



# SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)  
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &  
Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107



## Department of Computer Science and Engineering

### Minutes of 5<sup>th</sup> Board of Studies Meeting (UG)

The Fifth Board of Studies meeting of Computer Science and Engineering Department was held on **17<sup>th</sup> September 2022 at 10:00 A.M** at Centre V lab, EEE block, Sri Manakula Vinayagar Engineering College, with Head of the Department in the Chair through online mode.

The following members were present for the BoS meeting

SI.No	Name of the Member with Designation and official Address	Responsibility in the BoS
1	Dr. K.Premkumar, M.E, Ph.D., Professor and Head, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College	Chairman
2	Dr. S. R. Balasundaram, Professor and Head Department of Computer Applications, National Institute of Technology, Trichy.	Subject Expert (Pondicherry University Nominee)
3	Dr. Chokkalingam Subramanian, Professor & Head, Department of Information Technology, Saveetha University, Chennai.	Subject Expert (Academic Council Nominee)
4	Dr.S.Udhayakumar, Professor, School of Engineering , Amrita Vishwa Vidyapeetham, Chennai	Subject Expert (Academic Council Nominee)
5	S.Diwarah, M.Tech., Senior Engineer, Dell Technologies, Bangalore	Representative from Industry
6	R.Sakthi Murugan, Director, Interjet India Pvt. Ltd., Puducherry.	Postgraduate Alumnus (nominated by the Principal)
7	Dr. M.Ganesan, Professor, Department of CSE, SMVEC.	Internal Member
8	Dr.R.Ramachandiran, Associate Professor, Department of CSE, SMVEC.	Internal Member
9	Dr.T.Megala, Assistant Professor, Department of CSE, SMVEC	Internal Member
10	Dr.M.A.Ishrath Jahan Associate Professor, Department of English, SMVEC	Internal Member
11	Dr.T.Jayavarthan Professor, Department of Physics, SMVEC	Internal Member
12	Dr.S.Savithiri, Professor, Department of Chemistry, SMVEC	Internal Member
13	Prof.K.Raja, Asst. Prof., Department of Mathematics, SMVEC	Internal Member

*[Handwritten Signature]*  
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## Agenda of the Meeting

Item No. : BoS/ UG/ CSE 5.1 Confirmation of minutes of 4<sup>th</sup> BoS meeting held on 12.02.2022 and The Curriculum Structure of B.Tech Computer Science and Engineering of R-2019 up to VIII semester and R-2020 up to VIII semester Regulations – for any Modifications.

Item No. : BoS/ UG / CSE 5.2 To discuss about any updation needed in B.Tech. Degree curriculum and the syllabus approval for VIII semester under Autonomous Regulation R-2020 from the students admitted in the AY 2020-21 onwards.

Consideration of offering of Professional and Open electives in VII semester students admitted in the Academic Year 2019-20. The students should have to register one professional and one open elective as per Regulation R-2019.

- a) The students are registered the following *professional electives* in VII semester

Offering Department	Course Code / Course Name	Number of Students registered
CSE	Network Security(U19CSE17)	60
CSE	Virtual Reality (U19CSE73)	116
<b>Total Number of Students</b>		<b>176</b>

- b) The students are registered the following *Open electives* in VII semester which is offered by other departments

Offering Department	Course Name	Number of Students registered
ECE	U19ECO76: Sensors for Industrial Applications	120
IT	U19IT076: Automation Techniques & Tools DevOps	56
<b>Total Number of Students</b>		<b>176</b>

Item No. : BoS/ UG / CSE 5.3

Consideration of offering of Professional and open electives in IV semester for students admitted in the Academic year 2020-21. They should have to register one professional and one open elective as per Regulation R-2020

- a) The students are registered the following professional electives in IV semester

Offering Department	Course Name	Number of Students registered
CSE	U20CSE402: E-Business	126
CSE	U20CSE403: Object Oriented Analysis and Design	62
<b>Total Number of Students</b>		<b>188</b>

b) The students are registered the following Open electives in IV semester which is offered by other Departments

Offering Department	Course Name	Number of Students registered
ECE	U20ECO402:Consumer Electronics	126
EEE	U20EEO402: Electrical Safety	62
<b>Total Number of Students</b>		<b>188</b>

Item No. : BoS/ UG / CSE 5.4 To discuss and recommend the panel of examiners to the Academic Council

Item No. : BoS/ UG / CSE 5.5 Any other item with the permission of chair.

#### Minutes of the Meeting

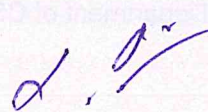
Dr. K.Premkumar, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

#### Item No. : BoS/ UG/ CSE 5.1

Confirmation of minutes of 4<sup>th</sup> BoS meeting held on 12.02.2022 and the Syllabi of B.Tech Computer Science and Engineering of R-2019 and R-2020 Regulations – for any Modifications.

Chairman, BoS, apprised the minutes of 4<sup>th</sup> BoS, its implementation and then it is confirmed with the approval in 4<sup>th</sup> BoS meeting for the incorporation of minor revisions needed as mentioned below.

S. No	Regulation	Semester	Course Name with Code	Unit	Suggestions given and Changes incorporated
1	R-19	VIII	U19CSE86 TRUST COMPUTING	-	Experts suggested to Rename the course name from "Trust Computing" to "Trusted Computing".  The above stated correction is incorporated and enclosed in Annexure-1
2	R-19	VIII	U19CSE87 Client Server Computing		Recommended to include new types of servers in Unit III.  Unit III to be titled as "Servers".  The above stated suggestion is incorporated and enclosed in Annexure-1

  
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3	R-19	VIII	U20CSE88 Human Computer Interaction	Experts Recommended to add latest version of Text books.  The above stated suggestion is incorporated and enclosed in Annexure-1
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The above correction was incorporated and approved by BoS members in 4<sup>th</sup> BoS meeting, and the details are enclosed in Annexure - I.

**Item No. : BoS/ UG/ CSE 5.2**

To discuss about any updation needed in B.Tech. Degree curriculum and the syllabus approval for VIII semester under Autonomous Regulations R-2020 from the students admitted in the AY 2020-21 onwards.

The B.Tech. Degree curriculum and syllabus approval of VIII semesters under Autonomous Regulations 2020 for the B.Tech programme and the students admitted in the AY 2020-21 were discussed and recommended with the following modifications.

S. No	Regulation	Semester	Subject Name with code	Unit	Particulars
1	R-20	VIII	Block chain and Cryptography- U20CST819	I	Experts Recommended to remove the topic "Hash function and digital signature" from unit I since the syllabus as separate unit on cryptographic Techniques.
				IV	The expert panel has suggested to rename unit IV title as "Cryptography Techniques" instead of "Introduction to Cryptography"
3	R-20	VIII	Practical- Entrepreneurship : Management- U20HSP804	-	Experts have suggested to include latest version of the text book.
4	R-20	VIII	Professional Elective V - Pervasive Computing- U20CSE824	II	Recommended to include the topic "Wireless Markup Language(WML)" since introducing WML with XML would be appropriate.
5	R-20	VIII	Professional Elective VI – Quantum Computing- U20CSE826	-	The Expert Panel as recommended to reduce the Syllabus since it is a very new domain under research.

6	R-20	VIII	Professional Elective VI – U20CSE827 - Trusted computing	III,V	The Expert panel has suggested to remove the title “Trusted Platform Module tools” from unit V and to include the same in unit III as unit III introduces different tools.
7	R-20	VIII	Professional Elective VI – U20CSE828 - Client Server Computing	II	Experts have recommended to include topics on “Middleware” in Unit II
				III	Recommended to include new types of servers in Unit III.

The above correction was incorporated and approved by BoS members in 5<sup>th</sup> BoS meeting, and the details are enclosed in Annexure - II.

Item No. : BoS/ UG/ CSE 5.3

Consideration of offering and approval of Professional and Open electives in VII semester students admitted in the Academic Year 2019-20. The students should have to register one professional and one open elective as per Regulation R-2019.

a) The students are registered the following *professional electives* in VII semester

Offering Department	Course Code / Course Name	Number of Students registered
CSE	Network Security(U19CSE17)	60
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b) The students are registered the following *Open electives* in VII semester which is offered by other departments

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Consideration of offering and approval of Professional and open electives in IV semester for students admitted from the Academic year 2020-21 onwards. They should have to register one professional and one open elective as per Regulation R- 2020

a) The students are registered the following professional electives in IV semester

Offering Department	Course Name	Number of Students registered
CSE	U20CSE402: E-Business	126
CSE	U20CSE403: Object Oriented Analysis and Design	62
<b>Total Number of Students</b>		<b>188</b>

b) The students are registered the following Open electives in IV semester which is offered by other Departments

Offering Department	Course Name	Number of Students registered
ECE	U20ECO402: Consumer Electronics	126
EEE	U20EEO402: Electrical Safety	62
<b>Total Number of Students</b>		<b>188</b>

Discussed about the offering of Professional and Open electives in VII semester and IV semester students admitted from the Academic Year 2019-20 onwards. The students have registered for one professional and one open elective as per Regulation R-2019. It was approved by BoS members

**Item No. : BoS/ UG/ CSE 5.4**

To discuss and recommend the panel of examiners to the Academic Council

The list of question paper setters and Evaluators (given in Annexure-III) was presented and recommended by the BoS members to the academic council.

**Item No. : BoS/ UG/ CSE 5.5**

Any other item with the permission of chair.

The panel discussed about bringing up new research topic in curriculum

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## Department of Computer Science and Engineering

### Minutes of 5<sup>th</sup> Board of Studies Meeting (Ph.D)

#### Agenda of the Meeting

Item No. : BoS/ Ph.D/ CSE 5.1	Confirmation of minutes of 4 <sup>th</sup> BoS meeting held on 12.02.2022 and Regulations of Ph.D in Computer Science and Engineering of R-2020 – for any Modifications.
Item No. : BoS/ Ph.D / CSE 5.2	To discuss and get approval for the students admitted in Ph.D in Computer Science and Engineering from the Academic Year 2021-2022
Item No. : BoS/ Ph.D/ CSE 5.3	To discuss and recommend the doctoral Committee members of the admitted students to the academic council
Item No. : BoS/ Ph.D / CSE 5.4	Any other item with the permission of chair.

#### Minutes of the Meeting

Dr. K.Premkumar, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

#### Item No. : BoS/ Ph.D/ CSE 5.1

Confirmation of minutes of 4<sup>th</sup> BoS meeting held on 12.02.2022 and Regulations of Ph.D in Computer Science and Engineering of R-2020 – for any Modifications

Chairman, BoS, apprised the minutes of 4<sup>th</sup> BoS, its implementation and then it is confirmed with the approval in 4<sup>th</sup> BoS meeting and recommended without any modifications

#### Item No. : BoS/ Ph.D/ CSE 5.2

To discuss and get approval for the students admitted in Ph.D in Computer Science and Engineering from the Academic Year 2021-2022

The students admitted in Ph.D in Computer Science and Engineering from the academic year 2021-2022 were discussed and List of students enrolled is enclosed in Annexure- IV

#### Item No. : BoS/ Ph.D/ CSE 5.3

To discuss and recommend the doctoral Committee members of the admitted students to the academic council

The doctoral Committee members for students admitted in Ph.D in Computer Science and

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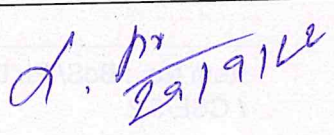
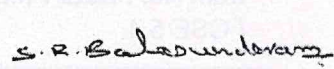
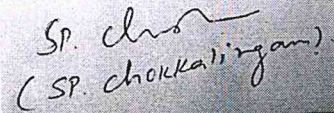
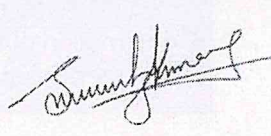
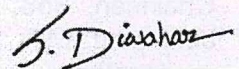


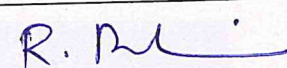
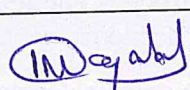
Engineering were introduced and the doctoral committee members list is enclosed in Annexure - V

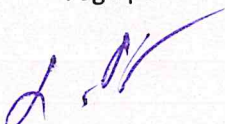
Item No. : BoS/ Ph.D/ CSE 5.4

Any other item with the permission of chair

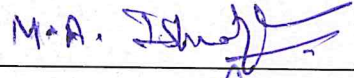
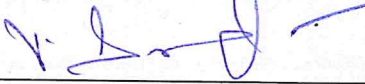
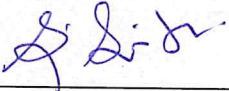
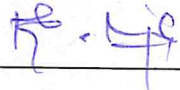
The committee were happy about number of internal students registered for Ph.D

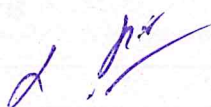
The meeting for the above Agenda regarding B.Tech – Computer Science and Engineering was concluded by 1:00 pm with by Dr. K.Premkumar, Chairman-BoS and Head of Department, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College.

Sl.No	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	Dr. K.Premkumar,M.E,Ph.D., Professor and Head, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College	Chairman	
<b>External Members</b>			
2	Dr. S. R. Balasundaram, Professor and Head Department of Computer Applications, National Institute of Technology, Trichy.	Subject Expert (Pondicherry University Nominee)	
3	Dr. Chokkalingam Subramanian, Professor & Head, Department of Information Technology, Saveetha University, Chennai.	Subject Expert (Academic Council Nominee)	
4	Dr.S.Udhayakumar, Professor, School of Engineering , Amrita Vishwa Vidyapeetham, Chennai	Subject Expert (Academic Council Nominee)	
5	S.Diwarhar, M.Tech., Senior Engineer, Dell Technologies, Bangalore	Representative from Industry	
6	R.Sakthi Murugan, Director, Interjet India Pvt. Ltd., Puducherry.	Postgraduate Alumnus (nominated by the Principal)	
<b>Internal Members</b>			
7	Dr. M.Ganesan, Professor, Department of CSE, SMVEC.	Internal Member	
8	Dr.R.Ramachandiran, Associate Professor, Department of CSE, SMVEC.	Internal Member	
9	Dr.T.Megala, Assistant Professor, Department of CSE, SMVEC	Internal Member	





Co-opted Members			
10	Dr.M.A.Ishrath Jahan Associate Professor, Department of English, SMVEC	Internal Member	
11	Dr.T.Jayavarthan Professor, Department of Physics, SMVEC	Internal Member	
12	Dr.S.Savithiri, Professor, Department of Chemistry, SMVEC	Internal Member	
13	Prof.K.Raja, Assistant Professor, Department of Mathematics, SMVEC	Internal Member	



Co-opted Members

10	Internal Member	Dr. M. A. Jaleel Assistant Professor Department of English, IIT Kharagpur
11	Internal Member	Dr. T. Jayaraman Professor Department of Physics, IIT Kharagpur
12	Internal Member	Dr. S. Ghoshal Professor, Department of Chemistry, IIT Kharagpur
13	Internal Member	Professor, Department of Mathematics, IIT Kharagpur

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# ANNEXURE I

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ANNEXURE I

2.A.3-12

## ANNEXURE -1

U19CSE86

### TRUSTED COMPUTING

L	T	P	C	Hrs
3	0	0	3	45

#### Course Objectives

- To design the goals in the trusted platforms.
- To understand the comprehensive overview of the trust architecture and its applications.
- To experiment with TCG and to implement different tools.
- To demonstrate different encryption algorithms for security purposes.
- To learn about the trusted devices and their maintenance.

#### Course Outcomes

*After completion of the course, the students will be able to*

- CO1 – Summarize the concept of trust categories.
- CO2 – Demonstrate trust architecture and formalization of security architecture.
- CO3 – Analyse about the TPM and TCG.
- CO4 – Understand about the cryptographic standards.
- CO5 – Summarize trusted computing and its administration.

#### UNIT I INTRODUCTION TO TRUST COMPUTING

(9Hrs)

Introduction – Trust and Computing – Instantiations – Design and Applications – Progression – Motivating scenarios – Attacks. Design goals of the trusted platform modules. Introduction to simulators – Implementation of attacks.

#### UNIT II TRUST ARCHITECTURE

(9Hrs)

Foundations – Design challenges – Platform Architecture – Security architecture – erasing secrets – sources – software threats – code integrity and code loading. Outbound Authentication – Problem – Theory – Design and Implementation - Validation – Process – strategy – Formalizing security properties – Formal verification – other validation tasks – reflection.

#### UNIT III TCG TCGA

(9Hrs)

Programming Interfaces To TCG. Experimenting with TCGA/TCG – Desired properties- Lifetime mismatch – Architecture – Implementation – Applications. Writing a TPM device driver- Low level software – Trusted boot – TCG software stack – Using TPM keys. Implementation using simulator tools.

#### UNIT IV CRYPTOGRAPHIC STANDARDS

(9Hrs)

TSS core service – Public key cryptography standard – Architecture – Trusted computing and secure storage – Linking to encryption algorithms – encrypting files and locking data to specific PCs-content protection – secure printing and faxing. Simulation analysis of symmetric and public key cryptographic standards - performance evaluation of these trust models.

#### UNIT V ADMINISTRATION OF TRUSTED DEVICES

(9Hrs)

Trusted Computing And Secure Identification Administration of trusted devices – Secure /backup maintenance – assignment of key certificates-secure time reporting-key recovery – TPM tools- Ancillary hardware.

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ANNEXURE - 1

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TRUSTED COMPUTING

07030325

Course Objectives

- To design the goals in the trusted platform
- To understand the comprehensive overview of the trust architecture and its applications
- To experiment with TCG and to implement the protocols
- To demonstrate different security solutions for security purposes
- To learn about the trusted devices and their maintenance

Course Outcomes

After completion of the course, the students will be able to

- CO1 - Summarize the concept of trust architecture
- CO2 - Demonstrate trust architecture and formation of security protocols
- CO3 - Analyse about the TPM and TCG
- CO4 - Understand about the cryptographic standards
- CO5 - Securely trust computing and its administration

UNIT I INTRODUCTION TO TRUST COMPUTING

Introduction - Trust and Computing - Introduction - Design and Applications - Progression -  
 Motivation concepts - Attack Design goals of the trusted platform - Introduction to  
 standards - Implementation of attacks

(8hrs)

UNIT II TRUST ARCHITECTURE

Platform - Design strategies - Platform Architecture - Security architecture - Design goals -  
 Access - Software layer - Code integrity and code loading - Operating System - Platform -  
 Theory - Design and implementation - Validation - Process - Strategy - Formulating security  
 properties - Formal verification - Other verification tasks - Reflection

(8hrs)

UNIT III TCG TPA

Programming interface to TCG - Experimenting with TCG - Design properties - Design  
 Introduction - Architecture - Implementation - Applications - Verifying a TPM device over low level  
 software - Trusted boot - TCG software stack - Using TPM keys - Implementation using Windows  
 tool

(8hrs)

UNIT IV CRYPTOGRAPHIC STANDARDS

DES core module - Public key cryptography standard - Architecture - Trusted computing and secure  
 storage - Linking to encryption algorithms - Grouping files and locking data in specific PC context  
 protection - secure online and local - Similarity of symmetric and public key cryptographic  
 standards - performance comparison of files and protocols

(8hrs)

UNIT V ADMINISTRATION OF TRUSTED DEVICES

Trusted Computing and Secure Technology Administration of trusted devices - Secure booting  
 requirements - Management of key certificates - secure time reporting - recovery - TPM logs  
 Administer hardware

(8hrs)

**Text Books**

1. Xujan Zhou, YueXu, Yuefeng Li, Audun Josang, and Clive Cox, "The state of-the-art in personalized recommender systems for social networking. Artificial Intelligence Review", Issue C, pp.1-14, Springer, 2011.
2. Challenger D., Yoder K., Catherman R., Safford D., Van Doorn L. "A Practical Guide to Trusted Computing", IBM press, 2008.
3. Sean W. Smith, "Trusted Computing Platforms: Design and Applications", Springer Science and Business media, 2005.

**Reference Books**

1. Dengguo Feng, "Trusted Computing" Tsinghua University Tsinghua University Press Released December Publisher(s): De Gruyter, 2017.
2. A Practical Guide to Trusted Computing (IBM Press), December 2007.
3. Trusted Computing Platforms Design and Applications, 2005.
4. Trusted Computing Platforms: TCPA Technology in Context by Pearson Education , July 2002.
5. John Linn, "Trust Models and management in Public Key Infrastructures", November 2000.

**Web Resources**

1. <https://trustedcomputinggroup.org/>
2. [https://en.wikipedia.org/wiki/Trusted\\_Computing](https://en.wikipedia.org/wiki/Trusted_Computing)
3. <https://www.techopedia.com/definition/16523/trusted-computing>
4. <https://webstore.ansi.org/industry/software/encryption-cryptography>
5. <https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>.

**COs/POs/PSOs Mapping**

COs	Program Outcomes (POs)												Program Sp Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	3	3	3	3	3	3	3	3	-	2	3	-	3	3
2	3	3	3	3	-	3	-	3	-	2	-	2	2	2
3	2	2	2	2	2	2	3	3	-	3	3	-	2	2
4	2	2	2	2	2	2	-	3	-	3	-	3	3	3
5	3	3	3	3	3	3	3	3	-	3	3	3	3	3

CorrelationLevel:1-Low,2-Medium,3-High

Test Book

1. Kevin Chen, Yuesheng Li, Aishan Lu, and Gao Cao, "The state of the art in distributed recommendation systems for social networking," *ArXiv preprint arXiv:1404.7552*, 2014.
2. Christian D. Yohet, K. Chaitin, R. Lafford, C. Van Doren, J. P. Practice, *Guide to Internet Computing*, IBM Press, 2008.
3. Sam W. Smith, *Trust Computing: Patterns, Design and Applications*, Springer Science and Business Media, 2008.

Reference Books

1. Bengt Forsberg, *Trust Computing*, Springer Science and Business Media, 2008.
2. A Practical Guide to Trust Computing (IBM Press), October 2007.
3. Trust Computing: Patterns, Design and Applications, 2008.
4. Trust Computing Patterns: TCPA Technology in Context by Pearson Education, July 2007.
5. John Kim, *Trust Models and Management in Public Key Infrastructures*, November 2000.

Web Resources

1. <http://trust-computing.org>
2. <http://www.ibm.com/press/ibmpress/ibmpress.html>
3. <http://www.ibm.com/press/ibmpress/ibmpress.html>
4. <http://www.ibm.com/press/ibmpress/ibmpress.html>
5. <http://www.ibm.com/press/ibmpress/ibmpress.html>

Appendix A

Program Outcome	Program Outcomes (PO)										Program Outcome
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
1	3	3	3	3	3	3	3	3	3	3	3
2	3	3	3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3
4	3	3	3	3	3	3	3	3	3	3	3
5	3	3	3	3	3	3	3	3	3	3	3



U19CSE87

**CLIENT SERVER COMPUTING**

L T P C Hrs  
3 0 0 3 45

**Course Objectives**

- Comprehend the basic concepts of the client-server model
- Describe how the hardware and software are combined to implement client/server computing.
- To expose terminology, concepts and types of servers in client/server architecture.
- Explore the different server operating systems and its components
- Explore about the Impact of Technology & Training and Testing Technology

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Understand and analyze about the history of C/S computing.

**CO2** - Analyze the different client/server models.

**CO3** - Be familiar with the types, features and components of Server in C/S systems.

**CO4** - Analyze the different server operating systems and its components.

**CO5** - Known about the impact of Technology, Training and Testing Technology.

**UNIT I INTRODUCTION TO CLIENT/SERVER COMPUTING**

(9 Hrs)

Introduction to client/server computing-What is client/server computing-Benefits of client/server computing-Evolution of C/S computing-Hardware trends-Software trends-Evolution of operating systems-Networking (N/W) trends-Business considerations.

**UNIT II CLASSIFICATION OF CLIENT / SERVER SYSTEMS**

(9Hrs)

**Two-tier client / Server Model:** Hardware and Software Requirements operating system services – Types of clients – Server tier.

**Three- Tier client / Server Model:** Hardware and Software Requirements – Network connectivity – Types of Middleware – Database Middleware.

**N- Tier client / Server Model:** Overview – Benefits – Disadvantages – Components – Tier separations and interaction.

**UNIT III SERVERS**

(9Hrs)

Server Hardware, Categories - Features classes of Server Machines - Server Environment - Network management environment - network Computing Environment - Network Operating Systems - Server requirements, Platform Independence - Transaction Processing and Connectivity - Server Data Management and Access Tools

**UNIT IV SERVER OPERATING SYSTEM**

(9Hrs)

Server operating system: OS/2 2. 0-Windows new technology-Unix based OS-Server requirements: Platform independence-Transaction processing-Connectivity-Intelligent database-Stored procedure-Triggers-Load leveling-Optimizer-Testing and diagnostic tools – Backup&recovery mechanisms.

**UNIT V IMPACT OF TESTING TECHNOLOGY**

(9Hrs)

Client / Server Administration and Management – Client /Server Software – Testing techniques – Testing aspects – Measures of Completeness – Testing Client / Server Application.

### Text Books

1. Munesh Chandra Trivedi, "Client/Server Computing", Khanna Book Publishing Company, Second edition, 2014.
2. Chandra Yadav Subhash, "Introductions to Client Server Computing", New Age International, 2009.
3. Dawana Travis Dewire, "Client/Server Computing", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2003.

### Reference Books

1. Dr. S.T. Deepa, Mrs.T.Yegammai, "Client Server Computing", Charulatha Publications Private Limited, 2019.
2. Patrick Smith, Steve Guengerich, "Client/Server Computing, Prentice Hall India Learning Private Limited, 2nd edition, 2011.
3. Robert Orfali, Dan Harkey and Jeri Edwards, "Essential Client/Server Survival Guide", Galgotia Publications, New Delhi, 2001.
4. Joel P Kaster, "Understanding Thin Client/Server Computing", Prentice Hall of India, New Delhi, 2001.
5. Karen Watterson, "Client/Server Technology for Managers ", Addition-Wesley, USA, 1996.

### Web Resources

1. <http://www.studentshangout.com/topic/142825-client-server-computing-notes>
2. <http://www.slideshare.net/jayasreep3/client-server-computing>
3. <http://www.infomotions.com/musings/waves/clientservercomputing.html>
4. <https://teachcomputerscience.com/client-server-architecture/>
5. <https://nptel.ac.in/content/storage2/courses/106105087/pdf/m17L41.pdf>

### COs/POs/ PSOs Mapping

COs	Program Outcomes(POs)												Program Specific Outcomes(PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	3	3	3	1	-	-	2	2	-	3	3	3
2	2	3	2	3	3	1	1	-	-	2	2	-	3	3	3
3	3	2	2	2	2	2	1	-	-	2	2	-	3	3	3
4	2	2	3	3	3	2	1	-	-	2	2	-	2	2	3
5	3	2	3	3	3	3	1	-	-	2	2	-	2	2	2

Correlation Level: 1-Low, 2-Medium, 3-High

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U19CSE88

## HUMAN COMPUTER INTERACTION

L	T	P	C	Hrs
3	0	0	3	45

### Course Objectives

- To Learn the foundations of Human Computer Interaction
- To be familiar with the design technologies for individuals and persons with disabilities
- To demonstrate the communication using multimedia and www.
- To study about mobile ecosystem.
- To learn about user interface.

### Course Outcomes

After completion of the course, the students will be able to

CO1 - Collect fundamentals of human interaction and problem solving

CO2 - Design effective HCI for individuals.

CO3 - Enumerate the cognitive computerized models for HCI

CO4 - Design mobile application framework using HCI tools.

CO5 - Develop web interface using various tools

### UNIT I INTRODUCTION

(9 Hrs)

The Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics– styles – elements – interactivity- Paradigms.

### UNIT II INTERACTIVE DESIGN AND RULE

(9

Hrs)

Interactive Design basics – process – scenarios – navigation – screen design – Iteration and prototyping. HCI in software process – software life cycle – usability engineering Prototyping in practice – design rationale. Design rules – principles, standards, guidelines, rules. Evaluation Techniques – Universal Design.

### UNIT III COGNITIVE COMPUTERIZED MODELS

(9 Hrs)

Cognitive models –Socio-Organizational issues and stake holder requirements –Communication and collaboration models-Hypertext, Multimedia and WWW.

### UNIT IV APPLICATION FRAMEWORK

(9Hrs)

Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of Mobile Design, Tools.

### UNIT V DESIGNING WEB INTERFACES

(9 Hrs)

Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.

### Text Books

1. Interaction Design: Beyond Human-Computer Interaction by Helen Sharp & Jenny Preece & Yvonne Rogers 2019.
2. Interaction Design - Beyond Human-Computer Interaction, 4th Edition, 2016
3. Computer-Human Interaction. Cognitive Effects of Spatial Interaction, Learning, and Ability by Theodor Wyeld & Paul Calder & Haifeng Shen (eds.) ,2015
4. Designing Interactive Systems: A Comprehensive Guide to HCI, UX and Interaction Design. by David R. Benyon 2013.

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- Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", 3<sup>rd</sup> Edition, Pearson Education, 2004.

### Reference Books

- Brian Fling, "Mobile Design and Development", Fourth Edition, O'Reilly Media Inc., 2018.
- Cabrera & James, "Modular Design Frameworks: A Projects-based Guide for UI/UX Designers", 2017.
- Bill Scott and Theresa Neil, "Designing Web Interfaces", First Edition, O'Reilly 2009.
- Jonathan Lazar, "Research Methods in Human-Computer Interaction", 2009.
- Yvonne Rogers, "Interaction Design: Beyond Human-Computer Interaction", 2001.

### Web Resources

- <https://www.interaction-design.org/literature/topics/human-computer-interaction>
- <https://www.hcii.cmu.edu/academics/mhci>
- <https://www.rit.edu/study/human-computer-interaction-ms>
- <https://www.udacity.com/course/human-computer-interaction--ud400>
- <https://xd.adobe.com/ideas/principles/human-computer-interaction/>

### COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
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1	3	3	3	3	3	3	3	3	-	2	3	-	3	3	3
2	3	3	3	3	-	3	-	3	-	2	-	2	2	2	-
3	2	2	2	2	2	2	3	3	-	3	3	-	2	2	2
4	2	2	2	2	2	2	-	3	-	3	-	3	3	3	-
5	3	3	3	3	3	3	3	3	-	3	3	3	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

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# ANNEXURE II

## ANNEXURE II

U20CST819

**BLOCKCHAIN AND CRYPTOGRAPHY**

L	T	P	C	Hrs
3	0	0	3	45

### Course Objectives

- To define the fundamental ideas behind Cloud Computing.
- To classify the basic ideas and principles in cloud information system.
- To understand about Bitcoin, Crypto currency, Ethereum and create own Blockchain network application.
- To understand cryptography concepts.
- To Understand Public Key Cryptography and Key management

### Course Outcomes

*After completion of the course, the students should be able to:*

**CO1** - Explain design principles of Bitcoin and Ethereum. Explain Nakamoto consensus.

**CO2** - Explain the Simplified Payment Verification protocol. List and describe differences between proof- of-work and proof-of-stake consensus.

**CO3** - Design, build, and deploy a distributed application. Evaluate security, privacy, and efficiency of a given blockchain system.

**CO4** - Explain cryptography concepts.

**CO5** - Identify and investigate public key cryptography and key management concepts.

### UNIT I BASICS

(9 Hrs)

Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete.

### UNIT II BLOCKCHAIN

(9 Hrs)

Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain.

### UNIT III CRYPTOCURRENCY AND CRYPTOCURRENCY REGULATION

(9 Hrs)

History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin. Stakeholders, Roots of Bitcoin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy. Applications: Internet of Things, Medical Record Management System, Domain Name Service and future of Blockchain.

### UNIT IV CRYPTOGRAPHY TECHNIQUES

(9 Hrs)

Introduction to Cryptography, Security Threats, Vulnerability, Active and Passive attacks-Dimensions of Cryptography, Classical Cryptographic Techniques - Block Ciphers (DES, AES) : Feistel Cipher Structure, Simplified DES, DES, Double and Triple DES, Block Cipher design Principles, AES, Modes of Operations.

## UNIT V PUBLIC-KEY CRYPTOGRAPHY AND KEY MANAGEMENT

(9 Hrs)

Public-Key Cryptography: Principles Of Public-Key Cryptography, RSA Algorithm, Key Management, Diffie- Hellman Key Exchange, Elgamal Algorithm, Elliptic Curve Cryptography, Key Management: Key Distribution Techniques, Kerberos.

### Text books

1. Douglas Robert Stinson and Maura Paterson, "Cryptography: Theory and Practice", CRC press, 2018.
2. Imran Bashir, "Mastering Blockchain: Deeper insights into decentralization, cryptography", Packet Publishing Ltd, Kindle Edition, 2017.
3. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, "Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction", Princeton University Press, Kindle Edition, 2016.

### Reference books

1. Imran Bashir, "Mastering Blockchain: A deep dive into distributed ledgers, consensus protocols, smart contracts, DApps, cryptocurrencies, Ethereum, and more", Packt Publishing Limited, 3rd Edition, 2020.
2. Andreas M. Antonopoulos, "Mastering Bitcoin: Unlocking Digital Cryptocurrencies", O'Reilly Media, 2nd Edition 2017.
3. Keith M. Martin, "Everyday Cryptography: Fundamental Principles & Applications", Oxford University Press, First edition 2016.
4. Dr. Gavin Wood, "ETHEREUM: A Secure Decentralized Transaction Ledger," Yellow paper. 2014.
5. Dr. T R Padmanabhan C K Shyamala, N Harini, "Cryptography and Security", Wiley, 1<sup>st</sup> Edition, 2011.

### Web Resources

1. <http://chimera.labs.oreilly.com/books/1234000001802/ch08.html>
2. <https://bitcoin.org/bitcoin.pdf>
3. <https://www.geeksforgeeks.org/introduction-to-crypto-terminologies>
4. <https://complyadvantage.com/knowledgebase/crypto-regulations/cryptocurrency-regulations-india>
5. <https://www.proofpoint.com/us/threat-reference/encryption>

### COs/POs/PSOs Mapping

CO'S	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 0	PO 1	PO 1	PSO 1	PSO 2	PSO 3
1	1	1	3	3	3	3	3	3	-	-	3	-	3	3	3
2	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-
3	3	3	3	3	3	3	3	3	-	-	3	-	3	3	3
4	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-
5	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

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## U20HSP804 ENTREPRENEURSHIP MANAGEMENT

L	T	P	C	Hrs
0	0	2	1	30

### Course Objectives

- To develop a clear understanding on Time Management, Stress Management and Networking Skills
- To understand the significance of Finance Skills, Branding, and Sales Skills for an Entrepreneur
- To develop an ability to identify the critical challenges hindering growth of entrepreneurs
- To examine the strategies to handle the entrepreneurial challenges
- To be aware of various Government Schemes and Subsidies available for Entrepreneurs

### Course Outcomes

*After completion of the course, the students will be able to*

- CO1** - Demonstrate the acquisition of time management, stress handling and networking skills
- CO2** - Practice cash management, brand building and enhancing turnover.
- CO3** - Identify the key challenges faced by entrepreneurs.
- CO4** - Be familiar with ways to handle the key challenges.
- CO5** - Understand various schemes and subsidies that are offered by various Government agencies for the benefit of entrepreneurs in general, and women entrepreneurs in particular.

### UNIT I ENTREPRENEURIAL SKILLS 1 (6 Hrs)

Time Management – Priority Planning – Defining Milestones (Immediate, Very Short-Term, Short Term and Medium Term) – Addressing the issue of ‘procrastination’ – Timely Execution of Plans.  
Stress Handling – Coping with the stress – Strategies to handle rejections – Addressing slow progress issues  
Networking – Key to Success – Power of Referral and Word of Mouth.

### UNIT II ENTREPRENEURIAL SKILLS 2 (6 Hrs)

Financial Skills – Cash Management – Problems of Poor Cash Management – Learning to be Frugal.  
Branding – Building a ‘niche’ follower for your product/service – Developing and Establishing a Brand  
Sales skills – KPI of Success of Entrepreneurship – Ensuring Growth in Turnover

### UNIT III ENTREPRENEURIAL CHALLENGES: IDENTIFYING (6 Hrs)

Identifying the typical problems of Entrepreneurs in your industry/service – Key Challenges: Operational Challenges – Marketing Challenges – Financial Challenges.

### UNIT IV ENTREPRENEURIAL CHALLENGES: HANDLING (6 Hrs)

Challenges Handling – Synergy Creation – Networking with Successful people in the industry – Learning from Best Practices – Understanding the Market Needs and Addressing them adequately – Financial Planning – Avoiding ‘Fund Diversions’ – Maintaining Financial integrity.

### UNIT V ENTREPRENEURIAL OPPORTUNITIES (6 Hrs)

Awareness of Government Schemes and Subsidies for various Entrepreneurial Categories – Special Schemes for Women Entrepreneurs – Understanding the Procedure and Documentation Process for availing the Government Schemes – Venture Capital – Crowd funding – Angel Investors.

### Text Books

1. Storey, D. J., & Greene, F. J. “Small business and entrepreneurship”, Financial Times/Prentice Hall, 2010.
2. Scarborough, N. M., “Essentials of entrepreneurship and small business management”, publishing as Prentice Hall, One Lake Street, Upper Saddle River, New Jersey 07458, 2011



3. Sebastian Aparico, Andrué Turro and María Noguera, "Entrepreneurship and Intrapreneurship in social, Sustainable, and Economic Development", published as sustainability, Switzerland, 2021

### Reference Books

1. Brian Tracy – The Psychology of Selling.
2. Dale Carnegie – How to Win Friends & Influence People.
3. Robert Kiyosaki and Sharon Lechter – Rich Dad; Poor Dad.
4. Reid Hoffman – The Startup of You: Adapt to the Future, Invest in Yourself, and Transform Your Career.
5. Michael E. Gerber – The E-Myth Revisited.
6. Chris Guillebeau – The Art of Non-Conformity.
7. Eric Ries – The Lean Startup.
8. Kevin D. Johnson – The Entrepreneur Mind.

### Web Resources

1. <https://www.helpguide.org/articles/stress/stress-management.htm>
2. <https://bscdesigner.com/8-entrepreneurial-kpis.htm>
3. <https://www.inc.com/ilya-pozin/5-problems-most-entrepreneurs-face.html>
4. <https://www.inc.com/jessica-stillman/how-to-network-with-super-successful-people.html>
5. <https://www.entrepreneur.com/article/251603>
6. <https://seraf-investor.com/compass/article/understanding-crowdfunding>

### COs/POs/PSOs Mapping

CO'S	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	1	3	3	3	3	3	3	-	-	3	-	3	3	3
2	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-
3	3	3	3	3	3	3	3	3	-	-	3	-	3	3	3
4	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-
5	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

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U20CSE824

## PERVASIVE COMPUTING

L	T	P	C	Hrs
3	0	0	3	45

### Course Objectives

- To study the pervasive computing and its applications
- To study the pervasive computing web based applications
- To study voice enabling pervasive computing :
- To study PDA in pervasive computing
- To study user interface issues in pervasive computing

### Course Outcomes

*After completion of the course, the students will be able to*

**CO1** - Be able to learn pervasive computing devices and interfaces.

**CO2** - Be able to learn XML role in pervasive computing.

**CO3** - To get clear idea about WAP architecture and security.

**CO4** - Be able to learn speech application in pervasive computing.

**CO5** - Become familiar with different voice standards. Identify user interface issues in pervasive computing.

### UNIT I INFRASTRUCTURE

(9 Hrs)

Pervasive computing infrastructure-applications-Device Technology -Hardware, Human-machine Interfaces, Biometrics, and Operating systems-Device Connectivity -Protocols, Security, and Device Management

### UNIT II WEB BASED APPLICATIONS

(9 Hrs)

Pervasive Computing and web based Applications: - XML, XML Schema and DTD document definitions - XSLT transformations and programming - XML and its role in Pervasive Computing - Wireless Application Protocol (WAP) Architecture and Security - Wireless Mark-Up language (WML).

### UNIT III VOICE ENABLING PERVASIVE COMPUTING

(9 Hrs)

Voice Enabling Pervasive Computing: - Voice Standards - Speech Applications in Pervasive Computing and security. Middleware for Pervasive: Adaptive middleware, Context aware middleware, Mobile middleware, Service Discovery, Mobile Agents.

### UNIT IV PDA IN PERVASIVE COMPUTING

(9 Hrs)

PDA in Pervasive Computing: - Introduction - PDA software Components, Standards, emerging trends - PDA Device characteristics - PDA Based Access Architecture. Security in Pervasive Computing: Security and Privacy in Pervasive Networks, Experimental Comparison of Collaborative Defence Strategies for Network Security.

### UNIT V DESIGN OF PERVASIVE COMPUTING SYSTEMS

(9 Hrs)

Design of pervasive computing systems, The User Interface Design process- Obstacles, Usability, Human characteristics in Design, Human Interaction speeds, User Interface Issues in Pervasive Computing, Architecture: - Smart Card- based Authentication Mechanisms - Wearable computing Architecture.

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### Text Books

1. JochenBurkhardt, Horst Henn, Stefan Hepper, Thomas Schaec& Klaus Rindtorff. "Pervasive Computing Technology and Architecture of Mobile Internet Applications", Addison Wesley, Reading, 2002.
2. Uwe Hansman, LothatMerk, Martin S Nicklous& Thomas Stober, "Principles of Mobile Computing", Second Edition, Springer- Verlag, New Delhi, 2003.
3. Jochen Burkhardt, "Pervasive Computing - Technology and Architecture of Mobile Internet Applications", 14th Edition, 2004.

### Reference Books

1. Rahul Banerjee, "Internetworking Technologies: An Engineering Perspective", Prentice –Hall of India, New Delhi, 2003. (ISBN 81-203-2185-5)
2. Rahul Banerjee,"Lecture Notes in Pervasive Computing", Outline Notes, BITS-Pilani, 2003.
3. Mohammad S. Obaidat, Mieso Denko, Isaac Woungang, "Pervasive Computing and Networking", 2011.
4. A. Genco and S. Sorce, "Pervasive Systems and Ubiquitous Computin", University of Palermo, 2010.
5. Varuna Godara, "Strategic Pervasive Computing Applications: Emerging Trends", 1st Edition, 2017.

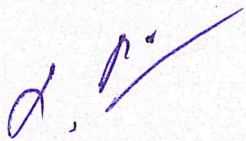
### Web Resources

1. <https://internetofthingsagenda.techtarget.com/definition/pervasive-computing-ubiquitous-computing>
2. <https://navveenbalani.dev/index.php/articles/the-complete-pervasive-computing-tutorial/>
3. <https://www.goodreads.com>

### COs/POs/PSOs Mapping

COs	Program Outcomes(POs)												Program Specific Outcomes(PSOs)		
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2	3	3	3	-	-	-	-	-	-	2	2	2	1	2	2
3	3	3	3	-	-	-	-	-	-	2	2	2	1	2	2
4	3	3	3	-	-	-	-	-	-	2	2	2	1	2	2
5	3	3	3	-	-	-	-	-	-	2	2	2	1	2	2

Correlation Level: 1-Low, 2-Medium, 3-High



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**Course Objectives**

- To explain the major concepts in Quantum computing
- To extend quantum circuits and algorithms
- To describe the building blocks of a quantum computer
- To understand the principles, quantum information and limitations of quantum operations formalism
- To discuss the quantum errors and its correction.

**Course Outcomes**

*Upon completion of the course, students shall have ability to*

- CO1 - Outline the key concepts of Quantum computing  
 CO2 - Develop logic gate circuits and quantum algorithms  
 CO3 - List the various quantum computers  
 CO4 - Discover quantum noise and its operations  
 CO5 - Illustrate errors and corrections in quantum computing

**UNIT I FUNDAMENTAL CONCEPTS****(9 Hrs)**

Global Perspectives, Quantum Bits, Quantum Computation, Quantum Algorithms, Quantum Information, Postulates of Quantum Mechanisms.

**UNIT II QUANTUM COMPUTATION****(9 Hrs)**

Quantum Circuits – Quantum algorithms, Single Orbit operations, Control Operations, Measurement, Universal Quantum Gates, Simulation of Quantum Systems, Quantum Fourier transform, Phase estimation, Applications

**UNIT III QUANTUM COMPUTERS****(9 Hrs)**

Guiding Principles, Conditions for Quantum Computation, Harmonic Oscillator Quantum Computer, Optical Photon Quantum Computer – Optical cavity Quantum electrodynamics, Ion traps, Nuclear Magnetic resonance

**UNIT IV QUANTUM INFORMATIONS****(9 Hrs)**

Quantum noise and Quantum Operations – Classical Noise and Markov Processes, Quantum Operations, Examples of Quantum noise and Quantum Operations – Applications of Quantum operations

**UNIT V QUANTUM ERROR CORRECTION****(9 Hrs)**

Introduction, Short code, Theory of Quantum Error –Correction, Constructing Quantum Codes, Stabilizer codes, Fault – Tolerant Quantum Computation, Entropy and information – Shannon Entropy, Basic properties of Entropy, Von Neumann, Strong Sub-Additivity, Data Compression, Entanglement as a physical resource

**Text Books**

1. Bennett C.H., Bernstein E., Brassard G., Vazirani U., "The strengths and weaknesses of quantum computation" SIAM Journal on Computing, 2016.
2. Phillip Kaye Raymond Laflamme Michele Mosca, "An Introduction to Quantum Computing", Oxford University Press, 2007.

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**Text Books**

1. Xujan Zhou, YueXu, Yuefeng Li, Audun Josang, and Clive Cox, "The state of-the-art in personalized recommender systems for social networking. Artificial Intelligence Review", Issue C, pp.1-14, Springer, 2011.
2. Challenger D., Yoder K., Catherman R., Safford D., Van Doorn L. "A Practical Guide to Trusted Computing", IBM press, 2008.
3. Sean W. Smith, "Trusted Computing Platforms: Design and Applications", Springer Science and Business media, 2005.

**Reference Books**

1. Dengguo Feng, "Trusted Computing" Tsinghua University Tsinghua University Press Released December Publisher(s): De Gruyter, 2017.
2. A Practical Guide to Trusted Computing (IBM Press), December 2007.
3. Trusted Computing Platforms Design and Applications, 2005.
4. Trusted Computing Platforms: TCPA Technology in Context by Pearson Education , July 2002.
5. John Linn, "Trust Models and management in Public Key Infrastructures", November 2000.

**Web Resources**

1. <https://trustedcomputinggroup.org/>
2. [https://en.wikipedia.org/wiki/Trusted\\_Computing](https://en.wikipedia.org/wiki/Trusted_Computing)
3. <https://www.techopedia.com/definition/16523/trusted-computing>
4. <https://webstore.ansi.org/industry/software/encryption-cryptography>
5. <https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>.

**COs/POs/PSOs Mapping**

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3	2	2	2	2	2	2	3	3	-	3	3	-	2	2	2
4	2	2	2	2	2	2	-	3	-	3	-	3	3	3	-
5	3	3	3	3	3	3	3	3	-	3	3	3	3	3	3

Correlation Level: 1-Low, 2-Medium, 3-High

U20CSE828

## CLIENT SERVER COMPUTING

L	T	P	C	Hrs
3	0	0	3	45

### Course Objectives

- Comprehend the basic concepts of the client-server model
- Describe how the hardware and software are combined to implement client/server computing.
- To expose terminology, concepts and types of servers in client/server architecture.
- Explore the different server operating systems and its components
- Explore about the Impact of Technology & Training and Testing Technology

### Course Outcomes

After completion of the course, the students will be able to

**CO1** - Understand and analyze about the history of C/S computing.

**CO2** - Analyze the different client/server models.

**CO3** - Be familiar with the types, features and components of Server in C/S systems.

**CO4** - Analyze the different server operating systems and its components.

**CO5** - Known about the impact of Technology, Training and Testing Technology.

### UNIT I INTRODUCTION TO CLIENT/SERVER COMPUTING (9 Hrs)

Introduction to client/server computing-What is client/server computing-Benefits of client/server computing-Evolution of C/S computing-Hardware trends-Software trends-Evolution of operating systems-Networking (N/W) trends-Business considerations.

### UNIT II CLASSIFICATION OF CLIENT / SERVER SYSTEMS (9 Hrs)

**Two-tire client / Server Model:** Hardware and Software Requirements operating system services – Types of clients – Server tier.

**Three- Tier client / Server Model:** Hardware and Software Requirements – Netware connectivity – Types of Middleware – Database Middleware.

**N- Tier client / Server Model:** Overview – Benefits – Disadvantages – Components – Tier separations and interaction.

**Middleware:** Importance-Types-benefits -disadvantages

### UNIT III SERVERS (9Hrs)

Server -Types of server- Hardware, Categories - Features classes of Server Machines - Server Environment - Network management environment - network Computing Environment - Network Operating Systems - Server requirements, Platform Independence - Transaction Processing and Connectivity - Server Data Management and Access Tools

### UNIT IV SERVER OPERATING SYSTEM (9Hrs)

Server operating system: OS/2 2. 0-Windows new technology-Unix based OS-Server requirements: Platform independence-Transaction processing-Connectivity-Intelligent database-Stored procedure-Triggers-Load leveling-Optimizer-Testing and diagnostic tools – Backup&recovery mechanisms.

### UNIT V IMPACT OF TESTING TECHNOLOGY (9Hrs)

Client / Server Administration and Management – Client /Server Software – Testing techniques – Testing aspects – Measures of Completeness – Testing Client / Server Application.

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### Text Books

1. Munesh Chandra Trivedi, "Client/Server Computing", Khanna Book Publishing Company, Second edition, 2014.
2. Chandra YadavSubhash, "Introductions to Client Server Computing", New Age International, 2009.
3. Dawana Travis Dewire, "Client/Server Computing", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2003.

### Reference Books

1. Dr. S.T. Deepa, Mrs.T.Yegammai, "Client Server Computing", Charulatha Publications Private Limited, 2019.
2. Patrick Smith, Steve Guengerich, " Client/Server Computing, Prentice Hall India Learning Private Limited, 2nd edition, 2011.
3. Robert Orfali, Dan Harkey and Jeri Edwards, "Essential Client/Server SurvivalGuide", Galgotia Publications, New Delhi, 2001.
4. Joel P Kaster, "Understanding Thin Client/Server Computing", Prentice Hall of India, New Delhi, 2001.
5. Karen Watterson, "Client/Server Technology for Managers ", Addition-Wesley, USA, 1996.

### Web Resources

1. <http://www.studentshangout.com/topic/142825-client-server-computing-notes>
2. <http://www.slideshare.net/jayasreep3/client-servercomputing>
3. <http://www.infomotions.com/musings/waves/clientservercomputing.html>
4. <https://teachcomputerscience.com/client-server-architecture/>
5. <https://nptel.ac.in/content/storage2/courses/106105087/pdf/m17L41.pdf>

### COs/POs/ PSOs Mapping

COs	Program Outcomes(POs)												Program Specific Outcomes(PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	3	3	3	1	-	-	2	2	-	3	3	3
2	2	3	2	3	3	1	1	-	-	2	2	-	3	3	3
3	3	2	2	2	2	2	1	-	-	2	2	-	3	3	3
4	2	2	3	3	3	2	1	-	-	2	2	-	2	2	3
5	3	2	3	3	3	3	1	-	-	2	2	-	2	2	2

Correlation Level: 1-Low, 2-Medium, 3-High

# ANNEXURE – III

Code	Program										Program Specific Outcome (PSO)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1

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Madagadipet, Puducherry - 605 107




## Department of Computer Science and Engineering

### Details of Examiners for Question Paper Setter and Evaluators

Sl.No	Name of the Examiner	Specialization	Designation, Department and Institution in which currently working	Contact number and mail
1	Dr. K. RAJA	Computer Graphics, Computer Networks, Multimedia	Assistant Professor / IT, Annamalai University, Chidambaram	9894304053, <a href="mailto:rajak_cdm@yahoo.co.in">rajak_cdm@yahoo.co.in</a>
2	Dr.B.MURUGANANTHAM	Artificial Intelligence, Service Oriented Architecture, Webservices	Associate Professor / CSE SRM Institute of Science and Technology, Chennai.	9940023373, <a href="mailto:muruganb@srmist.edu.in">muruganb@srmist.edu.in</a>
3	Dr. V.TAMIZHAZHAGAN	Wireless Networks	Assistant Professor / IT, Annamalai University, Chidambaram	8925122220 <a href="mailto:rvtamizh@gmail.com">rvtamizh@gmail.com</a>
4	Dr. D. JAGANATHAN	Artificial Intelligence, Computer Networks	Assistant Professor / CSE, Vel Tech Rangarajan Dr. Sagunthala R & D institute of Science and Tecnology, Chennai	9994524148 <a href="mailto:djagannathan@veltech.edu.in">djagannathan@veltech.edu.in</a>
5	Mr. V. PRABHU	DBMS, Data Structures	Assistant Professor / CSE, Vel Tech Rangarajan Dr. Sagunthala R & D	9597739629 <a href="mailto:vprabhu@veltech.edu.in">vprabhu@veltech.edu.in</a>

			institute of Science and Tecnology, Chennai	
6	Dr. LAKSHMI DHEVI	Internet of Things, Compute Organization, Computer Graphics	Assistant Professor / CSE, Vel Tech Rangarajan Dr. Sagunthala R & D institute of Science and Tecnology, Chennai	9551145796 <a href="mailto:blakshmidhevi@veltech.edu">blakshmidhevi@veltech.edu</a>
7	Dr.MANJUNATHAN	Database Management Systems, Operating Systems	Assistant Professor / CSE, Vel Tech Rangarajan Dr. Sagunthala R & D institute of Science and Tecnology, Chennai	9791060024 <a href="mailto:nmanjunathan@veltech.edu">nmanjunathan@veltech.edu</a>
8	Dr. A. RAMACHANDRAN	Digital Design, Computer Design, Web Technology	Assistant Professor and Head (i/c), Department of Computer Science and Engineering, University College of Engineering, Panruti.	9790900771 <a href="mailto:ramautpc@gmail.com">ramautpc@gmail.com</a> , <a href="mailto:ram@ucep.edu.in">ram@ucep.edu.in</a>
9	Dr. C. NAVANEETHAN	Java, Python, Artificial Intelligence, Data Structures	Associate Professor / CSE Department of Software and Systems Engineering, School of Information Technology & Engineering, VIT, Vellore - 632014	9962327007 <a href="mailto:navaneethan.c@vit.ac.in">navaneethan.c@vit.ac.in</a>
10	Dr. G. GUNASEKARAN.	Artificial Intelligence, AR & VR, Compiler Design	Associate Professor / CSE Department of Smart Computing, School of Information Technology & Engineering, VIT, Vellore - 632014	9443049982 <a href="mailto:ggunasekaran@vit.ac.in">ggunasekaran@vit.ac.in</a>
11	Dr. AMRITHA SARAVANAN	Data Structures, Operating Systems	Associate Professor / CSE Department of CSE, University college of Engineering, Villupuram	9791555778 <a href="mailto:aasaravanan777@gmail.com">aasaravanan777@gmail.com</a>



2. A. 3. 34

12	Dr. BALAJI. N	Computer Networks, Cloud Computing	Professor and Head, Department of CSE, Sri Venkateswara College of Engineering and Technology, Puducherry.	9944199803 <a href="mailto:nbalajime1983@gmail.com">nbalajime1983@gmail.com</a>
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2. A. 3. 35

2014-15 Department of Information Technology	Professor and Head, Department of CSE, SV Vishwakarma College of Engineering and Technology, Anantapur	Computer Networks Class	Dr. BALAJI N	12
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**ANNEXURE IV**



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Department of Computer Science and Engineering

## ANNEXURE IV

### List of Ph.D Candidates

S.No	Name of the Candidate	Supervisor	Mode
1.	Mrs.P.Bhavani	Dr.A.Ramalingam	Part-Time-Internal
2.	Mr.Arokiaraj St.Hubert	Dr.J.Madhusudanan	Part-Time-Internal
3.	Mr.S.Diwahar	Dr.J.Madhusudanan	Part-Time-External
4.	Mr.G.Aurobind	Dr.R.Ramachandiran	Part-Time-External
5.	Ms.T.Prateesshma	Dr.R.Raju	Regular

*d. n.*

ANNEXURE IV

List of P&T Candidates

S No	Name of the Candidate	Stream	Mode
1	Mrs. J. Shreya	B.Tech. / B.E.	Internal
2	Mr. Arjun S. Kumar	B.Tech. / B.E.	Internal
3	Mrs. A. Divya	B.Tech. / B.E.	External
4	Mr. A. Anand	B.Tech. / B.E.	Internal
5	Mr. T. Aravind	B.Tech. / B.E.	External

ANNEXURE V



# SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

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Department of Computer Science and Engineering

## ANNEXURE V

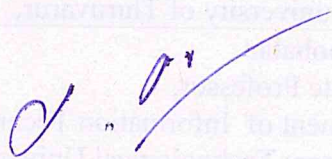
### List of Doctoral Committee Members

S.No	Name of the Candidate	Supervisor	Doctoral Committee Members
1.	Mrs.P.Bhavani Part-Time-Internal	Dr.A.Ramalingam	Dr.J.Madhusudanan Professor and Head, Department of Artificial Intelligence & Data Science, Sri Manakula Vinayagar Engineering College
			Dr.T.Vengattaraman, Associate Professor, Department of Computer Science, Pondicherry University
			Dr.S.Ganesh Kumar, Professor, Department of DS & BS SRM Institute of Science and Technology
2.	Mr.Arokiaraj St.Hubert Part-Time-Internal	Dr.J.Madhusudanan	Dr.A.Ramalingam, Professor and Head, Department of MCA, Sri Manakula Vinayagar Engineering College
			Dr.A.Martin, Assistant Professor, Department of Computer Science Central university of Thiruvarur,
			Dr.P.Boobalan Associate Professor, Department of Information Technology, Puducherry Technological University
3.	Mr.S.Diwarhar Part-Time-External	Dr.J.Madhusudanan	Dr.V.Prasanna Venkatesan Professor and Head, Department of Banking Technology, Pondicherry University

*(Handwritten signature)*

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			Dr.P.Thiyagarajan Assistant Professor, Rajiv Gandhi National Institute of Youth Development, Sriperumbudur
			Dr.R.Raju, Professor and Head, Department of Information Technology, Sri Manakula Vinayagar Engineering College
4.	Mr.G.Aurobind Part-Time-External	Dr.R.Ramachandiran	Dr. V. Bharathi Associate Professor, Department of CCE, Sri Manakula Vinayagar Engineering College
			Dr. P . Victor Paul. Assistant Professor, Department of Computer Science and Engineering, Indian Institute of Information Technology Kottayam
			Dr. Jagadeesh kakarla Assistant Professor Department of Computer Science and Engineering, Indian Institute of Information Technology Design and Manufacturing Kancheepuram
5.	Ms.T.Prateesshma Regular	Dr.R.Raju	Dr.P.Raja Professor and Head, Department of ECE Sri Manakula Vinayagar Engineering College
			Dr.T.Vengattaraman, Associate Professor, Department of CS, Pondicherry University
			Dr.N.Sivakumar Associate Professor, Department of CSE, Puducherry Technological University



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### Course Objectives

- To design the goals in the trusted platforms.
- To understand the comprehensive overview of the trust architecture and its applications.
- To experiment with TCG and to implement different tools.
- To demonstrate different encryption algorithms for security purposes.
- To learn about the trusted devices and their maintenance.

### Course Outcomes

*After completion of the course, the students will be able to*

- CO1** – Summarize the concept of trust categories.  
**CO2** – Demonstrate trust architecture and formalization of security architecture.  
**CO3** – Analyse about the TPM and TCG.  
**CO4** – Understand about the cryptographic standards.  
**CO5** – Summarize trusted computing and its administration.

### UNIT I INTRODUCTION TO TRUST COMPUTING (9Hrs)

Introduction – Trust and Computing – Instantiations – Design and Applications – Progression – Motivating scenarios – Attacks. Design goals of the trusted platform modules. Introduction to simulators – Implementation of attacks.

### UNIT II TRUST ARCHITECTURE (9Hrs)

Foundations – Design challenges – Platform Architecture – Security architecture – erasing secrets – sources – software threats – code integrity and code loading. Outbound Authentication – Problem – Theory – Design and Implementation - Validation – Process – strategy – Formalizing security properties – Formal verification – other validation tasks – reflection.

### UNIT III TCG TCGA (9Hrs)

Programming Interfaces To TCG. Experimenting with TCG/TCG – Desired properties- Lifetime mismatch – Architecture – Implementation – Applications. Writing a TPM device driver- Low level software – Trusted boot – TCG software stack – Using TPM keys-TPM tools- Implementation using simulator tools.

### UNIT IV CRYPTOGRAPHIC STANDARDS (9Hrs)

TSS core service – Public key cryptography standard – Architecture – Trusted computing and secure storage – Linking to encryption algorithms – encrypting files and locking data to specific PCs-content protection – secure printing and faxing. Simulation analysis of symmetric and public key cryptographic standards - performance evaluation of these trust models.

### UNIT V ADMINISTRATION OF TRUSTED DEVICES (9Hrs)

Trusted Computing And Secure Identification Administration of trusted devices – Secure /backup maintenance – assignment of key certificates-secure time reporting-key recovery –Ancillary hardware.

- Micheal A. Nielsen and Issac L. Chiang, "Quantum Computation and Quantum Information", Cambridge University Press, Fint South Asian Edition, 2002.

### Reference Books

- Nayak, Chetan; Simon, Steven; Stern, Ady; Das Sarma, Sankar, "Nonabelian Anyons and Quantum Computation", 2008.
- Clarke, John; Wilhelm, Frank, "Superconducting quantum bits", 2008.
- William M Kaminsky, "Scalable Superconducting Architecture for Adiabatic Quantum Computation", 2004.
- V. Sahni, "Quantum Computing", Tata McGraw-Hill Publishing Company, 2007.
- P. Kaye, R. Laflamme, and M. Mosca, "An introduction to Quantum Computing", Oxford University Press, 1999.

### Web Resources

- <https://nptel.ac.in/courses/115101092/Quantumcomputation>.
- [https://nptel.ac.in/courses/104104082/Quantumcomputing and information](https://nptel.ac.in/courses/104104082/Quantumcomputing%20and%20information).
- <https://www.futurelearn.com/courses/intro-to-quantum-computing>.

### COs/POs/ PSOs Mapping

COs	ProgramOutcomes(POs)												Program SpecificOutcome s(PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	-	-	-	-	-	-	2	2	-	3	2	3
2	3	2	2	-	-	-	-	-	-	2	2	-	3	2	3
3	3	2	2	-	-	-	-	-	-	2	2	-	3	2	3
4	3	2	2	-	-	-	-	-	-	2	2	-	3	2	3
5	3	2	2	-	-	-	-	-	-	2	2	-	3	2	3

CorrelationLevel:1-Low,2-Medium,3-High