SEMESTER III

COURSE TITLE: ADVANCED WEB PROGRAMMING

COURSE CODE: 05BMCAR17361 **CREDITS: 4**

UNIT I – PERL, CGI PROGRAMMING

Origins and used of Perl: Scalars and their operations: Assignment statements and simple input and output, Control statements; Fundamentals of arrays – Hashes – References – Functions, Pattern matching – File input and output Examples – Common Gateway Interface – CGI linkage, Query string format – CGI.pm module – A survey example – Cookies

UNIT II - SERVLETS AND JAVA SERVER PAGES

Overview of servlets – servlet details – Survey example – storing information on clients – Java Server Pages. PHP: Origins and uses of PHP – Overview of PHP – General syntactic characteristics – Primitives – Operations and expressions. Output Control Statements – Arrays – Functions: Pattern matching – Form handling – Files management. Cookies- session tracking – Introduction Database Access through the web.

UNIT III - DATABASE ACCESS ON WEB:

Relational Databases – Introduction to SQL – Architectures for Databases access – MySQL Database system. Database access with PERL and MySQL – Database access with PHP and MySQL – Database access with PHP – Jscript, Database access with JDBC and My SQL. – Origins and uses of Ruby – Scalar types and their operations – Simple input and output – Control Statements, Fundamentals of arrays – Hashes – Methods – Classes – Code blocks and iterators. Pattern matching – Overview of Tails – Document requests – Processing forms. Rails applications with Databases – Layouts – Database connecting examples – CGI

UNIT IV - INTRODUCTION TO AJAX

Overview of Ajax – The Basics of Ajax – Rails with Ajax, Ajax Frameworks - Key Elements of AJAX – Choosing the Framework. Prototype: Introduction – Downloading Prototype – Using Prototype for AJAX – Form examples. Accessing nodes – Removing nodes – XML and AJAX

Documents for further study

1. Robert W. Sebesta: “Programming the World Wide Web”, 4th Edition, Pearson Education, 2012.
2. M.Deitel, P.J Deitel, A.B. Goldberg: “Internet & WWW, How to program”, 3rd Edition, Pearson Education, 4th Edition PHI, 2011.
3. Chris Bates: “Web Programming Building Internet Applications”, 3rd Edition, Wiley India, 2011.

4. Joyce Farrell, Xue Bai, Michael Ekedahl: "The Web Warrior Guide to Web Programming", 1st edition, Thomson, 2010.

Magazines and Journals

- IEEE Journals Computer Science and Research.
- Springer Journals of Computer Science.
- Scopus Journals Computer Science and Engineering.
- Journals of WOS for Computer Science and Information Technology.
- Journals of ICI for Advanced Research in Computer Science and Applications.

E-learning

- www.javatpoint.com
- www.w3schools.com
- www.tutorialspoint.com/php
- www.tutorialspoint.com/servlets
- www.journaldev.com

PRACTICAL

CODE: 05BMCAR17365 **CREDITS: 02**

1. Develop and demonstrate a XHTML file that includes JavaScript to generate first n Fibonacci numbers.

2. Develop and demonstrate the usage of inline and external style sheet using CSS.

3. Develop and demonstrate, using JavaScript script, a XHTML document that collects the USN (the valid format is: A digit from 1 to 4 followed by two uppercase characters followed by two digits followed by two upper-case characters followed by three digits; no embedded spaces allowed) of the user. Event handler must be included for the form element that collects this information to validate the input. Messages in the alert windows must be produced when errors are detected.

4. Develop and demonstrate, using JavaScript script, a XHTML document that contains three short paragraphs of text, stacked on top of each other, with only enough of each showing so that the mouse cursor can be placed over some part of them. When the cursor is placed over the exposed part of any paragraph, it should rise to the top to become completely visible.

5. Design an XML document to store information about a student in a college affiliated to BU. The information must include USN, Name, and Name of the College, Brach, Year of Joining, and e-mail id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document.

6. Write a Perl program to display a digital clock which displays the current time of the server.

7. Write a Perl program to insert name and age information entered by the user into a table created using MySQL and to display the current contents of this table.

8. Write a PHP program to store current date-time in a COOKIE and display the 'Last visited on' date-time on the web page upon reopening of the same page.

9. Write a PHP program to read student data from an XML file and store into the MYSQL database. Retrieve and display.

10. Write a Perl program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.

11. Write a CGI-Perl program to use a cookie to remember the day of the last login from a user and display it when run.

12. Write a Perl program to display various Server information like Server Name, Server Software, Server protocol, CGI Revision etc.

13. Create a XHTML form with Name, Address Line 1, Address Line 2, and E-mail text fields. On submitting, store the values in MySQL table. Retrieve and display the data based on Name.

14. Write a Perl program to accept the User Name and display a greeting message randomly chosen from a list of 4 greeting messages.

SEMESTER III

COURSE TITLE: ADVANCED DATABASE MANAGEMENT SYSTEMS

COURSE CODE: 05BMCAR17362 **CREDITS: 4**

UNIT I

NOSQL and Query Optimization: Definition of NOSQL, History of NOSQL and Different NOSQL products, Exploring MongoDB Basics. NOSQL Storage architecture, CRUD operations, with MongoDB, Querying, Modifying and Managing NOSQL Data stores, Indexing and ordering data sets), Advanced NOSQL, NOSQL in CLOUD, Parallel Processing with Map Reduce, Big Data with Hive. Working with NOSQL: Query Optimization: Overview, Transformation of Relational Expressions, Estimating Statistics of Expression Choice of Evaluation Plans, Materialized views, Advanced Query Optimization: Motivation, Query Processing Phases, Logical Query Optimization

UNIT II

Introduction to Information Storage and Management, Data Canter Infrastructure, Information Lifecycle Components of Storage System Environment, Disk Drive, Components, Disk Drive Performance, Fundamental Laws Governing Disk Performance, Logical Components of the Host, Application Requirements and Disk Performance. Data Protection, Intelligent Storage system: Implementation of RAID, RAID Array Components, RAID Levels, RAID Impact on Disk Performance. Data Warehousing and Data Mining: Data Warehouse Architecture, Data Warehouse Implementation, Mining Methods, Mining Various Kinds of Association Rules. Data Mining: Data Mining Applications, Social Network Analysis.

UNIT III

Big Data: Introduction to principles and practice of systems that improve performance through experience., Topics include statistical learning frame work, supervised and unsupervised learning, performance evaluation and empirical methodology. Design tradeoffs. Introduction to the Big Data problem. Current challenges, trends, and applications Algorithms for Big Data analysis. Mining and learning algorithms that have been developed specifically to deal with large datasets Technologies for Big Data management. Big Data technology and tools, special consideration made to the Map Reduce paradigm and the Hadoop ecosystem

UNIT IV

Information Retrieval and Search Engines: Architecture of search engine, Ranking and Evaluation; CRAWLS AND FEEDS. Crawling the Web, Directory Crawling, Conversion Problem, Storing the Documents, Detecting Duplicates, Processing text: Text Statistics, Document Parsing, Document Structure and Mark-up, Link Analysis. Information Extraction, Internationalization RANKING WITH INDEXES: Inverted indexes,

Compression, Entropy and Ambiguity. Delta Encoding, Bit-aligned codes, Auxiliary Structures, Index Construction, Query Processing.

Documents for further study

- "Professional NOSQL" by Shashank Tiwari, 2011, WROX Press The Definitive guide to MongoDB, The NoSQL Database for Cloud and Desktop Computing, by Eelco Plugge, Tim Hawkins, Peter Membrey press 2010
- "NoSQL Handbook" by Mathias Meyer, 2011 Paper planes.
- MongoDB: The Definitive Guide, 2nd Edition, by Kristina Chodorow 2013 Silberschatz, Korth and Sudharshan Andreas Meister Otto-von-Guericke University Magdeburg
- G. Somasundaram, Alok Shrivastava (Editors): Information Storage and Management: Storing, Managing & Protecting Digital Information in Classic, Visualized and Cloud Environments, 2nd edition, EMC Education Services, Wiley- India, 2009. ISBN 978-1- 1180-9483-9
- Jiawei Han and Micheline Kamber, Data Mining, Concepts and Techniques, Morgan Kaufmann Publisher, II Edition, 2006.
- Machine Learning, Tom Mitchell. ISBN-10: 0070428077 | ISBN-13: 9780070428072 | Edition: 1 (optional)
- Hadoop Real World Solutions Cookbook by Jonathan R. Owens, Brian Femiano, and Jon Lentz Publication Date: February 7, 2013 | ISBN-10: 1849519129 | ISBN-13: 978- 1849519120

Magazines and Journals

- IEEE Journals Computer Science and Research
- Springer Journals of Computer Science
- Scopus Journals Computer Science and Engineering
- Journals of WOS for Computer Science and Information Technology
- Journals of ICI for Advanced Research in Computer Science and Applications

E-learning

- https://www.w3schools.in/dbms/http://roseindia.net
- https://www.tutorialspoint.com/mongodb/
- https://researchgate.net/DBMS
- https://learn.org/articles/What_Skills_Will_I_Learn_in_a_Database_Management_Course.html
- https://www.wileyindia.com/advanced-database-management-systemm.html
- https://www.researchgate.net/publication/258328266_Database_Management_Systems_A_NoSQL_Analysis

SEMESTER III

COURSE TITLE: ARTIFICIAL INTELLIGENCE

COURSE CODE : 05BMCAR17363 **CREDITS : 04**

UNIT I – INTRODUCTION to AI

Definition, AI Applications, AI Representation, Properties of internal representation. Heuristic search techniques – Best first search, mean and end analysis. A* and AO* Algorithm, Game Playing, Minimize Search procedure. Alpha beta cut offs – Waiting for Quiescence, Secondary Search.

UNIT II - KNOWLEDGE REPRESENTATION USING PREDICATE LOGIC

Predicate calculus, Predicate and augments, ISA hierarchy, frame notation, resolution, Natural deduction **,** Knowledge representation using non monotonic logic – TMS, statistical and probabilistic reasoning, 3 Fuzzy Logic- structure knowledge representation – Semantic net, Frames – Script, TMS Classifications - Conceptual dependency

UNIT III - PLANNING OF AI

Block world, strips, Implementation using goal stack, Nonlinear planning with goal stacks, Hierarchical planning **,** List commitment strategy – Perception – Action, Robot Architecture – Vision, Texture and Images. Representing and recognizing scenes, waltz algorithm, constraint determination – Trihedral and non-trihedral figures labelling. Learning as induction matching algorithms – Failure driver learning, learning in general problem solving – Concept learning. Qualitative analysis only – neural net architecture and applications

UNIT IV - NATURAL LANGUAGE PROCESSING AND UNDERSTANDING

Syntactic – semantic analysis – RTN, ATN, understanding sentences. Expert system: utilization and functionality, architecture of expert system. Knowledge representation – two case studies on expert systems, Introduction: procedural (imperative) and declarative (logical, functional) Programming paradigms and languages. Artificial neural networks. Historical notes. The perception and its learning algorithm. Multi-layer feed-forward networks; the back propagation learning algorithm.

Documents for further study

1. E. Charnaik and D. McDermott, Introduction to artificial Intelligence, Pearson Education 2012.
2. Dan W. Patterson, “Introduction to Artificial Intelligence and Expert Systems”, PHI 2013.
3. Artificial Intelligence: A Modern Approach, 3rd Edition, Sturrat Russell.
4. E. Rich and K. Knight, “Artificial Intelligence”, Tata McGraw Hill, 2013.
5. Nils and K. Knight, “Principles of Artificial Intelligence”, Narosa Publishing Co. 2012.

Magazines and Journals

- IEEE Journals Computer Science and Research.
- Springer Journals of Computer Science.
- Scopus Journals Computer Science and Engineering.
- Journals of WOS for Computer Science and Information Technology.
- Journals of ICI for Advanced Research in Computer Science and Applications.

E-learning

- http://www.imagination-engines.com/
- https://www.e-reading.club/book.php?book=143358
- http://ai-depot.com/
- http://www.pcai.com/
- http://www.library.ethz.ch/en/Resources/E-books-books/E-book-providers
- http://onlinelibrary.wiley.com/journal

SEMESTER III
COURSE TITLE: ADVANCED DBMS MINI PROJECT

COURSE CODE 05BMCAR17364 **CREDITS: 04**

Students have to implement mini projects based on the course : ADVANCED DATABASE MANAGEMENT SYSTEMS

SEMESTER III

COURSE TITLE: CLOUD COMPUTING

COURSE CODE: 05BMCAR17371 **CREDITS: 2**

UNIT I

Cloud Computing definition, private, public and hybrid cloud. Cloud types; IaaS, PaaS, SaaS Benefits and challenges of cloud computing, public vs private clouds, role of virtualization in enabling the cloud. Business Agility: Benefits and challenges to Cloud architecture. Application availability, performance, security and disaster recovery; next generation Cloud Applications.

UNIT II

Technologies and the processes required when deploying web services; Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages Designing Cloud Based Applications: Role of business analyst, requirements gathering, UML, use of state diagrams, Wire frame prototypes, use of design tools such as Balsamiq. Selecting front end technologies and standards. Impact of growth in mobile computing on functional design and technology decisions.

UNIT III

Reliability, availability and security of services deployed from the cloud. Performance and scalability of services, tools and technologies used to manage cloud services deployment**,** Cloud Economics: Cloud computing infrastructures available for implementing cloud based services, Economics of choosing a Cloud platform for an organization, based on application requirements, economic constraints and business. Service creation environments to develop cloud based applications. Development environments for service development; Amazon, Azure, Google App, Analysis of Case Studies when deciding to adopt cloud computing architecture. – Decision on the cloud requirements.

UNIT IV

Confidentiality, privacy, integrity, authentication, non-repudiation, availability, access control, defense in depth, least privilege, how these concepts apply in the cloud. User authentication in the cloud; Cryptographic Systems- Symmetric cryptography, stream ciphers, block ciphers. Modes of operation, public-key cryptography, hashing, digital signatures. Public-key infrastructures, key management, X.509 certificates, OpenSSL, Cloud Security Applications – Case Study on Public Cloud Computing Security - Cloud Computing Compliance, Audit and Data Governance.

Documents for further study

1. Gautam Shroff, “Enterprise Cloud Computing Technology Architecture Applications”, Cambridge University Press; 1 edition, 2010.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach” McGraw-Hill Osborne Media; 1 edition, 2009.

3. Dimitris N. Chorafas, “Cloud Computing Strategies” CRC Press; 1 edition, 2010.
4. Jim Webber, Savas Parastatidis, Ian Robinson, “REST in Practice” O'Reilly Media; 1 edition, 2010.
5. Greg Schulz, “Cloud and Virtual Data Storage Networking”, Auerbach Publication, 2011.
6. Marty Poniatowski, “Foundations of Green IT” Prentice Hall; 1 edition, 2009.
7. EMC, “Information Storage and Management” Wiley; 2 editions [ISBN: 978-0470294215], 2012.
8. Volker Herminghaus, Albrecht Scribes, “Storage Management in Data Centers” Springer; edition. 2009.
9. Klaus Schmidt, “High Availability and Disaster Recovery” Springer; edition, 2006.

Magazines and Journals

- IEEE Journals Computer Science and Research
- Springer Journals of Computer Science
- Scopus Journals Computer Science and Engineering
- Journals of WOS for Computer Science and Information Technology
- Journals of ICI for Advanced Research in Computer Science and Applications

E-learning

- https://www.infosecurity-magazine.com/cloud-security/
- https://learningcloud.ie/about-us
- https://www.sans.org/course/cloud-security-fundamentals
- https://www.computer.org/web/education/cloud-elearning-courseshttps://www.elearninglearning.com/cloud-computing/
- https://www.dokeos.com/cloud-computing-future-of-elearning/

SEMESTER III

E-Governance

COURSE CODE: 05BOPEL17381 **CREDITS: 4**

UNIT I

Introduction to e-Governance, Different Stages of e-governance Advantages, Problems and Challenges of e-Governance. National Statues, International Status, Securities in e-Governance

UNIT II

National e-Governance Plan, Government of India guidelines for websites. W3C guidelines, Web 2.0, Web 3.0

UNIT III

Different UN Survey on e-governance, UN Survey on e-Governance – 2014. E-Government Act, 2002, Aadhaar Bill, 2016, II Administrative Reforms Committee Report 11, Digital India Programme, IT Act, 2008 Section 1 to 11A, Section 43 and 66

UNIT IV

Workflow Management in e-Governance, Digital Divide, Mechanism to handle Digital Divide, Bridge the digital divide, M-Governance, e-Learning. Role of Social Media in e-governance, Big data Analytics in e-Governance, Semantic web Analytics

UNIT V

Case Study: Election Commission. Indian Railway Reservation and Addhar – UID. Income Tax, SAKALA, Bhoomi, e-Commission - CET admission, Centralized Admission, Student Scholarship Management.

Text and Main Documents

1. E-governance for Development: A Focus on India, Shirin Madon , Palgrave Macmillan , 2009 2.
2. E-governance: case studies, Ashok Agarwal, University Press India, 2007
3. 3. IT-e-Governance in India ,Kamalesh N. Agarwala, Murli D. Tiwari , Macmillan , 2002
4. E-government: from vision to implementation: a practical guide with case studies, Subhash C. Bhatnagar, SAGE , 2004

Documents for further study

- Electronic Governance and Cross-Boundary Collaboration: Innovations and Advancing Tools, Yu-Che Chen (Northern Illinois University, USA) and Pin-Yu Chu (National Chengchi University, Taiwan), Publisher: Information Science Reference, 2011
- Public Information Technology and E-Governance: Managing the Virtual State by G. David Garson, Publisher: Jones & Bartlett Learning, 2006
- Global e-Governance: Advancing e-Governance Through Innovation and Leadership , by J Tubtimhin, Publisher: IOS Press, 2009
- Innovations In e-Government: Governors And Mayors Speak-Out ,By Erwin Blackstone, Michael Bonino& Simon Hakim

Magazines and Journals

- Mishra D.S (2007). E-Governance as reform strategy for combating corruption in delivery of public services. Indian Journal of Public Administration. LIII (3).
- Bhogle Srinivas (2009). E-Governance. Selected Readings on Information Technology Management: Contemporary Issues ed. George Kelley. Information Science Reference, New York.
- Bhuiyan H Shahjahan (2011). Modernizing Bangladesh public administration through e-governance: Benefits and challenges. 28, 54-65.
- The World Wide Web Consortium (2008). Web Content Accessibility Guidelines (WCAG) 2.0. Downloaded on 10th January, 2012 from http://www.w3.org/

E-Learning

Students must browse the following websites to enhance their knowledge in the subject and can take the exercises as advised from time to time in consultation with faculty member.

- http://meity.gov.in/divisions/national-e-governance-plan
- http://mhrd.gov.in/e-contents
- https://www.india.gov.in/topics/education
- http://www.insightsonindia.com/2014/11/23/e-governance-india-concept-initiatives-issues
- http://negd.gov.in/

SEMESTER III

COURSE TITLE: SOFT SKILLS AND PERSONALITY DEVELOPMENT

COURSE CODE: 05BSSCO17391 **CREDITS: 2**

UNIT I

Introduction to Soft Skills and Hard Skills, Break the ice berg –FEAR, Self Development - Etiquette and Manners. The Self Concept: Attitude, The process of attitude formation, positive attitude, How to build a success attitude, You are the chief architecture of yourself. Self Management Techniques. Believe in yourself: Self Image and Self Esteem, Building Self Confidence, Environment we mix with, How to build self-image.

UNIT II

Meaning and definition of personality, Personal Planning and Success Attitude: Prioritizing, Creating the master plan, Active positive visualization and Spot analysis Self-Motivation and Communication: Levels of motivation, power of irresistible enthusiasm, etiquettes and manners in a group, public speaking. Importance of listening and responding.

UNIT III

Motivation Skills & Personality Development, Goal Setting, Career Planning, Resume Building, Psychometric Test Priority Management & Time Management, Positive Attitude and Self Confidence. Verbal Communication includes Planning, Preparation Delivery, Feedback and assessment of activities like: Public speaking, Group Discussion, Oral Presentation skills, Perfect Interview. Listening and observation skills, body language and use of Presentation aids. Email etiquettes, telephone etiquettes. Improving Personal Memory, study skills that include rapid reading, notes taking and creativity.

UNIT IV - NATURAL LANGUAGE PROCESSING AND UNDERSTANDING

Problem Solving and Decision Making Skills, Perceptive, Conceptual, Creative, Analytical and Decisive. Leadership as a process: co-ordination while working in a team, Leadership styles. Leader and Team player, Management of conflict, Profiles of great and successful personalities, Role of career planning in personality development, negotiation, Motivating.

Documents for further study

1. Wallace: Personality Development 1st Edition, 2008 Cengage Learning India.
2. Succeed for your self -Richard Denny (3rd edition) - Kogan page India www.vivagroupindia.com.
3. Unleashing Leadership – John Hoover & Angelo Valenti – Jaico publishing House – WWW.JAICOBOOKS.COM
4. Kundu, C.L - Personality development, Sterling Bangalore.

5. Listening and Responding – Sandra D.Collins-Cengage Learning India, 2nd Edition, 2008.
6. 1,001 ways to inspire your organization, your team and your self – David E. Rye-Jaico publishing house, Career Press, 1998.

Magazines and Journals

- Springer International Journal of Computer Science
- Elsevier International Journal of Information Sciences
- ACM Transactions on Computer Science Applications
- IEEE Transactions on Computer Science Applications
- International Journal on Intelligent Systems, Wiley
- Digit Magazine
- Computer World
- Developer IQ

E-learning

- https://crescendo.weebly.com/personality-development-topics.html
- https://onlinecourses.nptel.ac.in/noc16_hs14
- www.aptechaviationacademy.com/courses/personality-development
- www.aptechaviationacademy.com/courses/personality-development