURSEOUTCOMES
CO1	REMEMBERING	Recall the fundamental concepts and terminology of digital marketing.
CO2	UNDERSTANDING	Understand the role of various digital marketing strategies and platforms.
CO3	APPLYING	Implement key digital marketing tools like SEO, SEM, and social media marketing.
CO4	ANALYSING	Analyze marketing campaigns to assess their effectiveness and ROI.
CO5	EVALUATING	Evaluate the performance of digital marketing strategies using analytics tools.
CO 6	CREATING	Design and execute a basic digital marketing campaign for a product or service.

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	2	1	1	-	-
CO 2	2	2	-	1	-
CO 3	1	2	2	-	-
CO 4	1	2	3	2	1
CO 5	1	2	3	1	1
CO 6	1	2	3	2	2

Unit	Detailed Syllabus	Teaching Hours
I	**Introduction to Digital Marketing** • Fundamentals of Digital Marketing: Definition, Importance, and Scope • Overview of Digital Marketing Channels: SEO, SEM, Social Media, Email Marketing, Content Marketing • Understanding Website Structure and User Experience (UX) • Search Engine Optimization (SEO): Basics, On-Page, and Off-Page Optimization • Pay-Per-Click (PPC) Advertising: Google Ads Basics • Introduction to Social Media Marketing: Platforms, Strategy, and Content Creation	15

	• Analytics and Metrics: Key Performance Indicators (KPIs)	
II	**Practical Based on Unit-I** • Overview of SEO: Identifying keywords, writing SEO-friendly content • Basics of Google Ads: Setting up a simple ad campaign • Creating social media marketing content for platforms like Facebook, Instagram, and LinkedIn • Using Google Analytics to analyze website traffic • Hands-on with email marketing tools: Writing and sending a campaign using tools like Mailchimp • Designing a basic content calendar for social media • Preparing a digital marketing strategy for a sample product or service	30

Suggested Reference Books:

1. **"Digital Marketing for Dummies"** by Ryan Deiss and Russ Henneberry, Wiley, 2020
2. **"SEO 2023: Learn Search Engine Optimization"** by Adam Clarke, CreateSpace Independent Publishing, 2023
3. **"Social Media Marketing All-in-One For Dummies"** by Jan Zimmerman and Deborah Ng, Wiley, 2021
4. **"Digital Marketing: Strategy, Implementation and Practice"** by Dave Chaffey and Fiona Ellis-Chadwick, Pearson, 2020
5. **"Google Analytics Breakthrough"** by Feras Alhlou, Shiraz Asif, Eric Fettman, Wiley, 2016

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DSSEC246 Recommendation System

Semester: IV	Course Title: Recommendation System	Credit: 2
Course Code: DSSEC246		Hours: 2/week

Course Outcomes: On successful completion of the course the learner will be able to

CO	COGNITIVEABILITIES	COURSEOUTCOMES
CO1	REMEMBERING	Recall fundamental concepts, terminologies, and types of cyber threats.
CO2	UNDERSTANDING	Understand the role of cyber security in protecting information systems and data.
CO3	APPLYING	Demonstrate the use of basic tools and techniques for securing systems and networks.
CO4	ANALYSING	Analyze various types of cyberattacks and identify vulnerabilities in a system.
CO5	EVALUATING	Assess the effectiveness of cyber security measures and risk management strategies.
CO 6	CREATING	Design basic security solutions for mitigating cyber risks and securing networks.

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	2	1	1	-	-
CO 2	2	2	-	1	-
CO 3	1	2	2	-	-
CO 4	1	2	3	2	1
CO 5	1	2	3	1	1
CO 6	1	2	3	2	2

Unit	Detailed Syllabus	Teaching Hours
I	**Introduction to Recommendation Systems** • Basics of Recommendation Systems: Concepts, Types, and Applications • Collaborative Filtering: User-based and Item-based collaborative filtering, Memory-based methods, and Model-based methods • Content-Based Filtering: Using item features for recommendations, Text mining, and Natural Language Processing (NLP) • Hybrid Systems: Combining collaborative and content-based approaches for improved performance • Evaluation Metrics: Precision, Recall, F1-Score, Root Mean Squared	15

	Error (RMSE), Mean Absolute Error (MAE) • Challenges in Recommendation Systems: Cold start problem, Sparsity, Scalability, and Diversity	
II	**Practical Based on Unit-I** • Building a Collaborative Filtering Model: Implementing user-based and item-based collaborative filtering using Python and libraries like Surprise • Implementing Content-Based Filtering: Using item metadata (e.g., movie genres, descriptions) to recommend items, using libraries like TfidfVectorizer or CountVectorizer • Hybrid Recommender System: Combining collaborative and content-based methods using a simple weighted approach or advanced algorithms like Matrix Factorization • Evaluating Recommendation Models: Implementing and comparing various evaluation metrics (Precision, Recall, RMSE) on datasets like MovieLens • Handling Cold Start Problem: Techniques for recommending new users and new items	30

Suggested Reference Books:

1. **"Recommender Systems: Principles and Techniques"** by Joseph A. Konstan and John Riedl, Addison-Wesley, 2012
2. **"Building Recommendation Systems with Python"** by Suresh K. Gorakala, Packt Publishing, 2020
3. **"Hands-On Recommendation Systems with Python"** by Rounak Banik, Packt Publishing, 2019
4. **"Practical Recommender Systems"** by Kim Falk, Apress, 2016
5. **"Recommender Systems Handbook"** by Francesco Ricci, Lior Rokach, and Bracha Shapira, Springer, 2015

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