NPR College of Engineering & Technology
NPR Nagar, Natham, Dindigul - 624401, Tamil Nadu, India.
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.
An ISO 9001:2015 Certified Institution.
Phone No: 04544- 246 500, 246501, 246502.
Website : www.nprcolleges.org, www.nprcet.org, Email:nprcetprincipal@nprcolleges.org

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: Principles of Management	**SEMESTER:** 7 CREDITS:3
COURSE CODE: MG8591 / C401	**COURSE TYPE:** CORE
COURSE AREA/STREAM:	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): NIL	**LAB COURSE NAME:** NIL
COURSE COORDINATOR NAME: Mr.P.Thangamuniyappan	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS** Definition of Management – Science or Art – Manager Vs Entrepreneur - types of managers - managerial roles and skills – Evolution of Management – Scientific, human relations, system and contingency approaches – Types of Business organization - Sole proprietorship, partnership, company-public and private sector enterprises - Organization culture and Environment – Current trends and issues in Management.	9
II	**UNIT II PLANNING** Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.	9
III	**UNIT III ORGANISING** Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority –centralization and decentralization – Job Design - Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management, Career planning and management	9

IV	**UNIT IV DIRECTING** Foundations of individual and group behavior – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication –communication and IT.	9
V	**UNIT V CONTROLLING** System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.	9
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Stephen P. Robbins & Mary Coulter, "Management", Prentice Hall (India) Pvt. Ltd., 10th Edition, 2009.
T2	JAF Stoner, Freeman R.E and Daniel R Gilbert "Management", Pearson Education, 6th Edition, 2004.
R1	Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 2011.
R2	Robert Kreitner & Mamata Mohapatra, " Management", Biztantra, 2008.
R3	Harold Koontz & Heinz Weihrich "Essentials of management" Tata McGraw Hill,1998.
R4	Tripathy PC & Reddy PN, "Principles of Management", Tata McGraw Hill, 1999

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM

COURSE OBJECTIVES:

1	To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C401.1	Discuss the evolution of management thoughts and the challenges of managerial activities in a global business environment.	K2
C401.2	Understand the types of Planning and Decision making methodologies in Organizations	K2
C401.3	Summarize various types of Organization structure and associated Human Resources activities for man-power utilization.	K2

C401.4	Understand about motivation theories, behavior, leadership theories and communication for effective directing.	K2
C401.5	Understand various Controlling techniques to maintain standards in Organizations.	K2
C401.6	Associate managerial functions and knowledge on international aspect for Organizational growth	K2

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C401.1	-	-	-	-	-	-	-	-	2	2	-	-
C401.2	-	-	-	-	-	-	-	-	2	-	2	-
C401.3	-	-	-	-	-	-	-	2	2	-	2	-
C401.4	-	-	-	-	-	-	-	2	2	2	-	3
C401.5	-	-	-	-	-	-	-	-	2	2	2	-
C401.6	-	-	-	-	-	2	-	2	2	2	-	3
C401	-	-	-	-	-	2	-	2	2	2	2	3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C401.1	2	2	-
C401.2	2	1	-
C401.3	2	1	-
C401.4	2	-	-
C401.5	2	2	-
C401.6	2	-	-
C401	2	2	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
NIL			

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
NIL		

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/
3	ISO9001-2015 standards

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C401.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C401.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C401.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C401.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C401.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C401.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C401.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C401.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C401.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C401.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mr.P.Thangamuniyappan
Name and Signature

Approved by
(Programme Coordinator)

Mr.J.Viswanath
Name and Signature

NATHAM

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: Cyptography and Network Security	**SEMESTER:** 7 **CREDITS:** 3
COURSE CODE: CS8792 / C402	**COURSE TYPE:** CORE
COURSE AREA/STREAM : Network Secuirty	**CONTACT HOURS**: 5+1 (Tutorial) hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): IT8761	**LAB COURSE NAME :** Secuirty Laboratory
COURSE COORDINATOR NAME : Mrs.R.Ramya	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I INTRODUCTION** Security trends - Legal, Ethical and Professional Aspects of Security, Need for Security at Multiple levels, Security Policies - Model of network security – Security attacks, services and mechanisms – OSI security architecture – Classical encryption techniques: substitution techniques, transposition techniques, steganography- Foundations of modern cryptography: perfect security – information theory – product cryptosystem – cryptanalysis.	9
II	**UNIT II SYMMETRIC KEY CRYPTOGRAPHY** MATHEMATICS OF SYMMETRIC KEY CRYPTOGRAPHY: Algebraic structures – Modular arithmetic-Euclid"s algorithm-Congruence and matrices - Groups, Rings, Fields- Finite fields-SYMMETRIC KEY CIPHERS: SDES – Block cipher Principles of DES – Strength of DES – Differential and linear cryptanalysis - Block cipher design principles – Block cipher mode of operation – Evaluation criteria for AES – Advanced Encryption Standard - RC4 –Key distribution	9
III	**UNIT III PUBLIC KEY CRYPTOGRAPHY** MATHEMATICS OF ASYMMETRIC KEY CRYPTOGRAPHY: Primes – Primality Testing – Factorization – Euler's totient function, Fermat's and Euler's Theorem - Chinese Remainder Theorem – Exponentiation and logarithm - ASYMMETRIC KEY CIPHERS: RSA cryptosystem – Key distribution – Key management – Diffie Hellman key exchange -	9

	ElGamal cryptosystem – Elliptic curve arithmetic-Elliptic curve cryptography.	
IV	**UNIT IV MESSAGE AUTHENTICATION AND INTEGRITY** Authentication requirement – Authentication function – MAC – Hash function – Security of hash function and MAC – SHA –Digital signature and authentication protocols – DSS- Entity Authentication: Biometrics, Passwords, Challenge Response protocols- Authentication applications - Kerberos, X.509	9
V	**UNIT V SECURITY PRACTICE AND SYSTEM SECURITY** Electronic Mail security – PGP, S/MIME – IP security – Web Security – SYSTEM SECURITY: Intruders – Malicious software – viruses – Firewalls.	9
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	William Stallings, Cryptography and Network Security: Principles and Practice, PHI 3rd Edition, 2006.
R1	C K Shyamala, N Harini and Dr. T R Padmanabhan: Cryptography and Network Security, Wiley India Pvt.Ltd
R2	BehrouzA.Foruzan, Cryptography and Network Security, Tata McGraw Hill 2007.
R3	Charlie Kaufman, Radia Perlman, and Mike Speciner, Network Security: PRIVATE Communication in a PUBLIC World, Prentice Hall, ISBN 0-13-046019-2

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
C302	Computer Networks	Be familiar with the components required to build different types of networks	III
C201	Discrete Mathematics	To extend student"s Logical and Mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.	V

COURSE OBJECTIVES:

1	understand Cryptography Theories, Algorithms and Systems.
2	To understand necessary Approaches and Techniques to build protection mechanisms in order to secure computer networks.
3	To create an awareness for the design of various cryptographic primitives
4	To analyze different types of attacks on various cryptosystems.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C402.1	Describe the fundamentals of networks security, security architecture, threats and vulnerabilities	K2
C402.2	Discuss the mathematical support for both symmetric and asymmetric key cryptography	K2
C402.3	Make use of symmetric key cryptographic algorithms to perform cryptographic operations	K3
C402.4	Solve cryptographic operations using public key cryptographic algorithms	K3
C402.5	Apply the various Authentication schemes to simulate different applications.	K3
C402.6	Understand various Security practices and System security standards	K2

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402.1	2	1	1	-	-	-	-	-	-	-	-	-
C402.2	2	1	1	-	-	-	-	-	-	-	-	-
C402.3	3	2	2	1	-	-	-	-	-	-	-	-
C402.4	3	2	2	1	-	-	-	-	-	-	-	-
C402.5	3	2	2	1	-	-	-	-	-	-	-	-
C402.6	2	1	1	-	-	-	-	-	-	-	-	-
C402	3	2	2	1	-	-	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C402.1	3	2	-
C402.2	3	2	-
C402.3	2	3	-
C402.4	2	3	-
C402.5	2	3	-
C402.6	2	2	-
C402	2	3	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
NIL			

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
1	To familiarize students on the topic called steganography which plays an important role in information security	PO3, PO4, PO5
2	Familiarizing students on quantum cryptography	PO3, PO4, PO5

WEB SOURCE REFERENCES:

1	http://www.maths.usyd.edu.au/u/afish/Math2068/index_lectures.html
2	http://www.math.utk.edu/~finotti/papers/grad.pdf
3	http://www.nptel.iitm.ac.in/courses/106103015/3 4
4	https://engineering.purdue.edu/kak/compsec/
5	http://nptel.ac.in/.

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C402.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C402.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C402.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C402.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C402.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C402.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C402.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C402.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C402.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C402.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)
Mrs.R.Ramya
Name and Signature

Approved by
(Programme Coordinator)
Mr.J.Viswanath
Name and Signature

COLLEGE OF ENGG. & TECHNOLOGY NATHAM

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: CLOUD COMPUTING	**SEMESTER:7 CREDITS:**3
COURSE CODE: CS8791 / C403	**COURSE TYPE:** CORE
COURSE AREA/STREAM : Cloud Computing	**CONTACT HOURS**: 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): CS8711	**LAB COURSE NAME :** CLOUD COMPUTING LABORATORY
COURSE COORDINATOR NAME : Mrs.J.Bama	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I INTRODUCTION** Introduction to Cloud Computing – Definition of Cloud – Evolution of Cloud Computing –Underlying Principles of Parallel and Distributed Computing – Cloud Characteristics – Elasticity in Cloud – On-demand Provisioning.	9
II	**UNIT II CLOUD ENABLING TECHNOLOGIES** Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish- Subscribe Model – Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms – Virtualization of CPU – Memory – I/O Devices –Virtualization Support and Disaster Recovery.	10
III	**UNIT III CLOUD ARCHITECTURE, SERVICES AND STORAGE** Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds - laaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3.	8
IV	**UNIT IV RESOURCE MANAGEMENT AND SECURITY IN CLOUD** Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources – Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Virtual Machine Security – IAM –	10

	Security Standards.	
V	**UNIT V CLOUD TECHNOLOGIES AND ADVANCEMENTS** Hadoop – MapReduce – Virtual Box -- Google App Engine – Programming Environment for Google App Engine — Open Stack – Federation in the Cloud – Four Levels of Federation – Federated Services and Applications – Future of Federation.	8
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, "Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet", First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012.
T2	Rittinghouse, John W., and James F. Ransome, "Cloud Computing: Implementation, Management and Security", CRC Press, 2017.
R1	Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, "Mastering Cloud Computing", Tata Mcgraw Hill, 2013.
R2	Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing - A Practical Approach", Tata Mcgraw Hill, 2009.
R3	George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice)", O'Reilly, 2009.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
NIL			

COURSE OBJECTIVES:

1	Understand the concept of cloud computing.
2	Appreciate the evolution of cloud from the existing technologies.
3	Have knowledge on the various issues in cloud computing.
4	Be familiar with the lead players in cloud.
5	Appreciate the emergence of cloud as the next generation computing paradigm.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C403.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.	K1
C403.2	Learn the key and enabling technologies that help in the development of cloud.	K2
C403.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.	K3
C403.4	Explain the core issues of cloud computing such as resource management and security.	K2
C403.5	Be able to install and use current cloud technologies.	K3
C403.6	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud	K5

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403.1	2	1	1	-	2	-	-	-	-	2	2	2
C403.2	2	1	1	-	1	-	-	-	-	2	3	2
C403.3	3	2	2	1	1	-	-	-	-	3	3	2
C403.4	2	1	2	-	2	-	-	-	-	2	3	3
C403.5	3	2	2	1	1	-	-	-	-	2	3	3
C403.6	3	2	1	1	1	-	-	-	-	2	3	3
C403	3	2	2	1	1	-	-	-	-	2	3	3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C403.1	2	2	-
C403.2	2	2	-
C403.3	2	3	-
C403.4	2	2	-
C403.5	2	3	-
C403.6	2	3	-
C403	2	3	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
	Nill		

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
1	Performance of Cloud	PSO1, POS2
2	Cloud for HPC and HTC	PO2, PO4

WEB SOURCE REFERENCES:

1	https://csrc.nist.gov/publications/detail/sp/800-145/final
2	https://docs.aws.amazon.com/index.html?nc2=h_ql_doc#lang/en_us
3	https://docs.microsoft.com/en-in/azure/ 4 https://cloud.google.com/docs/

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C403.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C403.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C403.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C403.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C403.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C403.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C403.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C403.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C403.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C403.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

J. Bama

Mrs.J.Bama
Name and Signature

Approved by
(Programme Coordinator)

Mr.J.Viswanath
Name and Signature

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: Robotics	**SEMESTER:** 7 CREDITS:3
COURSE CODE: OIE751/ C404	**COURSE TYPE:** OPEN ELECTIVE
COURSE AREA/STREAM:	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): NIL	**LAB COURSE NAME:** NIL
COURSE COORDINATOR NAME: Mr.V.Ramasamy	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I FUNDAMENTALS OF ROBOT** Robot - Definition - Robot Anatomy - Coordinate Systems, Work Envelope Types and Classification- Specifications-Pitch, Yaw, Roll, Joint Notations, Speed of Motion, Pay Load Robot Parts and their Functions-Need for Robots-Different Applications.	6
II	**UNIT II ROBOT DRIVE SYSTEMS AND END EFFECTORS** Pneumatic Drives-Hydraulic Drives-Mechanical Drives-Electrical Drives-D.C. Servo Motors, Stepper Motors, A.C. Servo Motors-Salient Features, Applications and Comparison of all these Drives, End Effectors-Grippers-Mechanical Grippers, Pneumatic and Hydraulic- Grippers, Magnetic Grippers, Vacuum Grippers; Two Fingered and Three Fingered Grippers; Internal Grippers and External Grippers; Selection and Design Considerations.	9
III	**UNIT III SENSORS AND MACHINE VISION** Requirements of a sensor, Principles and Applications of the following types of sensors- Position sensors - Piezo Electric Sensor, LVDT, Resolvers, Optical Encoders, pneumatic Position Sensors, Range Sensors Triangulations Principles, Structured, Lighting Approach, Time of Flight, Range Finders, Laser Range Meters, Touch Sensors ,binary Sensors., Analog Sensors, Wrist Sensors, Compliance Sensors, Slip Sensors, Camera, Frame Grabber, Sensing and Digitizing Image Data- Signal Conversion, Image Storage, Lighting Techniques, Image Processing and Analysis-Data Reduction, Segmentation, Feature Extraction, Object	12

	Recognition, Other Algorithms, Applications- Inspection, Identification, Visual Serving and Navigation.	
IV	**UNIT IV ROBOT KINEMATICS AND ROBOT PROGRAMMING** Forward Kinematics, Inverse Kinematics and Difference; Forward Kinematics and Reverse Kinematics of manipulators with Two, Three Degrees of Freedom (in 2 Dimension), Four Degrees of freedom (in 3 Dimension) Jacobians, Velocity and Forces-Manipulator Dynamics, Trajectory Generator, Manipulator Mechanism Design-Derivations and problems. Lead through Programming, Robot programming Languages-VAL Programming-Motion Commands, Sensor Commands, End Effector commands and simple Programs.	13
V	**UNIT V IMPLEMENTATION AND ROBOT ECONOMICS** RGV, AGV; Implementation of Robots in Industries-Various Steps; Safety Considerations for Robot Operations - Economic Analysis of Robots.	5
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Klafter R.D., Chmielewski T.A and Negin M., "Robotic Engineering - An Integrated Approach", Prentice Hall, 2003.
T2	Groover M.P., "Industrial Robotics -Technology Programming and Applications", McGraw Hill, 2001.
R1	Craig J.J., "Introduction to Robotics Mechanics and Control", Pearson Education, 2008
R2	Deb S.R., "Robotics Technology and Flexible Automation" Tata McGraw Hill Book Co., 1994
R3	Koren Y., "Robotics for Engineers", Mc Graw Hill Book Co., 1992.
R4	Fu.K.S.,Gonzalz R.C. and Lee C.S.G., "Robotics Control, Sensing, Vision and Intelligence", McGraw Hill Book Co., 1987.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM

COURSE OBJECTIVES:

1	To understand the functions of the basic components of a Robot
2	To study the use of various types of End of Effectors and Sensors
3	To impart knowledge in Robot Kinematics and Programming
4	To learn Robot safety issues and economics.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C404.1	Understand the functions of the basic components of a Robot.	K2
C404.2	Use of various types of End of Effectors and Sensors	K2
C404.3	Impart knowledge in Robot Kinematics and Programming	K2
C404.4	Learn Robot safety issues and economics.	K2
C404.5	Apply the basic engineering knowledge for the design of robotics	K3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C404.1	3	2	2	-	3	2	-	-	-	-	-	-
C404.2	-	2	2	-	3	-	-	-	-	-	-	-
C404.3	3	2	2	-	3	1	-	-	-	-	-	-
C404.4	3	1	1	-	2	2	-	-	-	-	-	-
C404.5	-	2	1	-	3	1	-	-	-	-	-	-
C404.6	-	1	-	-	3	1	-	-	-	-	-	-
C404	3	2	2	-	3	2	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C404.1	2	1	-
C404.2	3	2	-
C404.3	3	-	-
C404.4	2	2	-
C404.5	2	2	-
C404.6	1	2	-
C404	2	2	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
NIL			

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
NIL		

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C404.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C404.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C404.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C404.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C404.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C404.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C404.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C404.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C404.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C404.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mr.V.Ramasamy
Name and Signature

Approved by
(Programme Coordinator)

Mr.J.Viswanath
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: Total Quality Management	**SEMESTER:** 7 CREDITS:3
COURSE CODE: GE8077 / C405	**COURSE TYPE:** ELECTIVE
COURSE AREA/STREAM:	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): NIL	**LAB COURSE NAME:** NIL
COURSE COORDINATOR NAME: Mr.J.Dinesh	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I INTRODUCTION** Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.	9
II	**UNIT II TQM PRINCIPLES** Leadership - Quality Statements, Strategic quality planning, Quality Councils – Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen – Supplier partnership - Partnering, Supplier selection, Supplier Rating.	9
III	**UNIT III TQM TOOLS AND TECHNIQUES I** The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT - Bench marking – Reason to bench mark, Bench marking process - FMEA - Stages, Types.	9
IV	**UNIT IV TQM TOOLS AND TECHNIQUES II** Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.	9
V	**UNIT V QUALITY MANAGEMENT SYSTEM** Introduction—Benefits of ISO Registration—ISO 9000 Series of	9

	Standards—Sector-Specific Standards—AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements—Implementation—Documentation—Internal Audits—Registration- ENVIRONMENTAL MANAGEMENT SYSTEM: Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001—Benefits of EMS.	
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Dale H.Besterfiled, Carol B.Michna,Glen H. Besterfield,Mary B.Sacre,Hemant Urdhwareshe and Rashmi Urdhwareshe, "Total Quality Management", Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression, 2013.
R1	James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
R2	Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
R3	Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM

COURSE OBJECTIVES:

1	Facilitate the understanding of Quality Management principles and process.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C405.1	Outline the Dimensions and Barriers regarding with Quality	K2
C405.2	Illustrate the TQM Principles	K2
C405.3	Demonstrate Tools utilization for Quality improvement	K2
C405.4	Understand the various types of Techniques are used to measure Quality.	K2
C405.5	Apply various Quality Systems and Auditing on implementation of TQM.	K3
C405.6	Apply the tools and techniques of quality management to manufacturing and services processes	K3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C405.1	-	3	2	-	-	-	-	-	-	-	-	-
C405.2	-	-	-	-	-	3	-	-	-	-	-	-
C405.3	3	3	-	-	-	2	-	-	-	-	-	-
C405.4	-	3	-	-	-	-	-	-	-	-	-	-
C405.5	3	3	3	-	-	3	-	-	-	-	-	-
C405.6	-	-	2	-	-	1	-	-	-	-	-	-
C405	3	3	2			2	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C405.1	1	-	-
C405.2	1	1	-
C405.3	2	1	-
C405.4	2	-	-
C405.5	2	2	-
C405.6	2	-	-
C405	2	1	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
NIL			

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
NIL		

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/
3	ISO9001-2015 standards

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C405.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C405.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C405.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C405.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C405.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C405.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C405.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C405.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C405.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C405.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mr.J.Dinesh
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Approved by
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Mr.J.Viswanath
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: HUMAN COMPUTER INTERACTION	**SEMESTER:** 7 **CREDITS:**3
COURSE CODE: CS8079 / C406	**COURSE TYPE:** ELECTIVE
COURSE AREA/STREAM : Operating System	**CONTACT HOURS**: 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): NIL	**LAB COURSE NAME :** NIL
COURSE COORDINATOR NAME :Mrs.V.Sujitha	

SYLLABUS:

MODULE	DETAILS	HOURS
I	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.	9
II	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.	9
III	Cognitive models –Socio-Organizational issues and stake holder requirements –Communication and collaboration models-Hypertext, Multimedia and WWW.	9
IV	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.	9
V	Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow.	9
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", 3rd Edition, Pearson Education, 2004 (UNIT I , II & III).
T2	Brian Fling, "Mobile Design and Development", First Edition , O"Reilly Media Inc., 2009 (UNIT –IV).
T3	Bill Scott and Theresa Neil, "Designing Web Interfaces", First Edition, O"Reilly, 2009.(UNIT-V).

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
C310	Mobile Computing	Basic Knowledge of Mobile Computing	VI
C302	Internet Programming	Concept of Web Tehcnology	V
C214	Software Engineeering	Basic concept of Software Engineering	IV

COURSE OBJECTIVES:

1	Learn the foundations of Human Computer Interaction.
2	Be familiar with the design technologies for individuals and persons with disabilities.
3	Be aware of mobile HCI.
4	Learn the guidelines for user interface.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C406.1	Learn the foundations of Human Computer Interaction.	K2
C406.2	Design effective dialog for HCI.	K3
C406.3	Design effective HCI for individuals and persons with disabilities.	K3
C406.4	Assess the importance of user feedback.	K3
C406.5	Understand the HCI implications for designing multimedia / ecommerce / elearning Web Sites	K2
C406.6	Develop meaningful user interface.	K3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C406.1	3	2	3	1	-	-	-	-	-	-	-	-
C406.2	3	2	2	1	-	-	-	-	-	-	-	-
C406.3	3	2	-	1	-	-	-	-	-	-	-	-
C406.4	1	2	-	2	-	-	-	-	-	-	-	-
C406.5	1	2	-	2	-	-	-	-	-	-	-	-
C406	2	2	3	1	-	-	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C406.1	2	1	-
C406.2	2	1	-
C406.3	2	-	-
C406.4	1	-	-
C406.5	1	2	-
C406	2	2	-

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
NIL			

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
1	Understanding Mobile Human-computer Interaction	PO11, PO12

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/106/105/106105202/

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

✓ CHALK & TALK	✓ STUD. ASSIGNMENT	✓ WEB RESOURCES	✓ TUTORIAL
✓ LCD/SMART BOARDS	✓ STUD. SEMINARS		

DELIVERY METHODS USED FOR EACH COURSE OUT COME

SNO	DELIVERY METHODS
C406.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C406.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C406.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C406.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C406.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C406.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C406.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C406.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C406.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C406.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mrs.V.Sujitha
Name and Signature

Approved by
(Programme Coordinator)

Mr.J.Viswanath
Name and Signature