Department of Computer Science & Informatics

University of Kota, Kota

M.B.S. Marg, Near Kabir Circle, KOTA - 324005

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MCA – I Semester

Tentative Lecture Plan of Paper - 1

MCA 101 – Computer Organization & Architecture

(Changes in contents, if any will be notified)

S. NO.	Unit	Topic	Lecture No.
1	I	Brief introduction to computer organization,.	2
2	I	representation of data, bits and bytes, Number system (binary, octal, decimal, hexadecimal), Representation of integers, real numbers, positive and negative numbers. Binary arithmetic,	4
3	I	Simple concepts and theorems of Boolean Algebra. Representation of characters: BCD, ASCII, EBCDIC Codes, Self Complementary Codes, Error Detecting and Error correcting codes (Parity, Gray& Hamming Codes)	6
4	II	Logic Gates and Boolean Algebra,	2
5	II	Basics of logic families, Karnaugh Map, Combinational Circuit Design: Adder, subtractor, Encoder, Decoder, Multiplexer, Demultiplexer, Magnitude Comparator.	3
6	II	Sequential Circuits, Flip-Flops, Shift Registers, Asynchronous and Synchronous Counters.	4
7	III	CPU Organization: Design of ALU, design of shifter and accumulator	2
8	III	Status Register, Processor unit, Control unit organization.	3
9	III	Micro instruction format, Hardwired and micro-programmed control.	3
10	IV	Data bus and address bus, stack organization, various registers, instruction formats, addressing techniques.	4
11	IV	I/O Organization – Simple I/O devices and their properties	2
12	IV	device interfacing, DMA interface, program & interrupt control transfer.	2
13	V	Semiconductor Memories: Types of Memories, Sequential and Random Access Memory (RAM, ROM, PROM, EPROM)	1
14	V	Storage location and address, fixed and variable word length storage	3
15	V	Cache Memory, bubble memory, Secondary Memory devices and their	3

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MCA – I Semester

Tentative Lecture Plan of Paper - 2

MCA 102 – Programming in 'C'

Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	No. of Lectures
1	I	Concept of good program, from problems to programs (Algorithm, specification of algorithm. Flowcharts).	1-3
2	I	Introduction to 'C' Language, History of 'C', 'C' character Set, Identifiers and Keywords, Data types	4-6
3	I	Constants and Variables, declarations, statement, symbolic constants, Operators and expressions.	7-9
4	I	Precedence and order evaluating, formatted and unformatted input and output functions.	10-12
5	I	All types of Control Statements.	13-15
6	II	Basics and needs of functions, Types of functions. Declaration, definition and calling of function in a program.	16-18
7	II	Parameter passing, Call by value, call by reference.	19
8	II	Recursion, Meaning and need of Recursion, Implementation of Recursive Functions.	20-21
9	II	C Pre-Processors, Command-Line Arguments	22-24
10	III	Concept, types, declaration and use of Arrays and Pointers. Pointer Arithmetic.	25-28
11	III	Pointers and functions :- Passing pointers to functions, Returning Pointers from functions.	29-31
12	III	Concept, use and implementation of dynamic memory allocation.	32-33
13	IV	Structures: Basics, structures and functions, Array of structures	34-36
14	IV	Pointers to structures, self referential Structures, table look up fields.	37-39
15	IV	Union and typedef, enumerations etc.	40
16	V	File Structure, Concept of Record, file operations: storing, creating, retrieving, updating, deleting, text and library files, File handling, file pointers.	41-43
17	V	File accessing function, low level I/O, Error handling, command line argument.	44-45

Text/Reference books:

1. The C Programming Language by Brian W. Kernighan, Dennis M. Ritchie, Prentice Hall Software Series, 2nd Edition.
2. Let us C by Y.Kanetkar, BPB Publications.
3. Mastering C by Vijay Prasad, TMH.
4. Programing with C, Balaguruswamy, Tata McGraw-Hill.
5. How to Solve it by Computers, Dromey, PHI.
6. Schaums Outline of Theory and Problem of Programming with C: Gottfried B.S., TMH.
7. C Project by Kanetkar, BPB Publications,2006.

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MCA – I Semester

Tentative Lecture Plan of Paper - 3

MCA 103 – Discrete Mathematics

Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	No. of Lectures
	I	Fundamentals: Sets and Subsets, Operations on Sets.	3
1	I	Sequences, Properties of Integers, Matrices, Mathematical Structures.	2
2	I	Logic & Propositional Logic: Introduction to Logic, Propositional Logic and Predicate Logic, Elements of Propositional Logic - Negation, Conjunction, Disjunction; Truth Table, Tautology, Connectives, Construction of Proposition.	4
3	I	Semantics, normal forms, Reasoning with Propositions, Implications, Proof of Identities, Proof of Implications.	2
4	II	Predicate Logic: Well Formed Formula of Predicate Logic.	3
5	II	Predicate, Validity, Quantification, Constructing Formulas, Reasoning with Predicate Logic, Quantifiers and Connectives.	5
6	III	Verification: Model checking, Linear-time temporal logic, program verification. Induction and Recursion,	4
7	III	Recurrence Relations, Proof by Induction.	2
8	III	Set and Functions: Sets, relations, functions, operations, and equivalence Relations, relation of partial order, partitions, binary relations, Equivalence relations, growth of functions, Complexity of Algorithms..	5
9	IV	Combinatorics: Permutation, combinations.	2
10	IV	Binomial theorem, Counting, Pigenhole principle.	3
11	IV	Generalized Inclusion-Exclusion Principle (GIEP), Discrete probability.	3
12	V	Trees and Graphs: Trees, traversals, spanning trees	4
13	V	graphs – path, connectivity, reachability,cycles and circuits, planar graphs..	3
14	V	Euler and Hamilonian graphs, graph traversals, topological sorting, graph coloring.	3

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MCA – I Semester

Tentative Lecture Plan of Paper - 4

MCA 104 – Database Management System

Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	No. of Lectures
1	I	Introduction: DBMS, Basic DBMS terminology and Data base System versus file System.	3
2	I	Data independence architecture of DBMS	2
3	I	Entity Relationship model : Basic Concepts, keys, design issues, E-R diagram, weak entity sets, extended E-R features, reduction of E-R scheme to tables..	4
4	II	Relational model: structure of relational database relational algebra, tuple relational calculus, domain relational calculus..	4
5	II	SQL: Basic structure, set operations, aggregate functions, null values.	3
6	III	Data Base Design: Functional Dependencies,	3
7	III	normal forms, first, second and third normal form, BCNF multivalued dependencies, fourth normal form, join dependencies.	6
8	IV	Query processing and optimization.	2
9	IV	Transaction processing concepts, ACID Properties, Concurrency control technique locking techniques..	3
10	IV	Time stamping, Recovery, Integrity and security of database.	4
11	V	Distributed database system:	1
12	V	Fragments of relations, optimization	2
13	V	Distributed Concurrency Control, management of deadlocks and crashes.	4
14	V	Database recovery Management.	2

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MCA – I Semester

Tentative Lecture Plan of Paper - 5

MCA 105 – Programming in C Lab

Changes in contents, if any will be notified)

S. No.	Unit / Section	Topics to be Covered	No. of Lectures
1	I	Preparing Algorithms and Flowcharts for simple problems.	1-3
2	I	Writing Simple Programs in C	4-6
3	I	Writing programs for simple arithmetic calculations using variables and constants.	7-9
4	I	Programs for accepting input and displaying output using formatted and unformatted I/O functions.	10-12
5	I	Programs to implement various types of Control Statements.	13-15
6	II	Breaking already written programs in parts to convert them in functions.	16-18
7	II	Programs to implement Parameter passing, Call by value, call by reference.	19
8	II	Programs to implement Recursion.	20-21
9	II	Programs to demonstrate the use of C Pre-Processors and Command-Line Arguments.	22-24
10	III	Programs to implement arrays and array operations.	25-27
11	III	Programs to implement Pointers and pointer arithmetic, Passing pointers to functions.	28-30
12	III	Programs to return Pointers from functions and implementation of dynamic memory allocation.	31-33
13	IV	Programs to implement Structures, Array of structures	34-36
14	IV	Programs to implement Pointers to structures, self referential Structures	37-39
15	IV	Programs to implement Union, typedef, enumerations etc.	40-41
16	V	Programs to implement file operations like storing, creating, retrieving, updating, deleting, text and library files	42-44
17	V	Programs to implement File accessing function, low level I/O, Error handling, command line argument.	45-46

Text/Reference books:

1. The C Programming Language by Brian W. Kernighan, Dennis M. Ritchie, Prentice Hall Software Series, 2nd Edition.
2. Let us C by Y.Kanetkar, BPB Publications.
3. Mastering C by Vijay Prasad, TMH.
4. Programing with C, Balaguruswamy, Tata McGraw-Hill.
5. How to Solve it by Computers, Dromey, PHI.
6. Schaums Outline of Theory and Problem of Programming with C: Gottfried B.S., TMH.
7. C Project by Kanetkar, BPB Publications, 2006.

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MCA – III Semester

Tentative Lecture Plan of Paper - 1

MCA 301 – Information and Network Security System

(Changes in contents, if any will be notified)

S. No	Unit	Topic	Lecture No.
1.	I	Basic Security Concept, Computer Security	1-2
2.		Threats to Security,	3
3.		attacks	4-5
4.		Security services & Mechanisms, Communication	6
5.		Security-Encryption, Classical Encryption Model	7
6.		Steganography.	8
7.	II	Cryptography- transposition/ substitution, Caesar Cipher	9-10
8.		Cryptosystem, Symmetric and Asymmetric crypto primitives	11
9.		Private Key Cryptography, Block Cipher Principles	12-13
10.		Data encryption Standards, Encryption and Decryption using round functions,	14-15
11.		AES, Triple DES, Random number generation, Key distribution.	16-17
12.	III	Message Authentication and hash functions	18
13.		message digest, strong and weak collision, message authentication code,	19-21
14.		MD5, Hash functions, Secure Hash algorithm (SHA)	22-23
15.		Birthday paradox	24
16.		digital signature, Digital signature standards (DSS).	25
17.	IV	Public Key Cryptography – Number Theory: Euclidean algorithm, Euler Theorem, ,	26-27
18.		Fermat theorem, Totent function, multiplicative and additive inverse.	28-29
19.		Principles of Public key cryptography, Public Key infrastructure (PKI),	30
20.		RSA algorithm	31-32
21.		Key management	33
22.		Elliptic Curve cryptography,	34
23.		Diffie Hellman Key Exchange.	35
24.	V	Network and System Security – Network Attacks	36
25.		IP Security (IPSec): AH & ESP	37-38
26.		Web security: SSL /TLS, Kerberos	39
27.		E-mail Security: Pretty good Privacy (PGP), S/Mime	40-41
28.		Network scanning, System security: intruders, viruses, firewall Design Principles	42-43
29.		Intrusion Detection system (IDS),	44
30.		Concept of Cyber Security.	45

Text/Reference Books

1. Cryptography and Network Security by Willian Stallings, Pearson Education, 6th edition, 2013.
2. Cryptography and Network Security by Behrouz A. Forouzen, Tata McGraw Hill.
3. Cryptography and Network Security by atul Kahate, McGraw Hill Education India (Pvt. Ltd.) 2nd edition, 2009.
4. Handbook of Information Security Management, Micki Krause F tipton- Vol. – 3, CRC Press LLC, 2004.
5. Link: Dr, Gary C. Kersler's An overview of Cryptography: "Pretty good Privacy (PGP)"(HTML).
6. www.Netseurity.net.

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MCA – III Semester

Tentative Lecture Plan of Paper - 1

MCA 302 – Programming with JAVA

(Changes in contents, if any will be notified)

S. No.	Unit	Topic	Lecture No.
1.	I	An overview of Java, JVM, byte code	1
2.	I	Java class libraries	2
3.	I	Data types	3
4.	I	Variable	4
5.	I	Data types and casting, Operators	5-6
6.	I	operator precedence and Control statements	7-8
7.	II	Declaring object reference variable	9-10
8.	II	Introducing methods	11
9.	II	constructors, the key word	12
10.	II	garbage collection	13-14
11.	II	Overloading methods	15-16
12.	II	String handling,.	17
13.	II	String buffer	18
14.	III	Inheritance and polymorphism	19
15.	III	super class and subclass,	20
16.	III	protected members, Relationship between super and sub class	21-22
17.	III	Inheritance hierarchy,	23
18.	III	abstract classes and methods	24
19.	III	final methods and classes	25
20.	III	nested classes,	26
21.	III	Packages and Interfaces,	27
22.	III	Defining a package, importing package,	28
23.	III	defining an interface, implementing and applying interfaces.	29-30
24.	IV	Exception Handling Fundamentals	31-32
25.	IV	exception types	33
26.	IV	using try and catch	34
27.	IV	File handling	35-36
28.	IV	Character based file and binary file,	37
29.	IV	Multithreaded Programming:	38
30.	IV	Creating a single and multiple threads	39
31.	IV	thread priorities, synchronization.	40
32.	V	Applets: Applets basics, applets architecture	41
33.	V	applets skeleton, the html applet tag	42
34.	V	passing parameters in applets, event-handling:	43
35.	V	event classes and event listener interfaces	44
36.	V	introduction to swing and servelets.	45

Text/Reference Books:

1. The complete reference Java - 2, P. Naughton and H. Schildt: Tata Mc-Graw Hill.
2. the java hand books, Patrick Naughton, Michael Morrison, Osborne/McGraw-Hill
3. A Desktop Quick Reference for Java Programmers, David Flanagan, Java in a Nutshell: O'Reilly & Associates, Inc.
4. Programming with Java A Primer, E. Balaguruswamy, TMH.
5. Big Java, Cay Horstmann, Wiley India edition, 2nd Edition.
6. Core Java, Dietel and Dietel, Pearson/Pretice Hall , 7th Edition.
7. Internet and Web-Technologies by Rajkamal, TataMcGraw-Hill, 6th Edition, 2011.

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MCA – III Semester

Tentative Lecture Plan of Paper - 3

MCA 303 – Theory of Computation

(Changes in contents, if any will be notified)

S. No	Unit	Topic	Lecture No.
1.	I	Mathematical preliminaries,	1
2.	I	alphabets, strings, Languages, states, transitions,	2-3
3.	I	finite automata	4-6
4.	I	regular expressions, applications e.g. Lexical analyzers and text editors	7-9
5.	II	The pumping Lemma	10-12
6.	II	closure property of regular sets	13-15
7.	II	Decision algorithms for regular sets.	16-18
8.	III	Context free grammars,	19-21
9.	III	Chomsky and Greibach normal form theorems,	22-24
10.	III	ambiguity, Pushdown automata	25-27
11.	III	equivalence of context free languages to sets accepted by non-deterministic PDA,	28-29
12.	III	the Pumping Lemma for CFL's,	30
13.	III	closure properties of CFL's and decision algorithms for CFL's	31-32
14.	IV	Turing Machines: Introduction, Turing hypothesis,	33
15.	IV	Turing computability, nondeterministic, multitape and other versions of Turing machine,	34
16.	IV	Church's hypothesis, primitive recursive function,	35
17.	IV	Generalization, recursively enumerable Languages and Turing Computability	36-37
18.	V	Undesirability: Universal Turing machines and unsolvability of the	38-39
19.	V	halting problem.	40
20.	V	an undecidable problem,	41
21.	V	Post's Correspondence problem.	42-43
		Problem solving	44-45

Text/Reference Books

1. Introduction to Automata Theory, Languages and Computation,Hopcroft J.E. and Ullman J.D., Narosa Publishing House, 1988.
2. Theory of Computation, Derickwood, Harper & Row Publishers, New York, 1987.
3. Elements of the Theory of Computation,Lewis H.R. & Papadimitriou C.H, Prentice Hall International Inc. 1981.
4. Introduction to the Theory of Computation, Michal Sipear, MA.: Thomson course technology, 2nd edition, 2006.
5. Automata Theory, language and Computation, J. Hoperoft, R. Motwani and Jeffery Ullman, Addison wisely, 3rd edition, 2013.
6. Theory of Computer Science: Automata, Language and computation, K.L.P. Mishra, N. Chandrasekaran, PHI Learning Pvt. Ltd.

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MCA – III Semester

Tentative Lecture Plan of Paper - 1

MCA 304 – Design and Analysis of Algorithms

(Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	Lecture No.
1	I	Algorithms and structured programming	1-2
2	I	analysing algorithms	3-4
3	I	behaviour of an algorithm	5-6
4	I	Order notations	7-8
5	I	Time and space complexities (polynomial, logrithmic and exponential),	9-10
6	I	average and worst case analysis	11
7	I	lower and upper bounds	12
8	II	Advanced data structures (Intro)	13
9	II	Threaded trees, B-trees	14-15
10	II	Heaps and heapsort	16-17
11	II	sets and relations	18
12	II	Graphs	19-20
13	II	Hashing	21
14	II	Basic search & Traversal Techniques (Breadth first traversals of Graphs)	22-23
15	II	and Depth first traversals of Graphs	24
16	III	Algorithm design strategies: Divide and conquer	25-26
17	III	Mergesort,	27
18	III	Quicksort,	28
19	III	matrix multiplication	29
20	III	Greedy method: General method	30
21	III	knapsack problem,	31-32
22	III	job sequencing with deadlines	33
23	III	minimum cost spanning trees.	34
24	III	Dynamic programming (0/1 knapsack, travelling salesman problem)	35
25	IV	Backtracking (8 - Queens problem, Sum of Subsets, Graph coloring, 0/1 Knapsack).	36-38
26	IV	Branch & Bound (0/1 knapsack, Travelling salesman).	39-40
27	V	Approximation algorithms: Polynomial Time Approximation Schemes. - Cook's theorem, NP completeness reductions.	41-42
28	V	Complexity: - NP-Hard and NP-complete Problems	43-44
29	V	Cook's theorem, NP completeness reductions.	45-46

Text/Reference Books:

1. E. Horowitz, S. Sahani, Fundamentals of Computer Algorithms, Galgotia Publications, 1985.
2. Aho, J.E. Hopcroft, & J.D. Ullman, Design & Analysis of Computer Algorithms, Addition Wesley, 1974.
3. P.Berlions & P. Bizard, Algorithms - The Construction, Proof & Analysis of Programs, John Wiley & Sons, 1986.
4. K. Melhorn, Data Strucures and Algorithms, Vol. I & II, Springer Verlag, 1984.

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MCA – V Semester

Tentative Lecture Plan of Paper - 1

MCA 501 – Modeling & Simulation

(Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	Lecture No.
1	I	Definition of System: Types of system-continuous and discrete,	1-3
2	I	modelling process and definition of a model	4-7
3	II	Computer work load and preparation of its models	8-9
4	II	verification and validation modelling procedures	10-11
5	II	comparing model data with real system	12-14
6	II	Differential and partial differential equation models	15-16
7	III	Simulation Process: Use of simulation, advantages and disadvantages of simulation	17-20
8	III	discrete and continuous simulation procedures	21-22
9	III	Discrete system simulation: Monte Carlo method, Random Number Generation	23-27
10	IV	Evaluation of simulation, length of simulation runs, variance reduction techniques	28-30
11	IV	Project management **:** PERT/CPM techniques, simulation of PERT networks	31-34
12	IV	Model as components of information systems, modelling for decision support	35-38
13	V	Simulation languages: A brief introduction to important discrete and continuous simulation language; Simula	39-45
14	V	Dyanamo, Stella, Powerism. Their application and Comparison	46-52

Text/Reference Books:

1. Introduction to simulation, Payne, J.A: Mcgraw Hill.
2. Computer Aided Modelling and Simulation-Spriet, W. A: Academic Press.
3. Modelling and performance Measurement of Computer systems, Barnes,B:.
4. System Simulation, Gorden, G: Prentice Hall of India.
5. System Simulation, Deo Narsing, Mcgraw Hill.

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MCA – V Semester

Tentative Lecture Plan of Paper - 2

MCA 502 – Computer Graphics

(Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	Lecture No.
1	I	Geometry and Line generation**:** Lines, line segments and perpendicular lines, distance between a point and a line, vectors, pixels and frame buffers, vector generation	1-5
2	I	Bresenham"s algorithm, anti aliasing of line, thick line segments, character generation, displaying the frame buffer	6-10
3	II	Graphics Primitives**:** Display devices, primitive operations, The display-file Interpreter, Normalized device coordinates, Display file structure and display-file algorithms, display control, text, the line style primitive	11-18
4	II	Polygons **:** Polygon representation, Entering polygons, polygon interfacing algorithms, filling polygons, filling with a pattern, initialization, anialiasing	19-22
5	III	Transformations : Matrices, scaling transformations, Rotation, Homogenous co-ordinates and Translations, coordinate transformations, rotation about an arbitrary point, inverse transformations, transformation routines, transformation and patterns initialization and display procedures	23-28
6	III	Segments **:** Creation of segment, closing, deletion and renaming segments, visibility, image transformations, saving and showing segments.	29-32
7	IV	Windowing and clipping **:** The viewing transformation and its implementation, clipping, the Cohen-Sutherland Outcode algorithm	33-35
8	IV	Sutherland-Hodgman algorithm, clipping of polygons, Generalized clipping, multiple windowing.	36-38
9	V	Three Dimensions : 3D geometry, 3D primitives and transformations, Parallel projection, Viewing projections and special projections, conversion to view plane co-ordinates, clipping in three dimensions, clipping planes	39-44
10	V	Hidden surfaces and Lines**:** Back-face algorithm, Z-buffers, Scanline algorithm, Franklin algorithm. Illumination, Reflection, shadows, Ray tracing, halftones	45-51

Text/Reference Books

1. Computer Graphics – C version by D. Hern & P. Baker, Pearson Education, 2nd edition, 2004.
2. Computer Graphics: A programming Approach, Steven Harrington: Publisher
3. Mathematical elements for computer graphics, David F. Rogers, J. Alan Adams: Publisher
4. Procedural elements for computer graphics, David F. Rogers: Publisher.
5. Computer Graphics –principles and Practice by James D. Foley, Andries VanDamet-al, Pearson education 2nd edition,2007.
6. Computer Graphics & Project by B.M. Havaldar, Anmol Publications

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MCA – V Semester

Tentative Lecture Plan of Paper - 3

MCA 503 (Elective -I) Mobile Computing

(Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	Lecture No.
1	I	Introduction to wireless Communication System: Evolution	1
2	I	Generations of wireless communication	2
3	I	Wireless transmission concepts: Frequencies, signals, Antennas.	3
4	I	Comparison of wireless communication system: Land- Mobile technologies (GSM, CDMA)	4-5
5	I	Satellite, Personal Communication Systems	6-7
6	II	Wireless MAC Protocols: S/F/T/CDMA	8-10
7	II	CSMA protocols	11-12
8	II	specialized MAC, Cellular Systems	13-14
9	II	Spread Spectrum: DSSS & FHSS	15-16
10	II	Wireless WAN (GSM: Mobile Service	17
11	II	GSM architecture	18
12	II	Radio Interface, Protocols, Localization & Calling,	19-20
13	II	Handover & security)	21
14	III	Wireless LAN: IEEE 802.11 b/a/g:.	22-23
15	III	System architecture, Protocol architecture,	24-25
16	III	MAC management;	26
17	III	introduction to HIPERLAN	27
18	III	Concept of Bluetooth - IEEE 802.16.	28
19	IV	Mobile IP – Packet delivery – Registration process	29-30
20	IV	Tunnelling and Encapsulation	31
21	IV	Routing protocols, DHCP	32-33
22	IV	Unicast & multicast Communication	34
23	IV	Wireless TCP- Indirect, Snooping & mobile TCP	35-36
24	IV	Introduction to wireless PAN	37
25	V	Ad-Hoc Networks-Infrastructure and Ad-Hoc networks	38
26	V	Routing algorithms	39-40
27	V	Support for mobility WAP, WAP architecture	41-42
28	V	Transport Security – Transaction protocol, Session protocol	43-44
29	V	Introduction to pervasive computing- Applications, Devices, Software	45-46

Text/Reference Books:

1. Jochen Schiller. Mobile Communications, Pearson Education
2. Stojmenovic Ivan, HandBook of Wireless Networks and Mobile Computing, John Wiley & Sons
3. Theodore S. Rappaport, Wireless Communications: Principles and Practice, Second Edition, Prentice Hall. 2002.
4. Chander Dhawan, Mobile Computing- A System Integrator's Approach, McGraw-Hill

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MCA – V Semester

Tentative Lecture Plan of Paper - 4

MCA 504 (Elective -II) Natural Language Processing

(Changes in contents, if any will be notified)

S. No.	Unit	Topics to be Covered	Lecture No.
1	I	Introduction to Natural Language, Understanding Language as a knowledge base process, Basic linguistics	1-8
2	I	Morphology-Types and Parsing, N-gram Model, Maximum Likelihood Estimation	9-13
3	I	Smoothing techniques on N-gram Model, Words and Word Classes, POS Tagging	14-15
4	II	Grammar and Parsing – Top-Down Parsing, Bottom-up Parsing, Dependency Grammar, Parsing Indian Language	16-22
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