Department of Computer Science & Informatics
University of Kota, Kota

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MCA – III Semester
Tentative Lecture Plan of Paper - 1
MCA 301 – Programming with JAVA
(Changes in contents, if any will be notified)

S. No.	Unit	Topic	Lecture No.
1.	I	An overview of Java, JVM, bytecode	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 - 2
MCA 302 – Operating System
(Changes in contents, if any will be notified)

S. No	Unit	Topic	Lecture No.
1.	I	Operating system as resource Manager	1
2.	I	Overview of processor management,	2
3.	I	memory management, file management,	3
4.	I	Device management	4
5.	I	operating system services;	5
6.	I	operating system classifications-single user, multiuser	6-7
7.	I	Multiprocessing, batch processing, time sharing & real time operating system.	8-9
8.	I	Processor management: Process overview, process states, multiprogramming	10-11
9.	I	levels of schedulers and scheduling algorithms, multi-processor scheduling,	12-14
10.	I	deadlock prevention, avoidance, detection and recovery	15-16
11.	II	Memory management	17
12.	II	Partition, paging and segmentation; types of memory management schemes	18-19
13.	II	virtual memory, demand paging,	20-22
14.	II	procedure sharing, run time storage allocation.	23
15.	II	File Management: File supports, access methods, allocation methods	24-25
16.	II	continuous, linked and index allocation of files	26
17.	II	directory systems-single level, tree structured, acyclic graph and general graph directory,	27-28
18.	II	file protection, layered file system	29
19.	III	Resource Protection: Mechanism, policy and domain of protection,	30-31
20.	III	access matrix and its implementation,	32
21.	III	dynamic protection structure	33
22.	IV	Device Management: Dedicated, shared and virtual devices,	34
23.	IV	sequential access and direct access devices ,	35
24.	IV	channel and control units, I/O buffering,.	36
25.	IV	I/O schedulers, spooling system	37-38
26.	V	Concurrent Process and Programming: Precedence graph, Berntein condition,.	39-40
27.	V	process hierarchy, process synchronization, critical section and mutual exclusion,	41-42
28.	V	classical process co-ordination problems,	43-44

| 29. | V | critical region, monitors, concurrent languages | 45 |

Text/Reference Books

1. Operating System Concepts, Silberschatz, Galvin and Gagne, Wiley India Ltd., 6 edition.
2. Modern Operating Systems, Andrew S. Tanenbum, Pearson Edition, 2nd edition, 2004.
3. Operating Systems, Gary Nutt, Pearson Education, 3rd Edition, 2004.
4. Operating Systems, Harvey M. Dietal, Pearson Education, 3rd edition, 2004.
5. Fundamentals of Operating Systems, A.M. (1979).

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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 - 4
MCA 304 – E- Commerce
(Changes in contents, if any will be notified)

S. No	Unit	Topic	Lecture No.
1.	I	E-commerce: Objectives,	1
2.	I	E-commerce :Advantages and disadvantages,	2-3
3.	I	Forces driving E-Commerce,	4-6
4.	I	Traditional commerce and E-commerce,	7-9
5.	I	E-Commerce opportunities for industries.	10-12
6.	II	E-Commerce Models	13-15
7.	II	E-Commerce Models : Business to consumer,	16
8.	II	E-Commerce Models : Business to Business,	17
9.	II	E-Commerce Models :Consumer to Consumer,	18
10.	II	E-Commerce other models – Brokerage Model, Aggregator Model, Info-mediary Model, Community Model and value chain Model.	19-21
11.	III	Electronic Payment Systems:	22
12.	III	Special features required in payment systems,.	23
13.	III	Types of E-payment systems,	24
14.	III	Smart Card, Electronic Purses, E-Cash, E-cheque, credit card	25-27
15.	IV	E-Marketing,	28-29
16.	IV	E-Customer Relationship Management,	30-31
17.	IV	E-Supply Chain Management	32-33
18.	V	Security Issues in E-Commerce	34-35
19.	V	Security risk of E-Commerce,	36-37
20.	V	Types of threats,	38
21.	V	Security tools and risk management approach	39
22.	V	Cyber laws,	40
23.	V	Business Ethics,	41
24.	V	EDI Application in business	42
		Problem Solving	43-45

Text/Reference Books

1. E - Commerce An Indian Perspective by P.T. Joseph, S.J., PHI

2. Doing Business on the Internet E – Commerce (Electronic Commerce for business) by S. Jaiswal, Galgotia Publications.

3. E-Commerce by Scneider, Thomson Publication.

4. E-commerce: Strategy – Technologies and Application by Whiteley David, TMH, India.

5. Electronic Commerce by Greensteen, TMH.

MCA – III Semester
Tentative Lecture Plan of Paper - 5
MCA 305 – Information and Network System Security
(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.