

B. N. Mandal University, Laloonagar, Madhepura

Details of theory & Sessional Papers code of 4<sup>th</sup> Year B. Tech. Course

**BRANCH: COMPUTER SCIENCE & ENGINEERING**

*Approved*  
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Subject	Subject Code	Branch Code	L	T	P	Th. Ext.	Th. Int.	Sessional
Introduction of java programming 80	JP	CS-401	2	1	3	70	30	Introduction of java programming-100 →
Computer graphics 20	CG	CS-402	2	1	3	70	30	- Computer graphics-100
Artificial intel 50	DSP	CS-403	3	1	0	70	30	
Data mining & warehousing 60	DMW	404	2	1	3	70	30	Data mining & warehousing-50
cryptography 50	CTG	CS-405	3	1	0	70	30	
Elective-I (Mobile wireless and computing) 100	Elective-I (MWC)	CS-406	3	1	0	70	30	
Elective-II Multimedia 100	Elective-II (MTA)	CS-407	3	1	0	70	30	
Technology and its Application Engineering	FEM	CS-408	3	1	0	70	30	
Economics & Management								
Project 80	Project	CS-409	0	0	3	---	---	Project-100
Seminar	Seminar	CS-410	0	0	3	---	---	Seminar-50

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TEXT BOOKS:

- 1 Core java by R Nageswara & Kogent Solution Inc, Dreamtech.
- 2 The Complete Reference Java Tata McGraw Hill.
- 3 Java 6 programming Black Book, w/CD by Kogent Solutions Inc, Dreamtech.

REFERENCE BOOKS:

1. Professional Java, JDK 6 Ed . by Richardson Avondolio Wrox.

JAVALAB:

Works in windows enviro. ment, internet based on HTML, DHTML and java programming based on syllabus:

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# Computer Graphics

L-T-P:2-1-3

RANCH CODE-CS-402

FIRST TERM

1. Graphics Techniques: Jag free images on a Raster CRT. Interactive Graphics processor for Digital logic situation system. Interactive techniques for 3-D shaded Graphics Lecture:10
2. Graphics Standards 3D Models: Devices Independence AI in graphics software, Implementation of Graphics Kernel System (GKS) Lecture:12

SECOND TERM

3. Graphical workstations: Routing output to workstations, Types of GKS, workstations Lecture:8
4. Evaluation of various 3D Models: Computer Animation, 3D shaded computer Animation the use of 3D abstract Graphical types in computer Graphics & Animation, 3Dimensional Reconstruction, A case study Lecture:16

## Text Books:

1. Computer Graphics C Version by Donald Hearn and M. Pauline Baker, Pearson Education
2. Mathematical Elements for Computer graphics by Roger. Tata Mcgraw Hill
3. Computer Graphics by Hearn and Baker, PHI
4. Computer Graphics by ISRD Group, Tata Mcgraw Hill
5. Computer Graphics by Hanmandin, BPB Publishers, 2005

## CG LAB

WORKING ON WINDOWS ENVIROMENT, INTERNET, C COMPUTER GRAPHICS PROGRAMMING ON C  
BASED ON SYLLABUS

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ARTIFICIAL INTELLIGENCE

L-T-P:3-1-0

BRANCH CODE:-CS-403

FIRST TERM:

- ✓ 1. Introduction: Why AI, Importance of AI, Prolog and other programming language for AI Lecture:10
- ✓ 2. Search Strategies: Representation Scheme, Blind Search Techniques, Heuristic Search Techniques, Game search, Graph search(algorithm A and A\*), Properties of A\* algorithm, monotone-specialized production systems-AO\* algorithm Lecture:10
- ✓ 3. Searching Game trees: Minimax Procedure, alpha-beta Pruning-Introduction to Predicate calculus-Resolution refutation systems Lecture:10

SECOND TERM:

- 4. Knowledge Representation, Reasoning: Knowledge representation, knowledge acquisition, logical Representation scheme, procedural representation schema, network representation scheme, STRIPS robot problem solving system, structured representations of knowledge(semantic, frames, scripts), KRR system, KR languages, Domain modeling, semantic net Lecture:10
- ✓ 5. Uncertainty: Non monotonic & monotonic reasoning, confidence factors, Baye theorem, Dempster & Shafer's Theory of evidence, Non classical logic, Fuzzy reasoning Lecture:10
- ✓ 6. Natural Language Processing: An Introduction to natural language Understanding, perception, learning Lecture:10
- ✓ 7. Applications of Artificial Intelligence: AI in E-commerce, AI in industry, AI in medicine Lecture:10

Text Books:

- 1. Introduction to Artificial Intelligence by Rajendra Akerkar, PHI
- 2. Introduction to Artificial Intelligence by Eugene Charniak, Pearson Education
- 3. Artificial Intelligence by Rich & Knight Tata Mcgraw Hills
- 4. Introduction to Artificial Intelligence & Expert system by Dan W. Patterson, PHI

Reference Book:

- 1. Artificial Intelligence A Modern approach by Stuart Russell Pearson Education
- 2. Introduction to Expert System, Peter Jackson, Pearson Education
- 3. Artificial Intelligence application programming by M. Tim Jones Dreamtech press



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DATA MINING & WAREHOUSING

SUBJECT CODE- CS 404

L-T-P:2-1-3

COURSE OBJECTIVES

1. Fundamentals: Three concept view of supervised learning, Unsupervised clustering, Data Mining or Data Query, Expert system or Data Mining? A simple data mining process model, Data mining Strategies, Supervised Data Mining Techniques, Association Rules, Clustering

Lecture:08

2. Basic Data Mining Techniques: Decision Trees, Generating Association Rules, K-Means

Lecture:08

3. An Excel Based Data Mining Tool with Analyzer

Lecture:

4. Knowledge Discovery in Databases: KDDO process model, Noisy data, missing data, Data Transformation, CRISP-DM process model

Lecture:08

SECOND SEMESTER

5. Data Mining using Excel for Mining Data: Introduction of Excel pivot Tables for data mining

Lecture:04

6. Feature Evaluation Techniques: Evaluation criteria, Tools, computing Test set confidence intervals, Evaluating supervised

Lecture: 04

7. Statistical Techniques: Linear regression analysis, Logistic Regression, Bayes Classifier, Clustering Algorithms: Adv and Disadvantages, Machine learning and Statistical Techniques

Lecture:08

8. Neural Networks: Feed Forward neural networks, its Training, Backpropagation, Neural Network with Applications

Lecture:06

9. Specialized Techniques: Time Series Analysis, Mining the web, Mining Textual Data, improving performance

Lecture:04

Text Books

(1) Data Mining: A tutorial-based primer, by Richard J. Roiger, Pearson Education

(2) Data Mining: Introductory & Advance topic, by Margaret H. Dunham, Pearson Education

Reference Books:

(1) Data Warehousing, Data Mining & OLAP by Berson/Smith, TMH

(2) The Microsoft Data Warehouse Toolkit: with sql server 2005 and the microsoft business intelligence data mart set by Ralph Kimball, Wiley India

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# CRYPTOGRAPHY

Subject code- CS-405

L-T-P:3-1-0

## FIRST TERM

1. Introduction: The OSI Security Architecture, Security attack, Security Services, Security Mechanism, A model for Network Security  
Lecture: 08

2. Symmetric Cipher: Classical Encryption Techniques, Symmetric Cipher Model, Block Cipher Principles, DES, Cryptanalysis, Block Cipher Design Principles, The Euclidean Algorithm, Finite field of form  $GF(p)$ , advance encryption standard (AES), AES Cipher, multiple Encryption and Triple DES, Stream, Placement of Encryption function, Traffic Confidentiality, key distribution, Random number generation  
Lecture: 18

## SECOND TERM


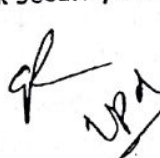

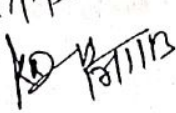

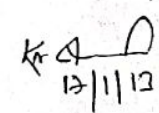
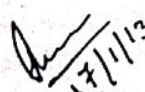
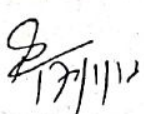
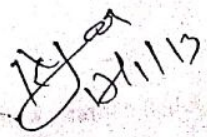
3. Public Key Encryption and Hash Function: Fermat's & Euler's Theorem, the Chinese Remainder Theorem, RSA algorithm, Diffie-Hellman key Exchange, Elliptic Curve Cryptography, Message authentication code, security of Hash function and MACs, Secure Hash algorithm, Whirlpool, HMAC, CMAC, digital signature  
Lecture: 12

4. Network Security Applications: Kerberos, X.509 Authentication Service, S/MIME, IP Security Architecture, Encapsulating Security Payload, Secure Socket Layer (SSL), Transport layer security, Secure Electronic Transaction  
Lecture: 08

5. System Security: Intrusion Detection, Password Management, Virus Countermeasure, Denial of service attack, firewall design principles, Trusted system  
Lecture: 08

### Text Books:

1. Cryptography and Network Security: Principles and Practice, 4e by William Stallings, Pearson Education/PHI.





## MOBILE AND WIRELESS COMPUTING (Elective-II)

BRANCH CODE-CS-406

### FIRST TERM

1. INTRODUCTION: Mobile computing, Middleware and gateway
2. Mobile computing architecture: Architecture for mobile computing, three-tier architecture, design consideration for mobile computing, mobile computing through internet Lecture:10
3. Mobile computing through telephony: multiple access, mobile computing through telephone, IVR system, voice XML Lecture:10
4. The mobile radio Environment: Representation of a mobile radio signal, Causes of propagation path loss and classification of channels, Definition of necessary terms, Delay spread and coherence bandwidth, diversity schemes, combining techniques Lecture:10
5. Mobile Radio interface: Co-channel and adjacent -channel interference, Near -end to far end ratio, inter symbol and simulcast interference Lecture:10
6. Frequency plans & Cellular Concept: Channelized schemes and frequency reuse, FDM, TDM, spread Spectrum & Frequency hopping, Cellular concept, Frequency reuses and cell separation, HO, spectral efficiency and cellular schemes, Separation between co-channel cells Lecture:10

### SECOND TERM

7. Digital Cellular Mobile System. GSM, GPRS, Numbers & Identities for Mobile Lecture:10
8. Personal Area Network: Bluetooth technology, protocol and etc. Lecture:10
9. Cellular CDMA: Narrowband & Wideband wave propagations, key elements in designing cellular, Spectrum techniques in modulation, Capacities of multiple access schemes, DS-SS, FH-SS, TH-SS Lecture:10
10. MOBILE-IP: IP packet delivery, agent advertisement & discovery, Registration, Tunneling and encapsulation, IPv6, DHCP, Ad-hoc network, Mobile Transport layer Lecture:10
11. WAP: WAP architecture, Wireless Markup language, WML script, MMS, case study of NOKIA phone simulator Lecture:10

### TEXT BOOKS:

1. Mobile computing by Asoke k Talukder, TMH
2. Mobile Communication by Jochen Schiller, Pearson education
3. Wireless and mobile all-IP Network by Yi-Bing, Ai Chun Pang, Wiley india
4. Mobile Computing by Hansmann, Wiley india
5. Mobile and Personal Communication system & services by Raj Pandya, PHI
6. Mobile & Wireless Design Essentials by Martyn Mallick, Wiley dreamtech
7. The wireless Application Protocol by sandeep singhal, et al., Pearson Education
8. Bluetooth Technology and its applications with Java and J2ME, by C.S.R. Prabhu and A. Prathap Reddi

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MULTIMEDIA TECHNOLOGY AND APPLICATION (Elective-II)

BRANCH CODE-CS-407

L-T-P:2-1-0

FIRST TERM

- 1. INTRODUCTION: Multimedia today, Impact of Multimedia, Multimedia Systems, Components and its applications Lecture:04
- 2. Text and Audio: Text Types of text, Ways to Present Text, Aspects of Text Design, Character, character Set, codes, Unicode, Encryption, audio: Basic sound concepts, types of sound, digitizing sound, computer representation of sound, Audio Formats, Audio tools, MIDI Lecture:06
- 3. Image and Video: Image Formats, Image colour Scheme, Image Enhancement, Video, Analogue and digital video, Recording formats and standards, Transmission of Video signals, video Capture and Computer based Animation Lecture:05
- 4. Synchronization: Temporal relationships, synchronization accuracy specification factors, quality of service Lecture:03
- 5. Storage media and access techniques: magnetic media, optical media, file systems Lecture:05

SECOND TERM:

- 6. Multimedia devices: Output devices, CD-ROM, DVD, scanner, ccd Lecture:02
- 7. Image and video database: Image representation, segmentation, similarity based retrieval, image retrieval by colour, shape and texture, indexing k-d trees, R-trees, quad trees: case studies (QBIC), Image Video Content querying, video segmentation, indexing Lecture:04
- 8. Document Architecture and Content management: Content Design and development, general design principles Lecture:06
- 9. Hypertext: Concept open document architecture (ODA) Multimedia and Hypermedia coding Expert group (MHEG) standard Generalised markup language (SGML), Document type definition (DTD), Hypertext Markup Language (HTML) in web publishing, case study of application Lecture:04
- 10. Multimedia Application: Interactive television, Video-on-demand, Video Conferencing, Educational Applications, Industrial Applications, Multimedia archives and digital libraries, media editors Lecture:05

Text Books:

- 1. Multimedia: Computing, communications & applications by Raif steinmetz and Klara Nahrstedt, Pearson ed:
- 2. Multimedia Systems Design by Prabhat K. Andleigh & Kiran Thakrar, PHI
- 3. Principles of Multimedia by Parehk, TMH

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