

SECURE SOFTWARE DESIGN AND ENTERPRISE COMPUTING

II Semester: CSE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
BCSC16	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45		Total Tutorials: Nil		Total Practical Classes: Nil		Total Classes: 45		

I. COURSE OVERVIEW:

This course describes about processes and methodologies which are designed and implemented to protect print, electronic, or any other form of confidential, private and sensitive information or data from unauthorized access, use, misuse, disclosure, destruction, modification, or disruption.

II. COURSE OBJECTIVES:

The students will try to learn:

- I. How to identify or Fix software flaws and bugs in software.
- II. The various issues like weak random number generation, information leakage, poor usability, and weak or no encryption on data traffic
- III. The techniques for successfully implementing and supporting network services on an enterprise scale and heterogeneous systems environment.
- IV. The methodologies and tools to design and develop secure software containing minimum vulnerabilities and flaws.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to

CO 1	Understand methodologies and tools to design and develop secure software containing minimum vulnerabilities and flaws.	Understand
CO 2	Study various issues like weak random number generation, information leakage, poor usability, and weak or no encryption on data traffic.	Understand
CO 3	Know essential techniques for reducing and avoiding system and software security problems,	Apply
CO 4	Evaluate various enterprise application design and development tools and standard practices.	Evaluate
CO 5	Review techniques for successfully implementing and supporting network services on an enterprise scale and heterogeneous systems environment	Apply

IV. SYLLABUS

MODULE-I: SECURE SOFTWARE DESIGN (10)

Identify software vulnerabilities and perform software security analysis, Master security programming Practices, Master fundamental software security design concepts, Perform security testing and quality assurance.

MODULE-II: ENTERPRISE APPLICATION DEVELOPMENT (09)

Describe the nature and scope of enterprise software applications, Design distributed N-tier software application, Research technologies available for the presentation, business and data tiers of an enterprise software application, Design and build a database using an enterprise database system, develop components at the different tiers in an enterprise system, Design and develop a multi-tier solution to a problem using technologies used in enterprise system, Present software solution.

MODULE-III: ENTERPRISE SYSTEMS ADMINISTRATIONS (08)

Design, implement and maintain a directory-based server infrastructure in a heterogeneous system Environment, monitor server resource utilization for system reliability and availability, Install and administer network services (DNS/DHCP/Terminal Services/Clustering/Web/Email).

MODULE-IV: TROUBLESHOOTING (09)

Obtain the ability to manage and troubleshoot a network running multiple services, Understand the requirements of an enterprise network and how to go about managing them.

MODULE-V: SOFTWARE EXCEPTIONS (08)

Handle insecure exceptions and command/SQL injection, defend web and mobile applications against attackers, software containing minimum vulnerabilities and flaws.

V. TEXT BOOKS:

1. Theodor Richardson, Charles N Thies, Secure Software Design, Jones & Bartlett
2. Kenneth R. van Wyk, Mark G. Graff, Dan S. Peters, Diana L. Burley, Enterprise Software Security, Addison Wesley.”

VI. REFERENCE BOOKS:

1. Theodor Richardson, Charles N Thies, “Secure Software Design”, Jones & Bartlett.
2. Kenneth R. van Wyk, Mark G. Graff, Dan S. Peters, Diana L. Burley, “Enterprise Software Security”, Addison Wesley.
3. W. Stallings, “Cryptography and Network Security: Principles and Practice”, Prentice Hall.
4. C. P. Pfleeger, S. L. Pfleeger, “Security in Computing”, Prentice Hall.
5. Gary McGraw, “Software Security: Building Security In”, Addison-Wesley

VII. WEB REFERENCES:

1. <http://www.sctie.iitkgp.ernet.in/>
2. <http://www.rkala.in/softcomputingvideos.php>
3. <http://www.sharbani.org/home2/soft-computing-1>
4. http://www.myreaders.info/html/soft_computing.html

VIII. E-TEXT BOOKS:

1. <https://www.books.google.co.in/books?id=bVbj9nhvHd4C>
2. <https://www.books.google.co.in/books?id=GrZHPgAACAAJ&dq=1.+J.S.R.Jang,+C.T.Sun+and+E>
3. Mizutani,+Neuro,+Fuzzy+and+Soft+Computing,+PHI,+2004,Pearson+Education.