



ଓଡ଼ିଶା ରାଜ୍ୟ ମୁକ୍ତ ବିଶ୍ୱବିଦ୍ୟାଳୟ, ସମ୍ବଲପୁର, ଓଡ଼ିଶା
Odisha State Open University, Sambalpur, Odisha
Established by an Act of Government of Odisha.

DIPLOMA IN CYBER SECURITY (DCS)

Duration: 01 Year

Total credit: 32

| 1st Semester (DCS) | | | |
|---|---------------------------------|---------|-----------|
| Theory | | | |
| Course Code | Course Title | (T-L-P) | Credit |
| CSP-10 | Operating System Basics | T | 02 |
| CSP-11 | Data Communication & Networking | T | 04 |
| CSP-12 | Information Security | T | 04 |
| Total Theory Credits | | | 10 |
| Project / Laboratory | | | |
| CSPL-10 | Operating System Basics | L | 02 |
| CSPL-11 | Data Communication & Networking | L | 02 |
| CSPL-12 | Information Security | L | 02 |
| Total Project / Laboratory Credits | | | 06 |
| TOTAL SEMESTER CREDITS | | | 16 |

| 2nd Semester (DCS) | | | |
|---|--------------------------------|---------|-----------|
| Theory | | | |
| Course Code | Course Title | (T-L-P) | Credit |
| CSP-13 | Application Cyber Security | T | 04 |
| CSP-14 | Network Cyber Security | T | 04 |
| Total Theory Credits | | | 08 |
| Project / Laboratory | | | |
| CSPL-13 | Application Cyber Security Lab | L | 02 |
| CSPL-14 | Network Cyber Security lab | L | 02 |
| CSPP-03 | Project Work | P | 04 |
| Total Project / Laboratory Credits | | | 08 |
| TOTAL SEMESTER CREDITS | | | 16 |
| TOTAL PROGRAMME CREDITS | | | 32 |

1st Semester

| CSP-10 : OPERATING SYSTEM BASICS (4 Credit) | |
|--|--|
| Block-1 | Windows Operating System |
| Unit-1 | Introduction, s/w and its types, Operating System Concept, Function of OS, classification of Operating Systems, Operating system benefits, Introduction to Windows OS, common OS in Market of Windows, Operating System Administrator, My Computer, Recycle Bin, Desktop, Drives, create a directory/folder, rename/change to a directory/folder, creating a file in a directory/folder, Make the file read only, Make the file/directory hidden, Editing a file in a directory/folder, Delete a file in a directory/folder. |
| Unit-2 | Listing the files in the directory, Create a file, Copy a file from one directory to the other, Deleting all files from a directory/folder, Deleting a director/folder, Formatting a hard disk and loading operating system, Domain, workgroup, Active Directory, User Management, Network Setting, Services, IIS Configuration |
| Block -2 | Linux Operating System |
| Unit -1 | Introduction, History of Linux, Distributions of Linux, Devices and drivers, File system Hierarchy, The components: Kernel, Distribution, XFree86, Sawfish, Gnome, The command line commands, File, management commands, Working with nano, Working with help (man). |
| Unit -2 | SSH and X-forwarding, Managing compressed archives with zip and tar, Working with GNU screen, How to add users and groups, working with su, working with sudo, Changing user password, Printing, Installing software with Yum, Yast, Rpm, Installing webmin. |

| CSP-11 : DATA COMMUNICATION & NETWORKING (6 Credit) | |
|--|---|
| Block-1 | Introduction to Data communication and Networking |
| Unit-1 | Fundamentals of data communication and networking |
| Unit-2 | Network Reference Models: OSI and TCP/IP Models |
| Unit-3 | Transmission media and network devices |
| Block -2 | Physical and data link layer functionalities |
| Unit -1 | Analog and Digital Signals |
| Unit -2 | Encoding |
| Unit -3 | Multiplexing and Switching: FDM,TDM,WDM,SDM, Message Switching and Circuit Switching and Packet Switching |
| Unit -4 | Data Link Control Protocols: Token Passing, CSMA/CD,CSMA,CSMA/CA |
| Block -3 | Internet Protocols and Services |
| Unit-1 | Network Layer : Internetworking, and IP addressing, ARP, RARP,ICMP,IGMP |
| Unit-2 | Transport Layer protocols: TCP& UDP |
| Unit-3 | Application Layer protocols: HTTP, HTTPs, SMTP, POP, DNS, TELNET, FTP |
| Unit-4 | Internet and its Services: Intranet, Extranet, www, Email |

CSP-12 : INFORMATION SECURITY (6 Credit)

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|----------------|--|
| Block-1 | Information Security Concepts and Cryptography |
| Unit-1 | Information Security Concepts: Information security issues, goals, architecture, Attacks, Security Services and Mechanisms. |
| Unit-2 | Introduction to Cryptography: Network security model, Cryptographic systems, Cryptanalysis, Steganography. Types of Cryptography: Symmetric key and Asymmetric Key Cryptography, Encryption and Decryption Techniques. |
| Unit-3 | Cryptographic Algorithms: Cryptographic hash, Message Digest, Data Encryption Standard, Advanced Encryption Standard, RSA(Introductory concepts only) |
| Block-2 | Security Threats and Vulnerabilities |
| Unit-1 | Overview of Security threats and Vulnerability: Types of attacks on Confidentiality, Integrity and Availability. Vulnerability and Threats. |
| Unit-2 | Malware: Viruses, Worms, Trojan horses |
| Unit-3 | Security Counter Measures; Intrusion Detection, Antivirus Software |
| Block-3 | Ethical Issues in Information Security & Privacy |
| Unit-1 | Information Security, Privacy and Ethics |
| Unit-2 | Cyber Crime and Cyber Terrorism |
| Unit-3 | Hacking: Ethical issues, Ethical Hacking |

2nd Semester

| CSP-13 : APPLICATION CYBER SECURITY (6 Credit) | |
|---|---|
| Block-1 | System Security |
| Unit-1 | Desktop Security |
| Unit-2 | Programming Bugs and Malicious code |
| Unit-3 | Database Security |
| Unit-4 | Operating System Security: Designing Secure Operating Systems, OS Security Vulnerabilities. |
| Block -2 | Security Management |
| Unit -1 | Disaster recovery |
| Unit -2 | Digital Signature |
| Unit -3 | Ethical Hacking, Penetration Testing |
| Unit -4 | Computer Forensics |
| Block -3 | Cyber Laws and Standards |
| Unit-1 | ISO 27001, Cyber Law (Information Technology Act, 2000) |
| Unit-2 | International Standards maintained for Cyber Security |
| Unit-3 | Security Audit ,Investigation by Investing Agency |
| Unit-4 | Cyber Security Solutions |

| CSP-14 : NETWORK CYBER SECURITY (6 Credit) | |
|---|--|
| Block-1 | Network Security |
| Unit-1 | Network Security Model, Network Security Threats |
| Unit-2 | Firewalls: Overview, Types, Features, User Management |
| Unit-3 | Intrusion Detection System , Intrusion Prevention System |
| Unit-4 | Public Key Infrastructure, Digital Signature Schemes |
| Block-2 | Internet and Web Application Security |
| Unit-1 | Email security: PGP and SMIME |
| Unit-2 | Web Security: Web authentication, Injection Flaws, SQL Injection |
| Unit-3 | Web Browser Security |
| Unit-4 | E-Commerce Security |
| Block-3 | Wireless Network Security |
| Unit-1 | Wireless Network Components |
| Unit-2 | Security issues in wireless Networks |
| Unit-3 | Securing a wireless network |
| Unit-4 | Mobile security |

| CSPP-03 : Project Work (4 credit) | |
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| Report (75 Marks) | Presentation & Viva (25 Marks) |