

E.G.S. PILLAY ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai

Accredited by NAAC with 'A' Grade | Accredited by NBA

NAGAPATTINAM – 611 002



B.TECH. INFORMATION TECHNOLOGY

Full Time Curriculum and Syllabus

Fourth Year – Eighth Semester

Course Code	Course Name	L	T	P	C	Maximum Marks		
						CA	ES	Total
Theory Course								
1703IT019	Cyber Forensics	3	0	0	3	40	60	100
1703IT025	Software Quality Assurance	3	0	0	3	40	60	100
1703IT027	Deep Learning	3	0	0	3	40	60	100
Laboratory Course								
1704IT851	Project Work	0	0	18	9	50	50	100

L – Lecture | T – Tutorial | P – Practical | CA – Continuous Assessment | ES – End Semester

1703IT019

CYBER FORENSICS

L	T	P	C
3	0	0	3

PREREQUISITE

1. Computer Networks
2. Security in Computing

COURSE OBJECTIVES:

1. Learn the security issues network layer and transport layer
2. Be exposed to security issues of the application layer
3. Learn computer forensics
4. Be familiar with forensics tools
5. Learn to analyze and validate forensics data

UNIT I NETWORK LAYER AND TRANSPORT LAYER SECURITY 9 Hours

Network layer security: IPSec Protocol – IP Authentication Header – IP ESP –Key Management Protocol for IPSec–Transport layer Security: SSL protocol–Cryptographic Computations – TLS Protocol.

UNIT II E-MAIL SECURITY & FIREWALLS 9 Hours

PGP– S/MIME– Internet Firewalls for Trusted System: Roles of Firewalls – Firewall related terminology– Types of Firewalls –Firewall designs – SET for E-Commerce Transactions.

UNIT III COMPUTER FORENSICS 9 Hours

Traditional Computer Crimes–Problems associated with Computer Crime–Identity Theft & Identity Fraud– Types of CF techniques –Incident and incident response methodology – Forensic duplication and investigation– Preparation for IR: Creating response tool kit and IR team. – Forensics Technology and Systems – Understanding Computer Investigation – Data Acquisition.

UNIT IV EVIDENCE COLLECTION AND FORENSICS TOOLS 9 Hours

Processing Crime and Incident Scenes – Working with Windows and DOS Systems– Current Computer Forensics Tools: Software/ Hardware Tools.

UNIT V ANALYSIS AND VALIDATION 9 Hours

Validating Forensics Data – Data Hiding Techniques – Performing Remote Acquisition – Network Forensics – Email Investigations – Cell Phone and Mobile Devices Forensics

TOTAL: 45 Hours

REFERENCES:

1. Man Young Rhee, “Internet Security: Cryptographic Principles”, “Algorithms and Protocols”, Wiley Publications, 2014.
2. Nelson, Phillips, Einfinger, Stuart, “Computer Forensics and Investigations”, Cengage Learning, India Edition, 2012
3. John R.Vacca, “Computer Forensics”, Cengage Learning, 2013
4. Richard E.Smith, “Internet Cryptography”, 3rd Edition Pearson Education, 2012.
5. MarjieT.Britz, “Computer Forensics and Cyber Crime”: An Introduction”, 3 rd Edition, Prentice Hall, 2013.
6. <http://nptel.ac.in/>

1703IT025	SOFTWARE QUALITY ASSURANCE	L	T	P	C
		3	0	0	3

PREREQUISITE: Software Engineering and Project Management

COURSE OBJECTIVES:

1. Understand the basic tenets of software quality and quality factors.
2. Be exposed to the Software Quality Assurance (SQA) architecture and the details of SQA components.
3. Understand of how the SQA components can be integrated into the project life cycle.
4. Be familiar with the software quality infrastructure.
5. Be exposed to the management components of software quality.

UNIT I INTRODUCTION TO SOFTWARE QUALITY & ARCHITECTURE 9 Hours

Need for Software quality – Quality challenges – Software quality assurance (SQA) – Software quality factors- McCall’s quality model – SQA system and architecture – Software Project life cycle Components – Pre project quality components – Development and quality plans.

UNIT II SQA COMPONENTS AND PROJECT LIFE CYCLE 9 Hours

Software Development methodologies – Quality assurance activities in the development process- Verification & Validation – Reviews – Software Testing implementations – Quality of software maintenance – Pre-Maintenance of software quality components – Quality assurance tools – CASE tools for software quality – Software maintenance quality – Project Management.

UNIT III SOFTWARE QUALITY INFRASTRUCTURE 9 Hours

Procedures and work instructions - Templates - Checklists – 3S developmenting - Staff training and certification Corrective and preventive actions – Configuration management – Software change control – Configuration management audit -Documentation control – Storage and retrieval.

UNIT IV SOFTWARE QUALITY MANAGEMENT & METRICS 9 Hours

Project process control – Computerized tools - Software quality metrics – Objectives of quality measurement – Process & Product metrics – Implementation – Limitations of software metrics – Cost of software quality – Classical quality cost model – Extended model – Application of Cost model.

UNIT V STANDARDS, CERTIFICATIONS & ASSESSMENTS 9 Hours

Quality management standards – ISO 9001 and ISO 9000-3 – CMM and CMMI assessment methodologies - Bootstrap methodology – SPICE Project – SQA project process standards – IEEE st 1012 & 1028 – Organization of Quality Assurance – Department management responsibilities – Project management responsibilities – SQA units and other actors in SQA systems.

TOTAL: 45 Hours

REFERENCES:

1. Daniel Galin, “Software Quality Assurance”, Pearson Publication, 2015.
2. Alan C. Gillies, “Software Quality: Theory and Management”, International Thomson Computer Press, 2012.
3. Mordechai Ben-Menachem “Software Quality: Producing Practical Consistent Software”, International Thompson Computer Press, 2012.
4. <http://nptel.ac.in>

1703IT027

DEEP LEARNING

L	T	P	C
3	0	0	3

PREREQUISITE:

Data Warehousing And Data Mining, Artificial Intelligence

COURSE OBJECTIVES:

1. Teach the concepts of deep learning process
2. Study the deep learning Strategies 1 and 2
3. Study of various learning and classification techniques
4. Study of various real time case studies of deep learning process

UNIT I INTRODUCTION 9 Hours

Review of Artificial Intelligence – Neural Networks – Supervised Learning – Back Propagations.

UNIT II DEEP LEARNING STRATEGIES - 1 9 Hours

Properties of CNN representations: inevitability, stability, invariance – Localization – Regression – RNNs.

UNIT III DEEP LEARNING STRATEGIES - 2 9 Hours

Deep Unsupervised Learning – Auto encoders (standard, de-noising, contractive, etcetc) - Variation Auto encoders - Adversarial Generative Networks - Maximum Entropy Distributions.

UNIT IV LEARNING AND CLASSIFICATION 9 Hours

Reinforced Learning — Learning Agents – Binary Classification – Multi Class Classification - CNN Classification – Deep Belief – Computer Vision.

UNIT V CASE STUDY 9 Hours

Medical Imaging – Natural Language Processing - Speech Processing – Secure Online Processing – Fraud Detection – Cyber Forensics.

TOTAL: 45 Hours

REFERENCES:

1. Daniel Graupe, “Deep Learning Neural Networks and Case Studies”, World Scientific Publishing Co. Pt. Ltd, 2016
2. Ian Goodfellow, YoshuaBengio, Aaron Courville, “Deep Learning (Adaptive Computation and Machine Learning series)”, MIT Press, 2017
3. Nikhil Buduma, Nicholas Locascio Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms, O'Reilly Media; 1 edition, 2017
4. AurélienGéron, Hands-On Machine Learning with Scikit-Learn and Tensor Flow: Concepts, Tools, and Techniques to Build Intelligent Systems, O'Reilly Media; 1 edition, 2017
5. Russell Reed (Author), Robert J Marks II, Neural Smithing: Supervised Learning in Feed forward Artificial Neural Networks, MIT Press A Bradford Book, 2012
6. <http://nptel.ac.in>

1704IT851

PROJECT WORK

L	T	P	C
0	0	18	9

Course Objectives:

The student should be made to:

1. To develop knowledge to formulate a real world problem and project's goals.
2. To identify the various tasks of the project to determine standard procedures.
3. To identify and learn new tools, algorithms and techniques.
4. To understand the various procedures for validation of the product and analysis the cost effectiveness.
5. To understand the guideline to Prepare report for oral demonstrations.

The students in a group of 3 to 4 works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department.

TOTAL: 180 Hours