SECURE SOFTWARE DESIGN AND ENTERPRISE COMPUTING

II Semester: CSE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
BCSB14	Elective	3	0	0	3	30	70	100
Contact Classes: 45	Total Tutorials: Nil	Total Practical Classes: Nil				Total Classes: 45		

I. COURSE OVERVIEW:

The course allows student to know software vulnerabilities and security analysis in preventing unauthorized access and modifications and obtain the ability to manage and troubleshoot a network running multiple services and also Defend web and mobile applications against attackers, software containing minimum vulnerabilities and flaws.

II. OBJECTIVES:

The students will try to learn:

I. How to fix software flaws and bugs in various software.
II. How to make students aware of 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 scaleand 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	**Make use of** software Vulnerabilities and Security analysis in preventing unauthorized access and modifications.	Create
CO 2	**Design** and Develop a multitier solution for problem solving in an enterprise application development.	Create
CO 3	**Develop** directory based server infrastructure in a heterogeneous system.	Create
CO 4	**Model** the ability to manage and troubleshoot a network running multiple services.	Understand
CO 5	**Demonstrate** an application to defend web and mobile application against attackers.	Understand

IV. SYLLABUS

UNIT-I	SECURE SOFTWARE DESIGN	Classes: 09

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

UNIT-II	ENTERPRISE APPLICATION DEVELOPMENT	Classes: 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.

UNIT-III	ENTERPRISE SYSTEMS ADMINISTRATION	Classes: 09

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

UNIT-IV	TROUBLESHOOTING	Classes: 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.

UNIT-V	SOFTWARE EXCEPTIONS	Classes: 09

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

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.

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

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.Mizutani,+Neuro,+Fuzzy+and+Soft+Computing,+PHI,+2004,Pearson+Education.