

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

Department of Computer Science and Engineering

Minutes of 4th BoS Meeting (UG)

Venue

Centre V Lab,

Department of CSE,

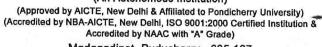
Sri Manakula Vinayagar Engineering College

Date & Time

12th Feb, 2022 at 01:30 P.M

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SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE (An Autonomous Institution)





Madagadipet, Puducherry - 605 107

Department of Computer Science and Engineering

Minutes of 4th Board of Studies Meeting (UG)

The Fourth Board of Studies meeting of Computer Science and Engineering Department was held on 12th February 2022 at 01:30 P.M at Centre V lab, Department of CSE, Sri Manakula Vinayagar Engineering College, with Head of the Department in the Chair.

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. N. Danapaquiame, Professor and Head, Department of CSE, SMVEC	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, Department of Computer Science and Engineering, Saveetha University, Chennai.	Subject Expert (Academic Council Nominee)
5	S.Diwahar, 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. K.Premkumar, Professor, Department of CSE, SMVEC.	Internal Member
8	Dr.E.Kodhai, Professor, Department of CSE, SMVEC.	Internal Member
9	Dr.P.lyappan, Associate Professor, Department of CSE, SMVEC	Internal Member
10	Dr.V.Vijayakumar, Associate Professor, Department of CSE, SMVEC	Internal Member
11	Dr.M.A.Ishrath Jahan Associate Professor, Department of English, SMVEC	Internal Member
12	Dr.T.Jayavarthanan Professor, Department of Physics, SMVEC	Internal Member
13	Dr.S.Deepa, Professor, Department of Chemistry, SMVEC	Internal Member
14	Prof.K.Raja, Asst. Prof., Department of Mathematics, SMVEC	Internal Member



Department of CSE - Fourth BoS Meeting



Agenda of the Meetir	
Item No. : BoS/ UG/ CSE 4.1	Confirmation of minutes of 3rd BoS meeting held on 21.08.2021and the Curriculum Structure of B.Tech Computer Science and Engineering of R-2019 and R-2020 Regulations – for any Modifications.
Item No. : BoS/ UG / CSE 4.2	To discuss about any updation needed in B.Tech. Degree curriculum and the syllabus modification for VII and approve the VIII semesters under Autonomous Regulations 2019 and the students admitted in the AY 2019-20.
Item No. : BoS/ UG / CSE 4.3	To discuss about any updation needed in B.Tech. Degree curriculum and syllabus modification for VI and VII semesters under Autonomous Regulations 2020 and the students admitted in the AY 2020-21.
	Consideration of offering of Professional and Open electives in VI semester students admitted in the Academic Year 2019-20. The students should have to register one professional and one open elective as per Regulations 2019.

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

Offering Department	Course Code / Course Name	Number of Students registered	
CSE	Service Oriented Architecture (U19CSE62)	60	
CSE	Agile Development (U19CSE63)	60	
CSE	Embedded Systems (U19CSE64)	56	
	Total Number of Students	176	

Item No.: BoS/ UG / **CSE 4.4**

> b) The students are registered the following Open electives in VI semester which is offered by other department

Offering Department	Course Name	Number of Students registered
MBA	U19HSO61:Product Development and Design	176
Ψ.	Total Number of Students	176

Item No.: BoS/ UG / **CSE 4.5**

To discuss and recommend the panel of examiners to the Academic

Council

Item No.: BoS/ UG /

Any other item with the permission of chair.

CSE 4.6

Minutes of the Meeting

Dr.N. Danapaquiame, 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 4.1

Confirmation of minutes of 3rd BoS meeting held on 21.08.2021 and the Curriculum Structure of B.Tech Computer Science and Engineering of R-2019 and R-2020 Regulations – for any Modifications.

Chairman, BoS, apprised the minutes of 3rd BoS, its implementation and then it is confirmed with the approval in 3rd BoS meeting for the incorporation of minor revisions needed as mentioned below.

S. No	as mentione Regulation	Semester	Course Name with Code	Unit	Suggestions given and Changes incorporated
1	R2020	ent souses. Co merces executive To be retained is in sufficient on additive	Environmental Science / U20CSM202	B teso	Since the Environmental Science is the mandatory course and it is common to all departments, the college recommended updating the existing syllabus according to AICTE syllabus for the students admitted in the AY 2021-22 onwards.
801	"i ni ered	fien doc	T Bovenge's bring III - equixante	ieten Ini.l _i e	(Environmental Science course updated and enclosed in Annexure - I)

The above correction was incorporated and approved by BoS members in 4th BoS meeting, and the details are enclosed in Annexure - I.

Item No.: BoS/ UG/ CSE 4.2

To discuss about any updation needed in B.Tech. Degree curriculum and the syllabus modification for VII and approve the VIII semesters under Autonomous Regulations 2019 and the students admitted in the AY 2019-20.

The B.Tech. Degree curriculum and syllabus modification for VII and approval of VIII semesters under Autonomous Regulations 2019 for the B.Tech programme and the students admitted in the AY 2019-20 were discussed and recommended with the following modifications.

S. No	Regulation	Semester	Subject Name with code	Unit	Particulars			
1	R-19	VIII	Professional Elective V- Ethical Hacking	II,IV , V	The UNIT II, IV and V are light weight and can be modify to increase its weight.			
3	R-19	VfII	Professional Elective V- Pervasive Computing	ı, ıı, ııı, ı∨, <u>∨</u>	The whole syllabus is light weight. Include some more advanced topics in pervasive computing			
4	R-19	VIII	Professional Elective V - Cyber Security And Digital Forensics	I, II, III, IV	The Unit I, II, III, IV is heavy weight and need to be reduced it.			



5	R-19	VIII	Professional Elective VI - Trust Computing	II	Change the course name from "Trust Computing" to "Trusted Computing". Rework CO-PO mapping. Suggested to reduce the content of Unit II.
-6	R-19	VIII	Professional Elective VI - Client Server		Recommended to include new types of servers in Unit III. Change the title of the Unit III to "Servers".
	. Valdabese		Computing	V	Reduce the title of the Unit V.
	egalloo er		Cent lie		Rework CO-PO mapping.
7	R-19	VIII	Professional Elective VI - Human Computer Interaction	norivn3 hadt 8006U	Text books should be updated to latest version. Change it and map the syllabus according to the text book.

The above correction was incorporated and approved by BoS members in 4th BoS meeting, and the details are enclosed in Annexure - II.

Item No.: BoS/ UG/ CSE 4.3

To discuss about any updation needed in B.Tech. Degree curriculum and syllabus modification for VI and VII semesters under Autonomous Regulations 2020 and the students admitted in the AY 2020-21.

The B.Tech. Degree curriculum and syllabus modification for VI and VII semesters under Autonomous Regulations 2020 for the B.Tech programme and the students admitted in the AY 2020-21 were discussed and recommended without any modifications.

Item No.: BoS/ UG/ CSE 4.4

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

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

Offering Department	Course Code / Course Name -	Number of Students registered		
CSE	Service Oriented Architecture (U19CSE62)	60		
CSE	Agile Development (U19CSE63)	60		
CSE	Embedded Systems (U19CSE64)	56		
MARKET	Total Number of Students	176		

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Department of CSE~ Fourth BoS Meeting

b) The students are registered the following *Open electives* in VI semester which is offered by other department

Offering Department	Course Name	Number of Students registered
MBA	U19HSO61:Product Development and	176
WIDI	Design Total Number of Students	176

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

Item No.: BoS/ UG/ CSE 4.5

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 4.6

Any other item with the permission of chair.

There are 9 Certification Courses in Regulation 2019. Along with that the new certificate course Cloud Computing need to be included as it gives exposure in AWS and AZURE which is needed and trending technology for the students. Therefore, it is presented and discussed with BoS members. It was approved and recommended by BoS members.

The meeting for the above Agenda regarding B.Tech – Computer Science and Engineering was concluded by 2:30 pm with by **Dr. N. Danapaquiame**, Chairman-BoS and Head of Department, Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College.

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SI.No	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	Dr. N.Danapaquiame Professor & Head, Department of CSE, SMVEC	Chairman	N.BY
Extern	al Members		
2	Dr. S. R. Balasundaram, Professor and Head Department of Computer Applications, National Institute of Technology, Trichy.	Subject Expert (Pondicherry University Nominee)	s. R. Balasundaram
3	Dr. Chokkalingam Subramanian, Professor & Head, Department of Information Technology, Saveetha University, Chennai.	Subject Expert (Academic Council Nominee)	SP. choukalingan).
4	Dr.S.Udhayakumar, Professor, Department of Computer Science and Engineering, Rajalakshmi College of Engineering, Chennai.	Subject Expert (Academic Council Nominee)	Sumy Ame I
, 5	S.Diwahar, M.Tech., Senior Engineer, Dell Technologies, Bangalore	Representative from Industry	S. Diwahar
6	R.Sakthi Murugan, Director, Interjet India Pvt. Ltd., Puducherry.	Postgraduate Alumnus (nominated by the Principal)	discourse of the second
Interna	al Members	17 (1.7) 80 m s 3 - 3 -	tent and the second
7	Dr. K. Premkumar Professor, Department of CSE, SMVEC.	Internal Member	1. 11
8	Dr.E.Kodhai, Professor, Department of CSE, SMVEC.	Internal Member	E. WIL
9	Dr.P.lyappan, Associate Professor Department of CSE, SMVEC	Internal Member	3 M D
10	Dr.V.Vijayakumar, Associate Professor, Department of CSE, SMVEC	Internal Member	V. (Nursumal)
Co-op	ted Members		
11	Dr.M.A.Ishrath Jahan Associate Professor, Department of English, SMVEC	Internal Member	D.M. A. JIMY 41312
12	Dr.T.Jayavarthanan Professor, Department of Physics, SMVEC	Internal Member	4/3/22
13	Dr.S.Deepa Professor, Department of Chemistry, SMVEC	Internal Member	O _f
14	Prof.K.Raja, Assistant Professor, Department of Mathematics, SMVEC	Internal Member	2-147



ANNEXURE I

r-ph

ENVIRONMENTAL SCIENCE

L T P C Hrs
2 0 0 - 30

We as human being are not an entity separate from the environment around us rather we are a constituent seamlessly integrated and co-exist with the environment around us. We are not an entity so separate from the environment that we can think of mastering and controlling it rather we must understand that each and every action of ours reflects on the environment and vice versa. Ancient wisdom drawn from Vedas about environment and its sustenance reflects these ethos. There is a direct application of this wisdom even in modern times. Idea of an activity based course on environment protection is to sensitize the students on the above issues through following two types of activities.

(a) Awareness Activities:

- i. Small group meetings about water management, promotion of recycle use, generation of less waste, avoiding electricity waste
- ii. Slogan making event
- iii. Poster making event
- iv. Cycle rally
- v. Lectures from experts

(b) Actual Activities:

- i. Plantation
- ii. Gifting a tree to see its full growth
- iii. Cleanliness drive
- iv. Drive for segregation of waste
- v. To live some big environmentalist for a week or so to understand his work
- vi. To work in kitchen garden for mess
- vii. To know about the different varieties of plants
- viii. Shutting down the fans and ACs of the campus for an hour or so

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Annexure IT

(Semester VIII - Curriculum and Syllabi of R-2019)

		SEMESTER – VIII (R-2019 Regulations)		-
SI. No	Course Code	Course Title		
Theory				-
1	U19CST81	Block chain and Cryptography		
2	U19CSE8X	Professional Elective – V	*	
3	U19CSE8X	Professional Elective – VI	-	
Practica	ı			10
4	U19CSP81	Entrepreneurship Management		
Project	Work	7		1
5	U19CSW81	Project phase – II	,	
Employ	ability Enhancer	ment Course		4
6	U19CSS81	Skill Development Course 10: NPTEL / MOOC -II		wije.

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U19CST81

BLOCKCHAIN AND CRYPTOGRAPHY



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 proofof-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. Cryptography: Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof.

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 Bit coin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy. Applications: Internet of Things, Medical Record Management System, Domain Name Service and future of Block chain.

UNIT IV INTRODUCTION TO CRYPTOGRAPHY

(9 Hrs)

Introduction to Cryptography, Security Threats, Vulnerability, Active and Passive attacks-Dimensions of Cryptography, Classical Cryptographic Techniques - Block Ciphers (DES, AES): Feistal Cipher Structure, Simplifies 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

- 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,1st 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

- 4,	Program Outcomes (POs)										Program Specific Outcomes (PSOs)				
co's	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
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Correlation Level: 1 - Low, 2 - Medium, 3 - High



U19CSP81 ENTREPRENEURSHIP MANAGEMENT

L T P C Hrs
0 0 2 1 45

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: ENTRPRENEURIAL 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. (2010). Small business and entrepreneurship. Financial Times/Prentice Hall.
- Scarborough, N. M. (2011). Essentials of entrepreneurship and small business management. publishing as Prentice Hall, One Lake Street, Upper Saddle River, New Jersey 07458..

- 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
- https://bscdesigner.com/8-entrepreneurial-kpis.htm
- https://www.inc.com/ilya-pozin/5-problems-most-entrepreneurs-face.html
- https://www.inc.com/jessica-stillman/how-to-network-with-super-successful-people.html
- https://www.entrepreneur.com/article/251603
- https://seraf-investor.com/compass/article/understanding-crowdfunding

COs/POs/PSOs Mapping

					Prog	ram O	utcom	es (PO	s)				Prog	gram Sp comes (ecific PSOs)
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5	2	Z													

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

Course Objectives

- To make literature survey.
- To identify problem definition.
- To build a project design.
- To carry out project implementation.
- To perform project testing and documentation.

Course Outcomes

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

- CO1 Use the techniques and skills for the project. (K3)
- CO2 Identify, formulate, and solve engineering problems.(K3)
- CO3 Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health care, safety and sustainability (K4)
- CO4 Develop presentation skills. (K4)
- CO5 Develop project management skills. (K4)

Exercises

The project group is required to do the following

- · literature survey,
- Problem formulation
- Forming a methodology of arriving at the solution of the problem.
- · Documentation of each step

Reference Books

Papers published in reputed journals, conferences related to the project

COs/POs/PSOs Mapping

CO's					Progr				•				Outo	ram Sp omes (F	1-020
	PO1	PO2	PO3	PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO									PSO1	PSO2	PSO3
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5	2	3	2	2	3	-	-		-	-	3	3	2	2	3
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Correlation Level: 1-Low, 2-Medium, 3- High

U19CSS81

SKILL DEVELOPMENT COURSE 10 (NPTEL / MOOC - II)

L T P C Hrs
0 0 0 - 30

Student should register online courses like MOOC / SWAYAM / NPTEL etc. approved by the Department committee comprising of HoD, Programme Academic Coordinator, Class advisor and Subject Experts. Students have to complete the relevant online courses successfully. The list of online courses is to be approved by Academic Council on the recommendation of HoD at the beginning of the semester if necessary, subject to ratification in the next Academic council meeting. The Committee will monitor the progress of the student and recommend the grade (100% Continuous Assessment pattern) based on the completion of course / marks secured in online examinations. The marks attained for this course is not considered for CGPA calculation.

PROFESSIONAL ELECTIVES - V

ETHICAL HACKING

L T P C Hrs 3 - 3 45

Course Objectives

- · Investigate how to attack a computer system.
- Explore low tech hacking techniques Investigate web-based hacking.
- Explore wireless network hacking.
- Investigate Trojans and other attacks.
- Perform penetration testing.

Course Outcomes

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

- CO1 Identify and analyse the stages an ethical hacker requires to take in order to compromise a target system.
- CO2 Identify tools and techniques to carry out a penetration testing.
- CO3 Critically evaluate security techniques used to protect system and user data.
- **CO4** Demonstrate systematic understanding of the concepts of security at the level of policy and strategy in a computer system.
- CO5 Develop a practical understanding of the current cyber security issues.

UNIT I (9 Hrs)

Ethical Hacking Introduction - Attack Scenarios - Emulating Cyber Attacks - Cyber Laws - Programming (C, Python, Assembly Language Basics, Computer Memory)

UNIT II (9 Hrs)

Scope of Hacking Red Team Operations - Purple Team Operation - Bug Bounty Programs- Vulnerability Data Resources - Exploit Databases - Network Sniffing - Types of Sniffing - Promiscuous versus Nonpromiscuous Mode - MITM Attacks - ARP Attacks - Denial of Service Attacks - Hijacking Session with MITM Attack.

UNIT III (9 Hrs)

System Exploitation-Basic System Exploits - Windows Exploits - Powershell Exploitation - Web Application Exploitation

UNIT IV (9 Hrs)

Malware Analysis Study of Malware - Mobile Malware -Ransomware.- Penetration Test - Vulnerability Assessments versus Penetration Test - Pre-Engagement - Rules of Engagement -Penetration Testing Methodologies - OSSTMM - NIST - OWASP.

UNIT V (9 Hrs)

Internet-of-Things Introduction - Embedded Devices - Exploitation - Wireless Hacking - Introducing Aircrack-Cracking the WEP - Cracking a WPA/WPA2 Wireless Network Using Aircrack-ng - Evil Twin Attack - Causing Denial of Service on the Original AP - Web Hacking - Attacking the Authentication - Brute Force and Dictionary Attacks.

Text Books

- 1. Allen Harper, Shon Harris, Jonathan Ness, Chris Eagle, Gideon Lenkey, and Terron Williams, Gray Hat Hacking The Ethical Hacker's Handbook, McGraw-Hill, 5th Edition, 2018.
- 2. Kimberly Graves, "Certified Ethical Hacker", Wiley India Pvt Ltd, 2010.
- 3. Rafay Baloch "Ethical Hacking and Penetration Testing Guide", CRC Press, 2014.

B.Tech. Computer Science and Engineering

N. A. C.

- 1. Sean-Philip Oriyano, Hacker Techniques, Teols, and Incident Handling, Jones and Bartlett Learning LLC, 3rd Edition, 2018.
- 2. Michael T. Simpson, "Hands-on Ethical Hacking & Network Defense", Course Technology, 2010.
- 3. CEH official Certified Ethical Hacking Review Guide, Wiley India Edition, 2007.
- 4. Rajat Khare, "Network Seuciryt and Ethical Hacking", Luniver Press, 2006.
- 5. Thomas Mathew, "Ethical Hacking", OSB publishers, 2003.

Web Resources

- 1.https://freedomhacker.net > Internet Security.
- 2.https://www.guru99.com/c-sharp-tutorial.html.
- 3. https://www.w3schools.in/ethical-hacking/
- 4. https://www.javatpoint.com/ethical-hacking-tutorial
- 5.https://www.tutorialspoint.com/ethical_hacking/index.htm

=COs/POs/PSOs Mapping

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

S. P.

DEEP LEARNING

L T P C Hrs 3 - - 3 45

Course Objectives

- To present the mathematical, statistical and computational challenges of building neural networks
- To study the concepts of deep neural networks
- To introduce dimensionality reduction techniques
- To enable the students to know deep learning techniques to support real-time applications
- · To examine the case studies of deep learning techniques

Course Outcomes

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

- CO1 Understand basics of deep learning
- CO2 Implement various deep learning models
- CO3 Realign high-dimensional data using reduction techniques
- CO4 Analyze optimization and generalization in deep learning
- CO5 Explore the deep learning applications

UNIT I INTRODUCTION

(9 Hrs)

Introduction to Machine Learning - Linear Models: SVMs and Perceptrons, Logistic Regression - Introduction to Neural Nets: Shallow Network Computes - Training a network: loss functions, Back Propagation and Stochastic Gradient Descent- Neural Networks as universal function approximates.

UNIT II DEEP NEURAL NETWORKS

(9 Hrs)

History of Deep Learning- A Probabilistic Theory of Deep Learning- Backpropagation and regularization, batch normalization- VC Dimension and Neural Nets-Deep Vs Shallow Networks- Convolutional Networks- Generative Adversarial Networks (GAN), Semi-supervised Learning.

UNIT III DIMENTIONALITY REDUCTION

(9 Hrs)

Linear (PCA, LDA) and manifolds, metric learning - Auto encoders and dimensionality reduction in networks Convolutional Neural Networks: Introduction to Convnet - Architectures – AlexNet, VGG, Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyperparameter optimization.

UNIT IV OPTIMIZATION ON DEEP LEARNING

(9 Hrs)

Optimization in deep learning— Non-convex optimization for deep networks- Stochastic Optimization-Generalization in neural networks- Spatial Transformer Networks- Recurrent networks, LSTM - Recurrent Neural Network Language Models- Word-Level RNNs & Deep Reinforcement Learning - Computational & Artificial Neuroscience.

UNIT V CASE STUDY AND APPLICATIONS

(9 Hrs)

Imagenet - Detection - Audio WaveNet - Vision-Speech - Natural Language Processing Word2Vec - Joint Detection - BioInformatics - Face Recognition - Scene Understanding - Gathering Image Captions.

Text Books

- 1. "Introduction to Deep Learning" Eugene Charniak, MIT Press January 2019.
- 2. Neural Networks and Deep Learning", Charu C. Aggarwal, Springer, 2018
- 3. Ian Goodfellow, Yoshua Bengio, Aaron Courville, Deep Learning, MIT Press, 2016.

NA

- 1. Deep Learning: A Practitioner's Approach Paperback 1 by Josh Patterson, Adam Gibson September 2017.
- 2. Deep Learning (Adaptive Computation and Machine Learning series) Hardcover 18 November 2016 by Ian Goodfellow, Yoshua Bengio, Aaron Courville.
- 3. Cosma Rohilla Shalizi, Advanced Data Analysis from an Elementary Point of View, 2015.
- 4. Michael Nielsen, Neural Networks and Deep Learning, Determination Press, 2015.
- 5. Deng & Yu, Deep Learning: Methods and Applications, Now Publishers, 2013.

Web Resources

- 1. http://deeplearning.net/
- 2. https://www.guru99.com/deep-learning-tutorial.html.
- 3. https://en.wikipedia.org/wiki/Deep_learning
- 4. https://www.ibm.com/cloud/learn/deep-learning
- 5. https://www.deeplearning.ai/

COs/POs/PSOs Mapping

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



MOBILE COMPUTING

L T P C Hrs 3 - - 3 45

Course Objectives

- To understand the typical mobile networking infrastructure through a popular GSM
- To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer
- To understand the database issues in mobile environments & data delivery models.
- To understand the ad hoc networks and related concepts.
- To understand the platforms and protocols used in mobile environment.

Course Outcomes

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

- CO1 Think and develop new mobile application.
- CO2 Take any new technical issue related to this new paradigm and come up with a solution(s).
- CO3 Develop new ad hoc network applications and/or algorithms/protocols
- CO4 Understand & develop any existing or new protocol related to mobile environment
- CO5 Understand the current issues in broadcasting and synchronization of data.

UNIT I MOBILE COMMUNICATON

(9 Hrs)

Introduction: Mobile Communications, Mobile Computing – Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices. GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS, CSHSD, DECT.

UNIT II MEDIUM ACCESS CONTROL

(9 Hrs)

(Wireless) Medium Access Control (MAC): Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA, Wireless LAN/(IEEE 802.11)

Mobile Network Layer: IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP

UNIT III Mobile Transport Laver

(9 Hrs)

Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks. Database Issues: Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

UNIT IV DATA DISSEMINATION AND SYNCHRONIZATION

(9 Hrs)

Data Dissemination and Synchronization: Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination, Broadcast Models, Selective Tuning and Indexing Methods, Data Synchronization – Introduction, Software, and Protocols

UNIT V

(9 Hrs)

Mobile Adhoc Networks (MANETs): Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc., Mobile Agents, Service Discovery.

Protocols and Platforms for Mobile Computing: WAP, Bluetooth, XML, J2ME, Java Card, Palm OS, Windows CE, Symbian OS, Linux for Mobile Devices, Android.

Text Books

- 1. Jochen Schiller, -Mobile Communications II, PHI, Second Edition, 2013.
- 2. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772.

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- 1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2004.
- 2. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2002, ISBN 0471419028.
- 3. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, Oct 2004.

Web Resources

- 1. https://freedomhacker.net Mobile computing.
- 2. https://www.guru99.com/c-sharp-tutorial.html.
- 3. http://developer.android.com/index.html
- 4. http://gecnilokheri.ac.ifr/GPContent/MOBILE%20COMPUTING%20UNIT-II%206th%20Sem%20CSE-converted.pdf

COs/POs/PSOs Mapping

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

P. P. C.

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.

Text Books

- JochenBurkhardt, Horst Henn, Stefan Hepper, Thomas Schaec& Klaus Rindtorff. --- Pervasive Computing Technology and Architecture of Mobile Internet Applications, Addision 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

- 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", Ist 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/PSOsMapping

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



U19CSE84 CYBER SECURITY AND DIGITAL FORENSICS

L T P C Hrs
3 0 0 3 45

Course Objectives

- To define the fundamental ideas behind Cyber Security.
- To define the fundamental ideas behind Cybercrime and cyber Investigations.
- To explain the basic ideas behind Digital Forensics.
- To relate windows systems and artifacts, Linux systems and artifacts.
- To Define Current Computer Forensics Tools.

Course Outcomes

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

- CO1 Explain the core concepts of the cyber security including systems vulnerability scanning and network defence tools.
- CO2 Explain the core concepts of the Cybercrime and cyber Investigations.
- CO3 Illustrate the fundamental concepts of Digital Forensics and demonstrate their use Cyber Security.
- CO4 Relate windows systems and artifacts, Linux systems and artifacts.
- CO5 Advancing towards a Current Computer Forensics Tools.

UNIT I SYSTEMS VULNERABILITY SCANNING AND NETWORK DEFENCE TOOLS

Overview of vulnerability scanning - Networks Vulnerability Scanning - Network-Sniffers and Injection tools = Firewalls and Packet Filters: Firewall Basics - Packet Filter Vs Firewall - Stateless Vs Stateful Firewalls - Network Address Translation (NAT) and Port Forwarding - Basic of Virtual Private Networks - Linux Firewall - Windows Firewall.

UNIT II INTRODUCTION TO CYBER CRIME, LAW AND CYBER CRIME INVESTIGATION (9 Hrs

Cyber Crimes - Types of Cybercrime - Traditional Problems Associated with Computer Crime - Introduction to Incident Response - Realms of the Cyber world - Recognizing and Defining Computer Crime - Contemporary Crimes - Contaminants and Destruction of Data - Indian IT ACT 2000 - password Cracking - Keyloggers and Spyware - Virus and Warms - Trojan and backdoors...

UNIT III DIGITAL FORENSIC

(9 Hrs)

(9 Hrs)

Computer forensics and investigations as a profession - Understanding computer forensics - Understanding case laws - Developing computer forensics resources - Preparing for computer investigations - Understanding law enforcement agency investigations - Following the legal process - Understanding corporate investigations - Establishing company policies - Displaying warning Banners.

UNIT IV WINDOWS SYSTEMS AND ARTIFACTS, LINUX SYSTEMS AND ARTIFACTS (9 Hrs)

Windows Systems and Artifacts: Introduction - Windows File Systems - File Allocation Table - New Technology File System - File System Summary - Registry - Event Logs - Prefetch Files - Shortcut Files - Windows Executables - Linux Systems and Artifacts: Introduction - Linux File Systems - File System Layer - File Name Layer - Metadata Layer - Data Unit Layer - Journal Tools - Deleted Data - Linux Logical Volume Manager - Linux Boot Process and Services.

UNIT V Current Computer Forensics Tools

(9 Hrs)

Evaluating Computer Forensics Tool Needs - Types of Computer Forensics Tools - Tasks Performed by Computer Forensics Tools - Tool Comparisons - Other Considerations for Tools - Computer Forensics Software Tools - Command-Line Forensics Tools - UNIX/Linux Forensics Tools - Other GUI Forensics Tools - Computer Forensics Hardware Tools - Forensic Workstations - Using a Write-Blocker.



Text Books

- 1. John Sammons, "The Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics", Syngress, 2nd edition, 2014
- 2. Mike Shema, "Anti-Hacker Tool Kit", Publication Mc Graw Hill Indian Edition, 2014.
- 3. Cory Altheide, Harlan Carvey, "Digital Forensics with Open Source Tools", Syngress imprint of Elsevier.2011.

Reference Books

- Gerard Johansen ,'Digital Forensics and Incident Response: Incident response techniques and procedures to respond to modern cyber threats', Packt Publishing Limited; 2nd edition (29 January 2020)
- 2. William Oettinger, Learn Computer Forensics: A beginner's guide to searching, analyzing, and securing digital evidence', Packt Publishing Limited, 2020
- 3. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina God bole and Sunit Belpure, Publication Wiley.2011.
- 4. Bill Nelson, Amelia Phillips, Christopher Steuart, "Guide to Computer Forensics and Investigations", Fourth Edition, Course Technology.2009.
- 5. Angus M.Marshall, "Digital forensics: Digital evidence in criminal investigation", John Wiley and Sons, 2008.

Web Resources

- 1. https://www.britannica.com/topic/cybercrime
 - 2. https://www.guru99.com/digital-forensics
 - 3. https://resources.infosecinstitute.com/computer-forensics-tools
 - 4. https://resources.infosecinstitute.com/topic/computer-forensics-tools
 - 5. https://www.utc.edu/document/71921

COs/POs/PSOs Mapping

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PROFESSIONAL ELECTIVES - VI

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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, Quantum search algorithms – Quantum counting – Speeding up the solution of NP – complete problems – Quantum Search for an unstructured database.

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, Limitations of the Quantum operations formalism, Distance Measures for Quantum information

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

- Micheal A. Nielsen and Issac L. Chiang, "Quantum Computation and Quantum Information", Cambridge University Press, Fint South Asian Edition, 2002.
- 2. Bennett C.H., Bernstein E., Brassard G., Vazirani U., The strengths and weaknesses of quantum computation. SIAM Journal on Computing.
- 3. Phillip Kaye Raymond Laflamme Michele Mosca, "An Introduction to Quantum Computing", Oxford University Press, 2007.

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

Web Resources

- 1. https://nptel.ac.in/courses/115101092/Quantumcomputation.
- 2. https://nptel.ac.in/courses/104104082/Quantumcomputing and information.
- 3. https://www.futurelearn.com/courses/intro-to-quantum-computing.

COs/POs/ PSOs Mapping

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



U19CSE86

TRUSTED COMPUTING

Hrs 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

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 TCPA

(9Hrs)

Programming Interfaces To TCG. Experimenting with TCPA/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

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

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.

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. Challener 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
- 3. https://www.techopedia.com/definition/16523/trusted-computing
- 4. https://webstore.ansi.org/industry/software/encryption-cryptography
- 5. https://csrc.nist.rip/Projects/Cryptographic-Standards-and-Guidelines.

COs/POs/PSOs Mapping

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



U19CSE87

CLIENT SERVER COMPUTING

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-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.

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

- 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.
- Dawana Travis Dewire, "Client/Server Computing", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2003.



- 1. Dr. S.T. Deepa, Mrs.T. Yegammai, "Client Server Computing", Charulatha Publications Private Limited,
- 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

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

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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
- Todemonstrate 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

(9Hrs)

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

(9Hrs)

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

(9Hrs

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

Text Books

- Interaction Design: Beyond Human-Computer Interaction by Helen Sharp & Jenny Preece & Yvonne Rogers 2019.
- 2. Interaction Design Beyond Human-Computer Interaction, 4th Edition, 2016
- 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 HeI, UX and Interaction Design. by David R. Benyon 2013.
- 5. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", 3rd Edition, Pearson Education, 2004.

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

Web Resources

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

COs/POs/PSOs Mapping

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

LT PC Hrs

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Course Objectives

- To learn the syntax and semantics of Natural Language Processing.
- To apply transformations morphology and part of speech tagging
- To design various transforming models.
- To learn the syntax parsing techniques.
- To acquire the knowledge of applications of NLP.

Course Outcomes

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

- CO1 Outline Natural Language Processing tasks in syntax, semantics and pragmatics.
- CO2 Explain morphology and Part of Speech Tagging.
- CO3 Explain various Transformations based Models.
- CO4 Demonstrate the usage of syntax parsing techniques.
- CO5 Explain the use of semantic analysis methods and summarize the application of NLP.

UNIT I INTRODUCTION OF NLP

(9 Hrs)

Natural Language processing tasks in syntax, semantics and pragmatics—Issues- Applications-The role of machine learning-Probability Basics—Information theory— Collocations- N-gram Language Models —Estimating parameters and smoothing- Evaluating language models

UNIT II MORPHOLOGY AND PART OF SPEECH TAGGING

(9 Hrs)

Linguistic essentials-Lexical syntax – Morphology and Finite State Transducers –Part of speech Tagging -Rule-Based Part of Speech Tagging -Markov Models - Hidden Markov Models-Transformation based Models-Maximum Entropy Models –Conditional Random Fields.

UNITIII SYNTAX PARSING

(9 Hrs)

Syntax Parsing-Grammar formalisms and tree banks –Parsing with Context Free Grammars- Features and Unification –Statistical parsing and probabilistic CFGs (PCFGs)Lexicalized PCFGs

UNIT IV SEMATIC ANALYSIS

(9 Hrs)

Representing Meaning – Semantic Analysis - Lexical semantics – Word-sense disambiguation – Supervised – Dictionary based and Unsupervised Approaches – Compositional semantics-Semantic Role Labeling and Semantic Parsing – Discourse Analysis.

UNIT V APPLICATIONS OF NLP

(9 Hrs)

Named entity recognition and relation extraction- IE using sequence labelling - Machine Translation(MT)-Basic issues in MT - Statistical translation-word alignment - phrase-based translation—Question Answering.

Text Books ___

- 1. NitinIndurkhya, Fred J. Damerau "Handbook of Natural Language Processing", Second Edition, CRC Press, 2010.
- 2. Steven Bird, Ewan Klein and Edward Lopper, "Natural Language Processing with Python", O'Reilly Media, First Edition, 2009.
- 3. James Allen, "Natural Language Understanding", Pearson Education, 2003.

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 Roland R. Hausser, "Foundations of Computational Linguistics: Human- Computer Communication in Natural Language", Paperback, MIT Press, 2011.

 Pierre M.Nugues, "An Introduction to Language Processing with Perl and Prolog: An Outline of Theories, Implementation, and Application with Special Consideration of English, French, and German(Cognitive Technologies)", Soft cover reprint, 2010.

3. Steven Bird, Ewan Klein and Edward Loper, "Natural Language Processing with Python", O'Reilly Media, First Edition, 2009.

 Daniel Jurafsky and James H. Martin, "Speech and Language Processing", Second Edition, Prentice Hall, 2008.

 C. Manning and H. Schutze, "Foundations of Statistical Natural Language Processing", MIT Press. Cambridge, MA:, 1999.

Web Resources

- 1. https://nptel.ac.in/courses/106/105/106105158/
- 2. https://www.kaggle.com/learn/natural-language-processing
- 3. https://www.javatpoint.com/nlp
- 4. https://www.coursera.org/in
- 5. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-863j-natural-language-and-the-computer-representation-of-knowledge-spring-2003/

COs/POs/PSOs Mapping

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

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ANNEXURE - III



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
(Approved by AICTE, New Delhi, a Affiliated to Pondioherry University)
(Acordised by NBA-AICTE, New Delhi, 180 9001;2000 Certified Institution & Acordised by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107



Department of Computer Science and Engineering

Details of Examiners for Question Paper Setter and Evaluators

			Designation, Department	
SI.No	Name of the Examiner	Specialization	and Institution in which	Contact number and mail id
			currently working	
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-	Dr. K. RAJA	Computer Networks,	IT, Annamalai University,	rajak cdm@yahoo.co.in
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		Artificial Intelligence,	Associate .Professor / CSE	9940023373
,		Service Oriented	SRM Institute of Science	mirringanb@srmist edit in
7	Dr.B.MUKUGANAN I HAM	Architecture,	and Technology, Chennai.	
		Webservices		
			Assistant Professor /	8925122220
က	Dr. V.TAMIZHAZHAGAN	Wireless Networks	IT, Annamalai University,	<u>rvtamizh@gmail.com</u>
			Chidambaram	
			Assistant Professor / CSE,	
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			Vel Tech Rangarajan Dr.	9597739629
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			Assistant Professor / CSE,	
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9	Dr. LAKSHMI DHEVI	Compute Organization,	Sagunthala R & D institute	blakshmidhevi@veltech.edu.in
		Computer Graphics	of Science and Tecnology,	
			Chennai	



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Database Management Systems, Operating Systems	Digital Design, Computer Design, Web Technology	Java, Python, Artificial Intelligence, Data Structures	Artificial Intelligence, AR & VR, Compiler Design	Data Structures, Operating Systems	Computer Networks, Cloud Computing
Dr.MANJUNATHAN	Dr. A. RAMACHANDRAN	Dr. C. NAVANEETHAN	Dr. G. GUNASEKARAN.	Dr. AMRITHA SARAVANAN	Dr. BALAJI. N
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