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: Algebra and Number Theory	**SEMESTER:** 5 **CREDITS:** 4
COURSE CODE: MA8551	**COURSE TYPE:** Allied
COURSE AREA/STREAM : Group theory and Number theory	**CONTACT HOURS:** 6+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY):	**LAB COURSE NAME :** NIL
COURSE COORDINATOR NAME : Ms. S. Kanagalakshmi	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I GROUPS AND RINGS** Groups : Definition - Properties - Homomorphism - Isomorphism - Cyclic groups - Cosets - Lagrange's theorem. Rings: Definition - Sub rings - Integral domain - Field - Integer modulo n - Ring homomorphism.	12
II	**UNIT II FINITE FIELDS AND POLYNOMIALS** Rings - Polynomial rings - Irreducible polynomials over finite fields - Factorization of polynomials over finite fields.	12
III	**UNIT III DIVISIBILITY THEORY AND CANONICAL DECOMPOSITIONS** Division algorithm – Base - b representations – Number patterns – Prime and composite numbers – GCD – Euclidean algorithm – Fundamental theorem of arithmetic – LCM.	12
IV	**UNIT IV DIOPHANTINE EQUATIONS AND CONGRUENCES** Linear Diophantine equations – Congruence's – Linear Congruence's - Applications: Divisibility tests - Modular exponentiation-Chinese remainder theorem – 2 x 2 linear systems.	12
V	**UNIT V CLASSICAL THEOREMS AND MULTIPLICATIVE FUNCTIONS** Wilson's theorem – Fermat's little theorem – Euler's theorem – Euler's Phi functions – Tau and Sigma functions.	12
	TOTAL HOURS	60

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Grimaldi, R.P and Ramana, B.V., "Discrete and Combinatorial Mathematics", Pearson Education, 5th Edition, New Delhi, 2007.
T2	Koshy, T., —Elementary Number Theory with Applicationsl, Elsevier Publications, New Delhi, 2002.
R1	Lidl, R. and Pitz, G, "Applied Abstract Algebra", Springer Verlag, New Delhi, 2nd Edition, 2006.
R2	Niven, I., Zuckerman.H.S., and Montgomery, H.L., —An Introduction to Theory of Numbersl, John Wiley and Sons , Singapore, 2004.
R3	San Ling and Chaoping Xing, —Coding Theory – A first Coursel, Cambridge Publications, Cambridge, 2004.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
C301	Algebra and Number Theory	Detailed study of group theory and Number theory in various methodology	V

COURSE OBJECTIVES:

1	Understand the basic notions of groups, rings, fields which will then be used to solve related problems.
2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics.
3	Apply the mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the statements proven by the text.
4	Explain the integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C301.1	Summarize the notations and properties of algebraic structures such as groups, rings and fields	K2
C301.2	Understand the concepts of finite fields and polynomials to solve problems in advanced algebra.	K2

C301.3	Associate the applications of divisibility theory and canonical decompositions.	K2
C301.4	Analyze the concepts of queuing models Describe the concept of Diophantine equations and congruences and exhibit the efficient use of advanced algebraic techniques in number theory	K2
C301.5	Extend the concepts of multiplicative functions and classical theorems.	K2

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C301.1	2	1	1	-	-	-	-	-	1	-	-	-
C301.2	1	1	1	-	-	-	-	-	1	-	-	-
C301.3	1	1	1	-	-	-	-	-	1	-	-	-
C301.4	1	1	1	-	-	-	-	-	2	-	-	-
C301.5	1	2	2	-	-	-	-	-	1	-	-	-
C301	1	1	1	-	-	-	-	-	1	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C301.1	2	1	-
C301.2	2	1	-
C301.3	2	1	-
C301.4	2	2	-
C301.5	2	1	-
C301	2	1	-

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

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
1	Algebraic operations	PO1,PO2	Assignment given
2	Congruence and Integer relations	PO1, PO2, PO3	Assignment given

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to PO
1	Finite Abelian group	PO1, PO3
2	Quadratic Residues	PO1, PO2
3	Combinatorics	PO1, PO2
4	Mayan Number system	PO1, PO2

WEB SOURCE REFERENCES:

1	https://nptel.ac.in/courses/111/101/111101137/
2	https://nptel.ac.in/courses/111/104/111104138/
3	https://mathoverflow.net/questions/ask
4	https://nptel.ac.in/courses/111/103/111103020/
5	https://onlinecourses.nptel.ac.in/noc20_ma39

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
C301.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C301.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C301.3	CHALK & TALK , STUD.ASSIGNMENT
C301.4	CHALK & TALK, WEB RESOURCES, TUTORIAL
C301.5	CHALK & TALK, STUD. ASSIGNMENT, WEB RESOURCES

ASSESSMENT METHODOLOGIES-DIRECT.

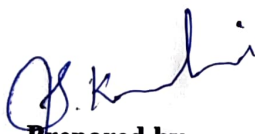| ✓ ASSIGNMENTS	✓ STUD. SEMINARS	✓ TESTS/MODEL EXAMS	✓ UNIV. EXAMINATION

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C301.1	Assignments, Univ. Examination, Stud. Seminars, Tests/Model Exams	Student Feedback On Faculty
C301.2	Univ. Examination, Tests/Model Exams	Student Feedback On Faculty
C301.3	Univ. Examination, Tests/Model Exams, Assignments	Student Feedback On Faculty
C301.4	Univ. Examination, Tests/Model Exams	Student Feedback On Faculty
C301.5	Assignments, Univ. Examination, Tests/Model Exams	Student Feedback On Faculty

Prepared by
(Course Coordinator)

Ms. S. Kanagalakshmi

Approved by
(Programme Coordinator)

Dr. T. Priya

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E	
COURSE: Computer Networks	**SEMESTER: 5 CREDITS: 3**	
COURSE CODE: CS8591 / C302	**COURSE TYPE:** CORE	
COURSE AREA/STREAM : Networking	**CONTACT HOURS:** 5+1 hours/Week.	
CORRESPONDING LAB COURSE CODE (IF ANY): CS8581	**LAB COURSE NAME :** Networks Laboratory	
COURSE COORDINATOR NAME : Mrs.R.Ramya		

SYLLABUS:

MODULE	DETAILS	HOURS
I	Networks – Network Types – Protocol Layering – TCP/IP Protocol suite – OSI Model – Physical Layer: Performance – Transmission media – Switching – Circuit-switched Networks – Packet Switching.	9
II	Introduction – Link-Layer Addressing – DLC Services – Data-Link Layer Protocols – HDLC– PPP - Media Access Control - Wired LANs: Ethernet - Wireless LANs – Introduction – IEEE 802.11, Bluetooth – Connecting Devices.	9
III	Network Layer Services – Packet switching – Performance – IPV4 Addresses – Forwarding of IP Packets - Network Layer Protocols: IP, ICMP v4 – Unicast Routing Algorithms – Protocols – Multicasting Basics – IPV6 Addressing – IPV6 Protocol.	9
IV	Introduction – Transport Layer Protocols – Services – Port Numbers – User Datagram Protocol – Transmission Control Protocol – SCTP.	9
V	WWW and HTTP – FTP – Email –Telnet –SSH – DNS – SNMP	9
	TOTAL HOURS	45

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Behrouz A. Forouzan, Data Communications and Networking, Fifth Edition TMH, 2013.
R1	Larry L. Peterson, Bruce S. Davie, Computer Networks: A Systems Approach, Fifth Edition, Morgan Kaufmann Publishers Inc., 2012.
R2	William Stallings, Data and Computer Communications, Tenth Edition, Pearson Education, 2013.
R3	Nader F. Mir, Computer and Communication Networks, Second Edition, Prentice Hall, 2014.
R4	Ying-Dar Lin, Ren-Hung Hwang and Fred Baker, Computer Networks: An Open Source Approach, McGraw Hill Publisher, 2011.
R5	James F. Kurose, Keith W. Ross, Computer Networking, A Top-Down Approach Featuring the Internet, Sixth Edition, Pearson Education, 2013.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
NIL	NIL	Knowledge regarding basic networking protocols required.	NIL

COURSE OBJECTIVES:

1	To understand the protocol layering and physical levelcommunication.
2	To analyze the performance of anetwork.
3	To understand the various components required to build differentnetworks.
4	To learn the functions of network layer and the various routingprotocols.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C302.1	Identify various layers of network and discuss the functions of physical layer	K2
C302.2	Discuss how data flows from one node to another node with regard to data link layer	K2
C302.3	Understand the different services of network layer	K2
C302.4	Compare the different transport layer protocols and their applicability based on user requirements	K3
C302.5	Describe the working of various application layer protocols	K2
C302.6	Evaluate the performance of network and analyze routing algorithms	K3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	2	-	3	-	-	-	-	-	-	-	-
C302.2	3	1	-	2	-	-	-	-	-	-	-	-
C302.3	3	-	1	2	3	-	-	-	-	-	-	-
C302.4	3	1	-	2	-	-	-	-	-	-	-	-
C302.5	3	1	-	2	-	-	-	-	-	-	-	-
C302.6	3	-	-	2	2	-	-	-	-	-	-	-
C302	3	1	1	2	3	1	1	1	1	1	1	1

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C302.1	3	-	2
C302.2	3	-	1
C302.3	3	-	1
C302.4	3	-	2
C302.5	3	-	2
C302.6	3	1	2
C302	3	1	2

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

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
1	Designing and developing programs that implements various protocols	PO3,PO4 PO5	Lab Session
2	A session on the college Networking System	PO7	Demo Session

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
1	Implementation/ simulation of the protocols	PO3, PO4,PO5

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/106/105/106105183/
3	ww.w3schools.com/
4	http://www.cs.ccsu.edu/~stan/classes/CS490/Slides/Networks4-Ch4-4.pdf 6
5	https://www.geeksforgeeks.org/basics-computer-networking/

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
C302.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C302.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C302.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C302.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C302.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES
C302.6	CHALK & TALK, LCD/SMART BOARDS, STUD.SEMINARS

ASSESSMENT METHODOLOGIES-DIRECT.

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

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

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ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C302.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C302.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C302.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C302.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C302.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C302.6	UNIV. EXAMINATION, TESTS/MODEL EXAMS, STUD SEMINARS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mrs.R.Ramya
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: Microprocessors and Microcontrollers	**SEMESTER:** 5 **CREDITS:** 3
COURSE CODE: EC8691/ C303	**COURSE TYPE:** CORE
COURSE AREA/STREAM :	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): EC8681	**LAB COURSE NAME :** Microprocessors and Microcontrollers Laboratory
COURSE COORDINATOR NAME : Mrs.C.KannikaParameshwari	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I THE 8086 MICROPROCESSOR** Introduction to 8086 – Microprocessor architecture – Addressing modes - Instruction set and assembler directives – Assembly language programming – Modular Programming - Linking and Relocation - Stacks - Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.	9
II	**UNIT II 8086 SYSTEM BUS STRUCTURE** 8086 signals – Basic configurations – System bus timing –System design using 8086 – I/O programming – Introduction to Multiprogramming – System Bus Structure – Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.	9
III	**UNIT III I/O INTERFACING** Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – D/A and A/D Interface - Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.	9
IV	**UNIT IV MICROCONTROLLER** Architecture of 8051 – Special Function Registers(SFRs) - I/O Pins Ports and Circuits – Instruction set - Addressing modes - Assembly language programming.	9

	UNIT V INTERFACING MICROCONTROLLER	
V	Programming 8051 Timers - Serial Port Programming - Interrupts Programming – LCD & Keyboard Interfacing - ADC, DAC & Sensor Interfacing - External Memory Interface- Stepper Motor and Waveform generation - Comparison of Microprocessor, Microcontroller, PIC and ARM processors	9
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007. (UNIT I- III)
T2	Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", Second Edition, Pearson education, 2011. (UNIT IV-V)
R1	Doughlas V.Hall, "Microprocessors and Interfacing, Programming and Hardware",TMH,2012
R2	A.K.Ray,K.M.Bhurchandi,"Advanced Microprocessors and Peripherals "3rd edition, Tata McGrawHill,2012

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
		NIL	

COURSE OBJECTIVES:

1	To understand the Architecture of 8086 microprocessor
2	To learn the design aspects of I/O and Memory Interfacing circuits.
3	To interface microprocessors with supporting chips.
4	To study the Architecture of 8051 microcontroller.
5	To design a microcontroller-based system.

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C303.1	Understand and execute programs based on 8086 microprocessors.	K2
C303.2	Design Memory Interfacing circuits.	K3
C303.3	Design and interface I/O circuits.	K3
C303.4	Design and implement 8051 microcontroller-based systems.	K3

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C303.1	3	2	1	-	-	-	-	-	-	-	-	-
C303.2	3	2	1	-	2	-	-	-	-	-	-	-
C303.3	3	2	1	-	2	-	-	-	-	-	-	-
C303.4	3	2	1	-	2	-	-	-	-	-	-	-
C303.5	3	2	1	1	2	-	-	-	-	-	-	-
C303.6	-	-	-	-	-	-	-	-	-	-	-	-
C303	3	2	1	1	2	-	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C303.1	2	1	1
C303.2	2	-	-
C303.3	2	1	-
C303.4	2	1	1
C303.5	2	-	1
C303.6	-	-	-
C303	2	1	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		

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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
C303.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C303.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C303.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C303.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C303.5	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
C303.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C303.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C303.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C303.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C303.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Name and Signature
Mrs.C.KannikaParameshwari

Approved by
(Programme Coordinator)

Name and Signature
Mr.J.Viswanath

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INFORMATION SHEET

PROGRAMME: Computer Science & Engineering	**DEGREE:** B.E
COURSE: THEORY OF COMPUTATION	**SEMESTER: 5 CREDITS: 3**
COURSE CODE: CS8501 / C304	**COURSE TYPE:** CORE
COURSE AREA/STREAM : Theoretical Computer Science	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): NIL	**LAB COURSE NAME :** NIL
COURSE COORDINATOR NAME : Mrs. C.Kalpana	

SYLLABUS:

MODULE	DETAILS	HOURS
I	Introduction to formal proof – Additional forms of Proof – Inductive Proofs –Finite Automata – Deterministic Finite Automata – Non-deterministic Finite Automata – Finite Automata with Epsilon Transitions	9
II	Regular Expressions – FA and Regular Expressions – Proving Languages not to be regular – Closure Properties of Regular Languages – Equivalence and Minimization of Automata.	9
III	CFG – Parse Trees – Ambiguity in Grammars and Languages – Definition of the Pushdown Automata – Languages of a Pushdown Automata – Equivalence of Pushdown Automata and CFG, Deterministic Pushdown Automata.	9
IV	Normal Forms for CFG – Pumping Lemma for CFL – Closure Properties of CFL – Turing Machines – Programming Techniques for TM.	9
V	Non Recursive Enumerable (RE) Language – Undecidable Problem with RE – Undecidable Problems about TM – Post's Correspondence Problem, The Class P and NP.	9
	TOTAL HOURS	**45**

1

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	J.E.Hopcroft, R.Motwani and J.D Ullman, —Introduction to Automata Theory, Languages and Computationsl, Second Edition, Pearson Education, 2003.
T2	John E Hopcroft, Rajeev Motwani and Jeffrey D Ullman, Introduction to Automata Theory, Languages, and Computation, 3/e, Pearson Education, 2007
R1	H.R.Lewis and C.H.Papadimitriou, —Elements of the theory of Computationl, Second Edition,PHI, 2003.
R2	J.Martin, —Introduction to Languages and the Theory of Computationl, Third Edition, TMH, 2003.
R3	Micheal Sipser, —Introduction of the Theory and Computationl, Thomson Brokecole, 1997.
R4	John C Martin, Introduction to Languages and the Theory of Computation, TMH, 2007
R5	RajendraKumar,Theory of Automata Language &Computation,Tata McGraw Hill,New Delhi,2010

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
C201	Discrete Mathematics	Basic knowledge of Logical and Mathematical Computations to solve practical problems.	3
C203	Data Structures and Algorithms	Knowledge of Data Structures and Algorithms is required.	3
C213	Design and Analysis of Algorithms	Understanding and apply the analysis techniques.	4

COURSE OBJECTIVES:

1	Students will demonstrate knowledge of basic mathematical models of computation and describe how they relate to formal languages.
2	In particular, they will learn regular languages and context free languages which are crucial to understand how compilers and programming languages are built.
3	Also students will learn that not all problems are solvable by computers, and some problems do not admit efficient algorithms.
4	Throughout this course, students will strengthen their rigorous mathematical reasoning skills

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C304.1	Define the mathematical principles and design automata for any given pattern.	K3
C304.2	Specify the regular expression of string pattern.	K2
C304.3	Understand the concepts of context free grammar of any language.	K2
C304.4	Design and propose computational solutions for turing machine.	K4
C304.5	Identify decidable and Undecidable problems.	K1
C304.6	Correlate the different types of automata to real world applications	K5

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C304.1	2	2	1	1	1	-	1	-	-	-	-	-
C304.2	2	2	1	-	-	-	-	-	-	-	-	-
C304.3	3	2	2	1	1	-	-	-	-	-	-	-
C304.4	3	2	3	-	-	-	1	-	-	-	-	-
C304.5	3	2	1	-	1	-	-	-	-	-	-	-
C304.6	3	1	2	1	-	-	1	-	-	-	-	-
C304	3	2	2	1	1	-	1	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PS2O 1	PSO 2	PSO 3
C304.1	2	-	-
C304.2	2	-	-
C304.3	2	-	-
C304.4	2	-	-
C304.5	2	-	-
C304.6	2	-	-
C304	2	-	-

3

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

SNO	DESCRIPTION	Mapping to PO	PROPOSED ACTIONS
1	Characterization of computability functions	PO1, PO2	NPTEL Video Lectures
2	Decision problems and their relationship to model of computations	PO3, PO5	NPTEL Video Lectures
3	Parsing and Ambiguity of CFG	PO5	Assignment
4	CFG and programming	PO3	Topics Beyond Syllabus

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

Sl.No	Topic	Mapping to P O
1	Recursive Languages, Recursive Enumerable Languages	-
2	CFG and Programming	-
3	Different Models of Turing Machines, Combinations of Turing Machines.	-

WEB SOURCE REFERENCES:

1	https://nptel.ac.in/courses/106/104/106104028/
2	https://nptel.ac.in/courses/106/106/106106049/
3	http://www.eecs.yorku.ca/course_archive/2012-13/S/2001
4	https://www.tutorialspoint.com/automata_theory/index.htm
5	https://www.javatpoint.com/automata-tutorial
6	https://freevideolectures.com/course/3045/theory-of-computation-i
7	https://www.cse.iitb.ac.in/~supratik/courses/cs331/
8	http://www.cs.toronto.edu/~pmccabe/csc236-2006s
9	http://sydney.edu.au/engineering/it/~comp3310/tutorials.html
10	http://www.nuim.ie/courses/?Target=MODULE&Mode=VIEW&MODULE_CODE=CS355

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
C304.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C304.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C304.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C304.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C304.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES
C304.6	CHALK & TALK, LCD/SMART BOARDS, STUD.SEMINARS

ASSESSMENT METHODOLOGIES-DIRECT.

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

ASSESSMENT METHODOLOGIES-INDIRECT.

STUDENT FEEDBACK ON FACULTY (ONCE)	

5

ASSESSMENT METHODOLOGIES USED FOR EACH COURSE OUT COME

SNO	ASSESSMENT METHODOLOGIES-DIRECT	ASSESSMENT METHODOLOGIES-INDIRECT
C304.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C304.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C304.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C304.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C304.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C304.6	UNIV. EXAMINATION, TESTS/MODEL EXAMS, STUD SEMINARS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Mrs. C. Kalpana
Name and Signature

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: OBJECT ORIENTED ANALYSIS AND DESIGN	**SEMESTER: 5 CREDITS: 3**
COURSE CODE: CS8592 / C305	**COURSE TYPE:** CORE
COURSE AREA/STREAM : Software Design	**CONTACT HOURS:** 5+1 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): CS8582	**LAB COURSE NAME :** OBJECT ORIENTED ANALYSIS AND DESIGN LAB
COURSE COORDINATOR NAME : Mrs.J.Prisca Mary	

SYLLABUS:

MODULE	DETAILS	HOURS
I	Introduction to OOAD with OO Basics - Unified Process – UML diagrams – Use Case –Case study – the Next Gen POS system, Inception -Use case Modelling – Relating Use cases – include, extend and generalization – When to use Use-cases	9
II	Class Diagram— Elaboration – Domain Model – Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class Hierarchies – Aggregation and Composition - Relationship between sequence diagrams and use cases – When to use Class Diagrams	9
III	Dynamic Diagrams – UML interaction diagrams - System sequence diagram – Collaboration diagram – When to use Communication Diagrams - State machine diagram and Modelling –When to use State Diagrams - Activity diagram – When to use activity diagrams Implementation Diagrams - UML package diagram - When to use package diagrams - Component and Deployment Diagrams – When to use Component and Deployment diagrams	9
IV	GRASP: Designing objects with responsibilities – Creator – Information expert – Low Coupling – High Cohesion – Controller Design Patterns – creational – factory method – structural – Bridge – Adapter – behavioural – Strategy – observer –Applying GoF design patterns – Mapping design to code	9

V	Object Oriented Methodologies – Software Quality Assurance – Impact of object orientation on Testing – Develop Test Cases and Test Plans	9
	TOTAL HOURS	**45**

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	Craig Larman, —Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Developmentl, Third Edition, Pearson Education, 2005.
T2	Ali Bahrami - Object Oriented Systems Development - McGraw Hill International Edition - 1999
R1	Erich Gamma, a n d Richard Helm, Ralph Johnson, John Vlissides, —Design patterns: Elements of Reusable Object-Oriented Softwarel, Addison-Wesley, 1995.
R2	Martin Fowler, —UML Distilled: A Brief Guide to the Standard Object Modeling Languagel, Third edition, Addison Wesley, 2003.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
		NIL	

COURSE OBJECTIVES:

1	To understand the fundamentals of object modeling
2	To understand and differentiate Unified Process from other approaches.
3	To design with static UML diagrams.
4	To design with the UML dynamic and implementation diagrams.
5	To improve the software design with design patterns.
6	To test the software against its requirements specification

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C305.1	Express the software design concepts with UML diagram.	K2
C305.2	Construct the domain model and design model to various use case scenarios.	K3
C305.3	Identify various scenarios based on software requirements	K3
C305.4	Design software applications using object oriented concepts.	K2
C305.5	Transform UML based software design into pattern based design using design patterns.	K3
C305.6	Understand the various testing methodologies for object oriented software	K2

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305.1	2	1	1	-	-	-	-	-	-	-	-	-
C305.2	3	2	2	-	-	-	-	-	-	-	-	-
C305.3	3	2	2	-	-	-	-	-	-	-	-	-
C305.4	2	1	1	-	-	-	-	-	-	-	-	-
C305.5	3	2	2	-	-	-	-	-	-	-	-	-
C305.6	2	1	1	-	-	-	-	-	-	-	-	-
C305	3	2	2	-	-	-	-	-	-	-	-	-

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C305.1	1	1	-
C305.2	1	1	-
C305.3	3	3	-
C305.4	2	2	-
C305.5	2	2	-
C305.6	3	3	-
C305	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	Familiarization of Eclipse	PO5, PSO2

WEB SOURCE REFERENCES:

1	en.wikipedia.org/wiki/
2	https://nptel.ac.in/courses/106/105/106105183/
3	ww.w3schools.com/
4	http://www.cs.ccsu.edu/~stan/classes/CS490/Slides/OOAD-Ch4-4.pdf 6
5	https://www.geeksforgeeks.org/Object- Oriented analysis and design /

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
C305.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C305.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C305.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C305.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C305.5	CHALK & TALK, STUD. ASSIGNMENT, LCD/SMART BOARDS, WEB RESOURCES
C305.6	CHALK & TALK, LCD/SMART BOARDS, STUD.SEMINARS

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
C305.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C305.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C305.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C305.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C305.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C305.6	UNIV. EXAMINATION, TESTS/MODEL EXAMS, STUD SEMINARS	STUDENT FEEDBACK ON FACULTY

Prepared by
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Mrs.J.Prisca Mary
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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: World Class Manufacturing	SEMESTER: 5 CREDITS: 3
COURSE CODE: OIM551/ C306	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.S.Joshua	

SYLLABUS:

MODULE	DETAILS	HOURS
I	**UNIT I INDUSTRIAL DECLINE AND ASCENDANCY** Manufacturing excellence - US Manufacturers - French Manufacturers - Japan decade – American decade - Global decade	9
II	**UNIT II BUILDING STRENGTH THROUGH CUSTOMER – FOCUSED PRINCIPLES** Customer - Focused principles - General principles - Design - Operations - Human resources - Quality and Process improvement - Promotion and Marketing	9
III	**UNIT III VALUE AND VALUATION** Product Costing - Motivation to improve - Value of the enterprises QUALITY - The Organization: Bulwark of stability and effectiveness - Employee stability – Quality Individuals Vs. Teams – Team stability and cohesiveness - Project cohesiveness and stability	9
IV	**UNIT IV STRATEGIC LINKAGES** Product decisions and customer service - multi-company planning - Internal manufacturing planning - Soothing the demand turbulence	9
V	**UNIT V IMPEDIMENTS** Bad plant design - Mismanagement of capacity - Production Lines - Assembly Lines – Whole Plant Associates - Facilitators - Teamsmanship - Motivation and reward in the age of continuous Improvement	9
	TOTAL HOURS	45

1

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T1	By Richard B. Chase, Nicholas J. Aquilano, F. Robert Jacobs – "Operations Management for Competitive Advantage", McGraw-Hill Irwin, ISBN 0072323159
T2	Moore Ran, "Making Common Sense Common Practice: Models for Manufacturing Excellence", Elsevior Multiworth
T3	Narayanan V. K., "Managing Technology & Innovation for Competitive Advantage", Pearson Education Inc.
T4	Korgaonkar M. G., "Just In Time Manufacturing", MacMillan Publishers India Ltd.,
T5	Sahay B. S., Saxena K. B. C., Ashish Kumar, "World Class Manufacturing", MacMillan Publishers

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
NIL			

COURSE OBJECTIVES:

1	Understanding of the concept and importance of strategy planning for manufacturing industries
2	To apply principles and techniques in the identifiable formulation and implementation of manufacturing strategy for competitive in global context

COURSE OUTCOMES:

SNO	DESCRIPTION	Level in Bloom's Taxonomy
C306.1	Able to understand the concept and the importance of manufacturing strategy for industrial enterprise competitiveness	K2
C306.2	Apply appropriate techniques in the analysis and devaluation of company's opportunities for enhancing competitiveness in the local regional and global context.	K3
C306.3	Identify formulation and implement strategies for manufacturing and therefore enterprise competitiveness.	K3
C306.4	Analyze the principles and techniques in the identifiable formulation and implementation of manufacturing strategy for competitive in global context	K5

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME OUTCOMES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306.1	3	-	-	-	2	-	-	-	-	-	-	-
C306.2	3	-	2	-	-	-	-	-	-	-	-	-
C306.3	3	-	-	-	-	-	-	-	-	-	-	3
C306.4	2	-	-	-	-	-	-	-	-	-	-	2
C306.5	-	2	-	-	-	-	-	-	-	-	-	1
C306.6	-	-	-	-	-	-	-	-	-	-	-	-
C306	3	2	2	-	2							2

CORELATION BETWEEN COURSE OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

CO	PSO 1	PSO 2	PSO 3
C306.1	2	1	-
C306.2	1	1	-
C306.3	1	1	-
C306.4	1	1	-
C306.5	1	1	-
C306.6	-	-	-
C306	1	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		

3

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
C306.1	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C306.2	CHALK & TALK, STUD. ASSIGNMENT, TUTORIAL
C306.3	CHALK & TALK , STUD.ASSIGNMENT, WEB RESOURCES
C306.4	CHALK & TALK, LCD/SMART BOARDS, WEB RESOURCES, TUTORIAL
C306.5	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
C306.1	ASSIGNMENTS, UNIV. EXAMINATION, STUD. SEMINARS, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C306.2	UNIV. EXAMINATION, TESTS/MODEL EXAMS,	STUDENT FEEDBACK ON FACULTY
C306.3	UNIV. EXAMINATION, TESTS/MODEL EXAMS, ASSIGNMENTS	STUDENT FEEDBACK ON FACULTY
C306.4	UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY
C306.5	ASSIGNMENTS, UNIV. EXAMINATION, TESTS/MODEL EXAMS	STUDENT FEEDBACK ON FACULTY

Prepared by
(Course Coordinator)

Name and Signature
Mr.S.Joshua

Approved by
(Programme Coordinator)

Name and Signature
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