Detailed Program Scheme

Bachelor of Computer Applications

(BCA)

Semester-VI

(2016-2019)

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RNB GLOBAL UNIVERSITY
Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).**Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for BCA Program for (January-June) Even Semester, 2019 along with examination pattern is as follows:

Course Scheme

Semester –VI

S. No.	Course Code	Course Name	L	T	P	Credits
1.	13013100	Software Testing and Quality Assurance	3	1	0	4
2.	13013200	Theory of Computation	3	1	0	4
3.	13013300	Elective-II Unix & Shell Programming	4	0	0	4
4.	13013400	Elective-II Unix & Shell Programming Lab	0	0	2	1
5.	13013500	Cloud Computing	3	0	0	3
6.	13013600	Major Project	0	0	16	8
7.	13003100	Ability & Skill Enhancement - VI	2	0	0	2
8.	99002800	Workshops & Seminars	-	-	-	1
9.	99002700	Human Values & Social Service/NCC/NSS	-	-	-	1
Total			**15**	**2**	**18**	**28**

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	Two Mid-term Sessional of 15 marks each (15+15)	30
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	15
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS & NCC/NSS

1. NCC/NSS will be completed from Semester I – Semester IV. It will be evaluated internally by the institute. The credit for this will be given at the end of each Semester.
2. The students have to join club/clubs with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester

CURRICULUM

Course Name: Software Testing and Quality Assurance

Course Code: 13013100

Objectives

- To gain knowledge of various functional and structural testing techniques.
- To gain knowledge of various activities and levels of testing.
- To learn the issues in testing of object oriented and internet based applications.

Course Outline

Unit I
Software Testing – Psychology of Testing, Verification and Validation, Testing Team and Development Team, Characteristics of Test Engineers, Levels of Testing, Top-Down versus Bottom-Up Testing, Types of Testing – Black Box, White Box, Gorilla, Beta, Field, Performance, Stress and Acceptance Testing, Criteria for Completion of Testing, Manual Testing and its Limitations.

Unit II
Overview of Testing Tools – Need for Automated Testing Tools, Taxonomy of Testing Tools, Functional/Regression Testing Tools, Performance Testing Tools, Testing Management Tools, Source Code Testing Tools, How to select a Testing Tool. • WinRunner – Overview of WinRunner, Testing Applications using WinRunner.

Unit III
Software Quality Assurance – Software Engineering, Criteria for the Success of Software Project, Process-Oriented Software Development, the Management Process. Metrics in Software Development, Documentation.

Unit IV
Quality Standards, ISO 9000 Series Standards, Quality Process Implementation Issues.

Suggested Readings:

1. K.V.K.K. Prasad, "Software Testing Tools", Dreamtech Press.
2. LauiseTamres, "Introducing Software Testing", Pearson Education.
3. Borris Beizer, "Software Testing Techniques", Dreamtech Press.

Course Name: Theory of Computation

Course Code: 13013200

Objectives

1. To introduce students to the mathematical foundations of computation including automata theory.
2. To be able to understand the concept of theory of formal languages and grammars and the notions of algorithm, decidability, complexity, and computability.
3. To enhance/develop students' ability to understand and conduct mathematical proofs for computation and algorithms.
4. To enhance the ability to understand the concept of Regular Expression Formalism.
5. To be able to describe formation of Turing machine by Grammars.

Course Outline

Unit I
Review of Mathematical Preliminaries: Set, Relations and functions, Graphs and trees, string, alphabets and languages. Principle of induction, predicates and propositional calculus. Theory of Automation : Definition, description, DFA,NFA, Transition systems,2DFA, equivalence of DFA & NDFA, Regular expressions, regular grammar, FSM with output (mealy and moore machines), Minimization of finite automata.

Unit II
Formal Languages : Definition & description, Phrase structured grammars & their classification, Chomskey classification of languages, closure properties of families of language, regular grammar, regular set & their closure properties, finite automata, equivalence of FA and regular expression.

Unit III
Context-Free grammar & PDA : Properties unrestricted grammar & their equivalence, derivation tree simplifying CFG, unambiguous CFG, productions, normal form for CFG, Pushdown automata, 2 way PDA, relation of PDA with CFG, Determinism & Non determinism in PDA & related theorems, parsing and pushdown automata.

Unit IV
Turing Machine : Model, design, representation of TM, language accepted by TM, universal turing machine, determine & non-determinism in TM, TM as acceptor/generator/algorithms, multidimensional, multi tracks, multi tape, Two way infinite tape, multi head, Halting problems of TM.

Suggested Readings:

- Hopcroft& Ullman "Introduction to Automata theory, languages & Computation" ,Narosha Publishing house.
- LewishPapadimutrau "Theory of Computation", Prentice Hall of India, New Delhi.
- Peter linz, "An Introduction to formal language and automata", Third edition, Narosa publication. 4. Marvin L. Minskay "Computation : Finite & Infinite Machines", PHI.
- Mishra &ChanderShekhar "Theory of Computer Science (Automate, Language & Computations),

Course Name: UNIX & Shell Programming

Course Code: 13013300

Course Outline

Unit I
Unix, Unix Architecture, UNIX Operating System, Unix File system, Directory Management , File Permission / Access Modes,

Unit II
Unix - Environment, Basic Utilities, Pipes and Filters, Processes Management The Bourne Shell, Network Communication Utilities. The vi Editor.

Unit III
Unix Shell Programming: Shell, Shell Variables, Special Variables, Shell Arrays, Shell Basic Operators, Shell Decision Making, Shell Loop Types, Shell Loop Control.

Unit IV
Shell Input/output, Shell Functions, File System Basics, User Administration,Programming with the Shell Introduction to System administration.

Suggested Readings:

1. UNIX-Concepts & Applications, Sumitava Das, TMH
2. Learning UNIX Operating System, Peek, SPD/O'REILLY
3. Understanding UNIX, Srirengan, PHI
4. Learning the Vi Editor, Lamb, SPD/O'REILLY
5. Essentials Systems Administration, Frisch, SPD/O'REILLY

Course Name: UNIX & Shell Programming Lab

Course Code: 13013400

1. Write a shell program to find the largest of 3 numbers using command line arguments.
2. Write a shell program to compare two strings given by the user.
3. Write a shell program to concatenate the contents of two files.
4. Write a shell program to find sum of digits of a given number.
5. Write a Shell Script to convert a binary number to its decimal equivalent.
6. Write a Shell Script to print the multiplication table.
7. Write Shell Scripts to compute the factorial value with and without using recursive functions.
8. Write a shell program to remove the files of the same size in the current directory
9. Write a shell program to convert all lower case into upper case and vice versa in a file using command line arguments.
10. Write a Shell Script to prepare and display the Electricity bill with significant considerations.
11. File handling system.

    a. create a file

b. copy the file
c. move the file
d. delete the file
e. exit

12. Write a menu based program to permit or remove read/write/execute permission of a file.
13. Write a shell program to calculate the net salary of an employee in a particular month. Considering various allowances (TA, DA, and HRA) and deductions (income tax) as:
    TA = 15 % of Basic salary
    DA = 2 % of Basic salary
    HRA = 10 % of Basic salary
    Income tax = 5% of salary
    PF = 10 % of salary
14. Students marks sheet processing.
15. Write a shell program which will
    a. ask the user to enter a filename
    b. check if the file is ordinary file and is readable
    c. display the file if the file is ordinary and readable
    d. display an error message if the file is not ordinary and/or not readable

Course Name: Cloud Computing

Course Code: 13013500

Objectives

1. To provide students with the fundamentals, essentials of Cloud Computing and cloud models.
2. To be able to work with cloud services and to provide a sound foundation of the Cloud Computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios.
3. To learn about the cloud environment, building software systems and components that scale to millions of users in modern internet.
4. To understand basic and advance services provide by the cloud and basic architecture on which cloud is based upon.
5. To enable students exploring some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications.

Course Outline

Unit I: Introduction

The vision of cloud computing - The cloud computing reference model - Characteristics and benefits - Challenges ahead - Historical developments - Distributed systems -

Virtualization - Building cloud computing environments - Application development - Infrastructure and system development - Computing platforms and technologies

Unit II: Principles of Parallel and Distributed Computing
Parallel vs. distributed computing - Elements of parallel computing - Hardware architectures for parallel processing Approaches to parallel programming - Laws of Caution **Cloud Computing Architecture** Introduction - The cloud reference model - Types of clouds - Economics of the cloud.

Unit III: Virtualization
Introduction - Characteristics of virtualized environments - Taxonomy of virtualization techniques - Virtualization and cloud computing - Pros and cons of virtualization - Technology example: VMware: full virtualization.
Cloud Computing Economics Cloud infrastructure - Economics of private clouds - Software productivity in the cloud - Economies of scale: public vs. private clouds.

Unit IV: Cloud Platforms in Industry
Amazon web services: Compute services - Storage services - Communication services - Additional services. Google App Engine: Architecture and core concepts - Application life cycle - Cost model – Observations. Microsoft azure: Azure core concepts - SQL azure - Windows azure platform appliance

Unit V: Cloud Applications
Healthcare: ECG analysis in the cloud - Biology: protein structure prediction - Biology: gene expression data analysis for cancer diagnosis - Geoscience: satellite image processing

Suggested Readings:

1. Rajkumar Buyya, Christian Vecchiola and S. Thamarai Selvi, "Mastering Cloud Computing" - Foundations and Applications Programming , MK publications, 2013.
2. Gautam Shroff, "Enterprise Cloud Computing: Technology, Architecture, Applications" by Cambridge University Press, 2010.
3. Michael J.Kavis, "Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS)", John Wiley & Sons Inc., Jan 2014

Course Name: Major Projects

Course Code: 13013600

Course Outline

Students are required to develop projects under mentorship of faculty in any of the application; web based includes data base handling.

Course Name : Ability & Skill Enhancement – VI

Course Code: 13003100

Objectives

- This three year syllabus is a journey that aims to explore the dynamics and techniques of effective interpersonal communication.

Course Outline – Final Assessment – Report/Presentation

Unit I: Verbal Reasoning & English Aptitude
Logical Sequence of Words, Verbal Analogy, Classification, Blood Relation Test, Syllogism, Reading Comprehension

Unit II: Winning Attitude
Attitude is the most important thing for success, how to develop a winning attitude, what is it, when we need it, what is mindset, how to have a winning and positive mindset, how to win in difficult situations, Positive thinking, passion, dedication, confidence, well preparation, focus, hard work, planning, never give up, etc - some traits that help in developing winning attitude.

Unit III: Understanding the News
Reading Current News, Comparing & Analysing the news, Write an editorial, News Vocabulary, Presentation on any major news (political/social/sports/economics).

Unit IV: Be a Journalist
Chat Show, Panel Discussion, Parliamentary debate, News Inspired Theatrical Performance.

Unit V: Report
Preparing a report on major National/International News – Insights/ review of major news papers and news channels.

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

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