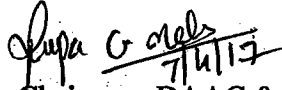


COMPUTER ENGINEERING DEPARTMENT

No. CoED/DAAC/ 018 /2017-18
Date: 07-04-2017

Note: Minutes of the meeting of DAAC

Please find herewith minutes of the meeting of Departmental Academic Advisory Committee (DAAC), held on 24/03/2017 at 15.30 hrs at Seminar room of Computer Engineering Department.


Chairman, DAAC & Head
Computer Engineering Department.

To,
The Dean (Academic)

Computer Engineering Department, SVNIT Surat - 395007
DEPARTMENTAL ACADEMIC ADVISORY COMMITTEE (DAAC)

Minutes of the meeting

24-03-2017 – 3:30 pm

Agenda Item :

- 1 : To finalize elective subjects for ensuing semester.
- 2 : To decide criteria to guide B.Tech projects for faculty.
- 3 : To decide criteria to guide M.Tech dissertation for faculty.
- 4 : To decide criteria for students going for external M.Tech Dissertation.
- 5 : To decide question paper patterns.
- 6 : To provide practical/tutorial/assignment submission information to students well in advance.
- 7 : To resolve PhD RPS committee.
- 8 : To decide B.Tech Project submission date.

The following resolutions are adopted:

Resolution 1 :

Following amendments are made in the list of elective subjects. Details of the syllabus are provided in annexure -1.

1. B.Tech. IV (Semester 7) ES-I
 - a. Addition : Security in Resource Constrained Environments and IoT (CO421)
 - b. Removal : Cloud Computing (CO411) (Shifted to B.Tech. IV 8th Sem Electives EIS-II)
2. B.Tech. IV (Semester 8) EIS-I
 - a. Addition : Secure Software Engineering (CO412)
3. B.Tech. IV (Semester 8) EIS-II
 - a. Addition : Cloud Computing (CO428) (shifted from B.Tech IV 7th Sem ES-I);
 - b. Removal : Security in Embedded Systems (CO422)

Following electives are confirmed in ensuing semester :

1. B.Tech III : EIS-1 (Elective Interdisciplinary Subject)
 - a. Information Security (CO319)
 - b. Information Theory and Coding (CO315)
2. B.Tech. IV: Elective 1 (ES-I)
 - a. Security in Resource, Constrained Environments and IoT (CO421)
 - b. Data Warehousing and Mining (CO415)
3. M.Tech. I :Elective 1
 - a. Computer Vision and Image Processing (CO611)
 - b. Advanced Database Management System (CO619)

Resolution 2 :

Following criteria is resolved for faculties to guide B.Tech projects.

1. There will be maximum 4 groups / faculty.
2. At least 1 group is mandatory for any faculty.
3. Project group may consist of maximum of 4 students.

Resolution 3 :

Following criteria is resolved for faculties to guide M.Tech dissertation.

1. There will be maximum 2 students / faculty
2. At least 1 student is mandatory for any faculty.

Resolution 4 :

Following criteria is resolved for students going for external M.Tech Dissertation.

1. The student must follow the institute norms.
2. It is compulsory for student to take one project under internal supervisor.
3. It is mandatory for student to publish at least one paper related to their dissertation work.

Resolution 5 :

Following criteria is resolved for question paper setting.

1. Tentative 25% question should be kept optional.
2. Due weightage is to be given for setting analytical and practical oriented questions.
3. Question paper and solution to be submitted in the department with distribution of marks.

Resolution 6 :

All faculties were informed to instruct the students about practical/tutorial/assignment submission schedule well in advance.

Resolution 7 :

Following RPS committee is proposed for constitution for following PhD scholars, who have completed their course work.

Sr. No.	PhD Candidate (Roll No.)	Supervisor	Chairman	Internal Examiner	External Examiner
1.	Mr. Bintu Kadhiwala (DS15CO003)	Dr. Sankita J. Patel	Dr. Sweta Shah, Asst. Professor., ECED, SVNIT	Dr. M. A. Zaveri, Assoc. Professor, CoED, SVNIT	Dr. N. M. Patel, Assoc. Professor, BVM Engg. College, Vallabh Vidyanagar
2.	Mr. Anshuman Patel (DS15CO006)	Prof. D. C. Jinwala	Dr. Y D Patil, Asst. Professor. AMD, SVNIT	Dr. U. P. Rao, Asst. Professor, CoED, SVNIT	Dr. Deven Shah, Professor, Department of I.T., Thakur College of Engineering, Mumbai.
3.	Ms. Mukti Padhya (DS15CO001)	Prof. D. C. Jinwala	Dr. Y D Patil, Asst. Professor. AMD, SVNIT	Dr. Sankita J. Patel, Asst. Professor, CoED, SVNIT	Dr. Manik Lal Das, Professor, DA-IICT, Gandhinagar, Gujarat.
4.	Mr. Nilesh Vasantrao Alone (D16CO003)	Dr. M. A. Zaveri	Dr. V. L. Manekar, Assoc. Professor CED, SVNIT	Dr. U. P. Rao, Asst. Professor, CoED, SVNIT	Dr. Asim Banerjee Professor, DA-IICT, Gandhinagar, Gujarat.
5.	Mr. Yogesh M. Kapuriya (DS15CO002)	Dr. U. P. Rao	Dr. V. L. Manekar, Assoc. Professor CED, SVNIT	Dr. M. A. Zaveri Assoc. Professor, CoED, SVNIT	Dr. Asim Banerjee, Professor, DA-IICT, Gandhinagar
6.	Mr. Vishal M. Shah (DS15CO005)	Dr. U. P. Rao	Dr. U. D. Dalal, Assoc. Professor ECED, SVNIT	Dr. Sankita J. Patel Asst. Professor, CoED, SVNIT	Dr. Mayur M. Vegad, Professor, BVM Engg. College, Vallabh Vidyanagar
7.	Mr. Bharat Arun Tidke (DS15CO007)	Dr. R. G. Mehta	Dr. J. N. Sarvaiya, Assoc. Professor. ECED, SVNIT	Dr. U. P. Rao, Asst. Professor, CoED, SVNIT	Dr. Narendrasinh Chauhan , Professor & Head, Department of I.T., A. D. Patel Institute of Tech. New Vallabh Vidyanagar
8.	Ms. Anjali S. More (DS15CO008)	Dr. D. P. Rana	Dr. Anand Darji, Asst. Professor. ECED, SVNIT.	Dr. Sankita J. Patel, Asst. Professor, CoED, SVNIT	Dr. Apurva Shah, Assoc. Professor, Dept. Comp. Sci. Engg. M. S. University, Vadodara.

Resolution 8 :

B.Tech IV final project submission date is decided to be on 9-10th May 2017.

The meeting ended with the thanks to one and all.

(Dr. K. N. Jariwala)
Secretary, DAAC

(Dr. R. G. Mehta)
Chairperson, DAAC
& HEAD, COED

Annexure 1 :

- (i) Detail syllabus : Security in Resource Constrained Environments and IoT (CO421)
(ii) Detail syllabus : Secure Software Engineering (CO412)

PERMANENT FACULTY STAFF

1	Prof. D. R. Patel	Professor	<i>(Signature)</i>
2	Prof. D. C. Jinwala	Professor	
3	Dr. M. A. Zaveri	Associate Professor	<i>(Signature)</i> 4/4/17
4	Mr. R. P. Gohil	Associate Professor	<i>(Signature)</i> 04/4/2017
5	Dr. Rupa G. Mehta	Associate Professor & Head	<i>(Signature)</i> 3/4/17
6	Dr. Krupa N. Jariwala	Assistant Professor & PG I/c	<i>(Signature)</i> 4/4/17
7	Dr. Dipti P. Rana	Assistant Professor & I/c CCC	<i>(Signature)</i>
8	Dr. Udai Pratap Rao	Assistant Professor	<i>(Signature)</i>
9	Mr. Satish Raj Goyal	Assistant Professor	<i>(Signature)</i>
10	Dr. Sankita J. Patel	Assistant Professor	<i>(Signature)</i>
11	Mr. Bhavesh N. Gohil	Assistant Professor	<i>(Signature)</i>

Computer Engineering Department

B.Tech-IV CO (7th Semester)-Scheme

CS – Core Subject	IS – Interdisciplinary Subject
ES – Elective Subject (for department only)	EIS – Elective Interdisciplinary Subject

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	CS-1 Software Engineering	CO401	5	3	1	2	100	25	50	175
2.	CS-2 Cryptography and Network Security	CO403	5	3	1	2	100	25	50	175
3.	CS-3 Principles of Programming Language	CO405	4	3	0	2	100	0	50	150
4.	Elective – I (ES)	CO4XX	4	3	1	0	100	25	0	125
5.	CS-4 Project Preliminaries	CO407	2	0	0	4	0	0	100	100
6.	CS-5 Seminar	CO409	1	0	0	2	0	0	50	50
	Total		21	12	3	12	400	75	300	775
	Total Contact Hours per week			27						

Elective - I (ES):

1	Advanced Operating Systems (CO413)	4	Embedded Systems (CO419)
2	Data warehousing and Mining (CO415)	5	Security in Resource Constrained Environments and IoT (CO421)
3	Optimization Methods (CO417)		

Detailed Syllabus

B.Tech. IV (CO) Semester – 7 (ELECTIVE - I)	L	T	P	C
CO421: SECURITY IN RESOURCE CONSTRAINED ENVIRONMENTS AND IOT (ELECTIVE - I)	3	1	0	4

<ol style="list-style-type: none"> 1. Introduction to Embedded Security & discussion of the syllabus, study materials, Review of Security Basics, Services & Mechanisms, Security Requirements in Embedded Systems. Design Challenges in Security for Embedded Systems, Security Gap, Typical Generic Security Threats in Embedded Systems 2. Introduction to Wireless Sensor Networks as Embedded Systems, evolution of Human Computer Interfaces, Ubiquitous computing, Pervasive Computing, The illustrative sensor motes, typical configurations, Deployment models and issues, typical applications. 3. The motivation for the Security Issues, Security in Wireless Sensor Networks, Typical Attacks and Countermeasures. The Denial of Service Attacks on Wireless Sensor Networks. 4. Hands-on on the TinyOS operating environment, the nesC programming language. The TOSSIM simulator. The Avrora Emulator. The TinySec environment and its files. Hands-on on Contiki Cooja simulator. 5. Motivation for Secure Data Aggregation in Wireless Sensor Networks. End-to-end and Hop-by-hop Secure Data Aggregation. Issues. 6. The Design of a Hop-by-hop Link Layer Security protocol in Wireless Sensor Networks. Design Issues viz. Security Issues, Performance Issues, Ciphers, Initialization Vector, Message Authentication Code, Authenticated Encryption Modes. Investigating Replay attacks in Link Layer Security Architectures and typical mitigation approaches. The Replay Protection Algorithms continued. Flexibly Configurable Link Layer Security Architecture for Wireless Sensor Networks. 	(21+7 Hours)
<ol style="list-style-type: none"> 7. The End-to-End Secure Data Aggregation in Wireless Sensor Networks. The concept of Fully Homomorphic Encryption. Using the Classical Homomorphic Encryption algorithms for privacy in WSNs. Different approaches to offer data integrity viz. using conventional MAC - Aggregate MAC, Homomorphic MAC Hybrid Secure Data Aggregation. Malleability Resilient Concealed Data Aggregation. 8. Ciphers in the resource constrained devices. Lightweight Ciphers for RFID Devices. The AES Cipher working and Demo in WSNs. Assignment on AES Encryption Decryption routines. The TEA Cipher operation, Demo of Executing RC5 and XXTEA ciphers in TinySec environment. Case study of the ciphers – representative ciphers from the list viz. TEA, XXTEA, RC5, miniAES, PRESENT, Simon, Speck – their Encryption, Decryption and Key Management Routines. Doing hand computation of the intermediate ciphertext at each stage in all these ciphers. 	(21+7 Hours)

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<p>9. Public Key Infrastructure in Wireless Sensor Networks, The TinyPK protocol as a case study. Attribute Based Encryption and its motivation for Embedded Systems.</p> <p>10. The Internet of Things. Architecture. Constituent Elements. The Security and Privacy Issues in IoT Systems. Overview of the IoT Protocols viz. Continua for Home Health Devices, DDS, DPWS: WS-Discovery-SOAP-WSAddressing-WDSL-XML Schema, HTTP/REST, MQTT, UPnP, XMPP, ZeroMQ. The IoT Security Protocols viz. ZigBee, Bluetooth, 6LowPAN, RPL. The CoAP.</p> <p>11. Introduction to the Side channel attacks in embedded systems: Side channel attacks, passive versus active attacks, timing, analysis, power analysis, electromagnetic analysis, analysis tools and equipment.</p> <p>12. Overview of Security Support in Data protection protocols for the Embedded Systems. SSL, IPSec, IKE, and TLS in Resource constrained devices.</p>	
(Total Contact Time: 42 Hours + 14 Hours = 56 Hours)	

BOOKS RECOMMENDED

- Research Papers prescribed in class

Computer Engineering Department

B.Tech-IV CO (8th Semester)-Scheme

CS – Core Subject	IS – Interdisciplinary Subject
ES – Elective Subject (for department only)	EIS – Elective Interdisciplinary Subject

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	CS-1 Distributed Algorithms	CO402	5	3	1	2	100	25	50	175
2	IS-1 Economics and Business Management	MH402	3	3	0	0	100	0	0	100
3	Elective – I (ES)	CO4XX	3	3	0	0	100	0	0	100
4	Elective – II (ES)	CO4XX	4	3	1	0	100	25	0	125
5	Project	CO404	6	0	0	12	0	0	300	300
	Total		21	12	2	14	400	50	350	800
	Total Contact Hours per week			28						

Elective – I (ES)

1	Network & System Security (CO406)	4	Secure Software Engineering (CO412)
2	Multimedia Systems (CO408)	5	System Analysis and Simulation (CO414)
3	Soft Computing (CO410)		

Elective – II (ES)

1	Video Codec Standards and Design(CO418)	3	Natural Language Processing (CO426)
2	Advanced Compilers Design(CO424)	4	Cloud Computing (CO428)

Detailed Syllabus

B.Tech. IV (CO) Semester – 8	L	T	P	C
CO412 : SECURE SOFTWARE ENGINEERING (ELECTIVE - I)	3	0	0	3

Introduction to the course. Software Security. Security in SDLC. Review of Software Engineering Concepts. SDLC. Software Qualities. Interdependence of Software Qualities. Security as a Software Quality. Review of Information Security concepts. Software Security vs. Information Security vs. Application Security, Terminologies. The trinity of trouble viz. Connectivity, Extensibility and Complexity. Studies of various catastrophes due to Insecure software. Model Based Security Engineering, Three Pillars of Software Security. Security in Software Lifecycle.	(04 Hours)
Attacks and Types of Attackers. Attacks-Types, Methods. Attacks in each phase of software life cycle. Motivation for attackers, Methods for attacks: Malicious code, Hidden software mechanisms, Social Engineering attacks, Physical attacks. Non-malicious dangers to software. Attacks in each phase of software life cycle. Security Vulnerabilities and Attack Taxonomy in Internet of Things and Cyber Physical Systems. Attack Trees. Attack Trees for BGP, PGP. PGP Probable Vulnerabilities	(06 Hours)
Security Vulnerabilities-I. Introduction to Stack Analysis. Hands on on Stack Analysis using gcc compiler and gdb debugger tool. Methods of attack. Taxonomy of security vulnerabilities. Introduction to Code reviews and Static Informal reviews, Formal inspections. Code Coverage and Code Coverage Criteria viz. Statement coverage, Branch coverage, Condition coverage, Path coverage. Illustrations.	(06 Hours)
Security Vulnerabilities-II. Format String Vulnerabilities. Race Conditions vulnerability. Examples of TOCTOU race conditions in Linux environment. Code injection and its types, SQL injection, Interpreter injection; Weak session cookies. Buffer over flows, Hidden form fields, Fail open authentication. Cross-site scripting.	(04 Hours)
Introduction to Petrinets as a modelling tool to model concurrent systems. Modelling deadlocks and starvation.	(04 Hours)
Integrating Security into SDLC. Risk management and Threat Modeling Methodologies. Software Risk Assessment and Threat Modelling Methodologies. Secure development cycle activities and practices.	(02 Hours)
Review of UML, USecase modelling - Usecases, Sequence Diagram, Collaboration Diagram. Illustrations of Kerberos and SET through Sequence Diagram.	(04 Hours)
The Attack Patterns, Illustrations, Review of Design Patterns in SE and Multi-tier architecture. Attack Proles. Attack Proles from Attack Patterns. Usage of Attack Proles. Using Attack Patterns in Attack Proles. Generating Attack Patterns. Case Studies. Abuse Cases. Misuse Cases. Using Attack Patterns to generate an Abuse Case Model and Anti-requirements. Finite State Machines for Security Requirements. Case Studies. Security Patterns.	(04 Hours)
Architectural Risk Analysis Using UMLSec and SecureUML. Using Z for Secure	(04 Hours)

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Specifications. Introduction to Penetration Testing.	
Secure Programming. Common software security bugs and coding errors.	(04 Hours)
(Total Contact Time: 42 Hours)	

BOOKS RECOMMENDED

1. Research/Survey Papers prescribed in Class.
2. Gary McGraw. Software Security : Building Security In. Addison Wesley Software Security Series.2006 edition.
3. Theodor Richardson, Charles Thies. Secure Software Design. Jones and Bartlet Learning, 2013
4. Ghezzi, Jazayeri, Mandrioli: Fundamentals of Software Engg, 2003 ed, Pearson EDU

Detailed Syllabus

B.Tech. IV (CO) Semester – 8 (ELECTIVE -II)	L	T	P	C
CO428 : CLOUD COMPUTING (ELECTIVE - II)	3	1	0	4

OVERVIEW OF COMPUTING PARADIGM AND INTRODUCTION TO CLOUD COMPUTING	(06 Hours)
Recent trends in computing, evolution of cloud computing, Cloud computing (NIST model), properties, characteristics and disadvantages, role of open standards	
CLOUD COMPUTING ARCHITECTURE	(04 Hours)
Cloud computing stack, Service models (XAAS), Deployment models,	
INFRASTRUCTURE AS A SERVICE	(04 Hours)
Introduction, Hypervisors, Resource virtualization, examples	
PLATFORM AS A SERVICE	(04 Hours)
Introduction, Cloud Platform and Management, examples	
SOFTWARE AS A SERVICE	(04 Hours)
Introduction, Web services, Web 2.0, Web OS, examples	
SERVICE MANAGEMENT IN CLOUD COMPUTING	(06 hours)
Service Level Agreements (SLAs), Billing & Accounting, Comparing scaling hardware, economics of scaling, managing data	
CLOUD SECURITY	(06 hours)
Infrastructure security, Data security and storage, Identity and Access Management, Access Control, Trust and Reputation, Authentication in Cloud computing	
CASE STUDY ON OPEN SOURCE AND COMMERCIAL CLOUDS	(08 hours)
Eucalyptus, VMware Cloud	
(Total Contact Time: 42 Hours+14 Hours = 56 Hours)	

BOOKS RECOMMENDED

1. Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010
2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski: "Cloud Computing: Principles and Paradigms", Wiley, 2011
3. Nikos Antonopoulos, Lee Gillam: "Cloud Computing: Principles, Systems and Applications", Springer, 2012
4. Ronald L. Krutz, Russell Dean Vines: "*Cloud Security: A Comprehensive Guide to Secure Cloud Computing*", Wiley-India, 2010
5. Tim Mather, Subra Kumara swamy, Shahed Latif, Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, O'Reilly Media, 2009.