Rani Channamma University Belagavi

Vidyasangama, NH-04, Bhutaramanahatti, Belagavi – 591 156

Bachelor of Science (B.Sc.) in Computer Science

Syllabus for V and VI Semester

(as per National Education Policy – 2020)

2023-24 onwards

RANI CHANNAMMA UNIVERSITY

Vidyasangama, NH-04, Bhutaramanahatti, Belagavi – 591 156

SYLLABUS

Bachelor of Science (B.Sc.) in Computer Science

(as per National Education Policy – 2020)

Submitted by

Dr. Parashuram Bannigidad
Chairperson BoS (UG) – Rani Channamma University, Belagavi

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Curriculum Structure for B.Sc. (Computer Science) V and VI Sem Program of RCUB as per NEP 2020 w.e.f. 2023-24

SEMESTER-V										
Category	**Course code**	**Title of the Paper**	**Marks**			**Teaching hours/week**			**Credit**	**Duration of exams (Hrs)**
			IA	**SEE**	**Total**	**L**	**T**	**P**		
DSC5	21BSC5CSMJ1L	Programming in PYTHON	40	60	100	4	-	-	4	2
	21BSC5CSMJ1P	PYTHON Programming lab	25	25	50	-	-	4	2	3
DSC6	21BSC5CSMJ2L	Computer Networks	40	60	100	4	-	-	4	2
	21BSC5CSMJ2P	Computer Networks Lab	25	25	50	-	-	4	2	3
DSC5	Another Department Subject	Another Department Course Title	40	60	100	4	-	-	4	2
	Another Department Subject Practical	Another Department Course Title lab	25	25	50	-	-	4	2	3
DSC6	Another Department Subject	Another Department Course Title	40	60	100	4	-	-	4	2
	Another Department Subject Practical	Another Department Course Title lab	25	25	50	-	-	4	2	3
SEC4	21BSC6SE4CS3	Cyber Security	20	30	50	2	-	2	3	1h.30min
Total Marks					**650**	**Semester Credits**			**27**	

Curriculum Structure for B.Sc. (Computer Science) VI Sem Program of RCUB as per NEP 2020 w.e.f. 2023-24

SEMESTER-VI										
Category	**Course code**	**Title of the Paper**	**Marks**			**Teaching hours/week**			**Credit**	**Duration of exams (Hrs)**
			IA	**SEE**	**Total**	**L**	**T**	**P**		
DSC7	21BSC6CSMJ1L	Web Technologies	40	60	100	4	-	-	4	2
	21BSC6CSMJ1P	Web Technology lab	25	25	50	-	-	4	2	3
DSC8	21BSC6CSMJ2L	Statistical Computing & R Programming	40	60	100	4	-	-	4	2
	21BSC6CSMJ2P	R Programming Lab	25	25	50	-	-	4	2	3
DSC7	Another Department Subject	Another Department Course Title	40	60	100	4	-	-	4	2
	Another Department Subject Practical	Another Department Course Title lab	25	25	50	-	-	4	2	3
DSC8	Another Department Subject	Another Department Course Title	40	60	100	4	-	-	4	2
	Another Department Subject Practical	Another Department Course Title lab	25	25	50	-	-	4	2	3
Proj 1	21BSC6SE4CS1	Project	25	25	50				2	2
Total Marks					**650**	**Semester Credits**			**26**	
Students Exiting the programme after 3-years will be awarded UG degree in Disciplines A and B as double majors upon securing 136 credits and satisfying the minimum credit requirements under each category of courses prescribed										

Syllabus for BSc V Semester

Semester: V

Program Name	**B.Sc.**		Semester	**V**
Course Title	**Programming in Python (Theory)**			
Course Code:	**DSC5**		No. of Credits	**04**
Contact hours	**52 Hours**		Duration of SEA/Exam	**2 hours**
Formative Assessment Marks	**40**		Summative Assessment Marks	**60**

Course Pre-requisite(s): None

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1	Setup Python to develop simple applications
CO2	Understand the basic concepts in Python Programming
CO3	Learn how to write, debug and execute Python programs
CO4	Understand and demonstrate the use of advanced data types such as tuples, dictionaries and lists, Tuples and Sets
CO5	Design solutions for problems using object-oriented concepts in Python
CO6	Use and apply the different Python Libraries for GUI Interface, Data Analysis and Data Visualisation.
C07	Extend the knowledge of python programming to build successful career in software development.

Unit	Contents	52 Hrs
Unit I	**Introduction**: Introduction, Overview, Features and Applications of Python; Python Versions; Getting Started With Python; Python Command Line mode and Python IDEs; Indentation; Comments: **Python Basics:** Identifiers; Keywords; Variables; Data Types; Operators; Precedence and Association; Statements and Expressions; **Python Control Flow:** Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions.	12
Unit II	**Functions:** Introduction; Types of Functions; Built- in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples. User Defined Functions-Parameters, arguments, function calls, return statement, Scope and Lifetime of Variables in Functions, Writing Python Scripts using functions. **Strings:** Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods.	10

Unit III	**Lists:** Creating Lists; Built-in Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists. **Dictionaries:** Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries. **Tuples and Sets:** Creating Tuples; Operations on Tuples; Built-in Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.	10
Unit IV	**Exception Handling:** Types of Errors; Exceptions; Exception Handling using try, except and finally. **File Handling:** File Types; Operations on Files– Create, Open, Read, Append and Write, Close Files; File Names and Paths; Format Operator. **Object Oriented Programming:** Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading.	10
Unit V	**GU Interface:** The Tkinter Module-; Widgets-Button, Canvas, Check button, entry, frame, label, List Box, Menu Button, Radio Button, Message, Scale, Scrollbar, Text, Spin Box, Message Box, Label Frame, Paned Window ; Layout Management- pack, grid and place. **Python SQLite:** The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables- Insert, Select, Update. Delete and Drop Records.	10

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

References	
1	**Introduction to Computing and Problem Solving Using Python**, E Balaguruswamy, McGrawHill, First Edition
2	**Think Python How to Think Like a Computer Scientist,** Allen Downey et al., 2nd Edition, 2015, Green Tea Press. Freely available online @ https://www.greenteapress.com/thinkpython/thinkCSpy.pdf
3	**Introduction to Python Programming**, Gowrishankar S et al.,2019, CRC Press
4	**Python Data Analytics**: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, 2015, Apress®
5	**Advance Core Python Programming**, Meenu Kohli, 2021, BPB Publications
6	**Core PYTHON Applications Programming**, Wesley J. Chun, 3rd Edition, 2012, Prentice Hall
7	**Automate the Boring Stuff**, Al Sweigart, 2015, No Starch Press, Inc.
8	**Data Structures and Program Design Using Python**, D Malhotra et al., 2021, Mercury Learning and Information LLC
9	http://www.ibiblio.org/g2swap/byteofpython/read/
10	https://docs.python.org/3/tutorial/index.html

Course Title	**Python Programming Lab (Practical)**	Practical Credits	**02**
Course Code	**DSC5-Lab**	Contact Hours	**04** **Hours/week**
Formative Assessment	**25 Marks**	Summative Assessment	**25 Marks**

Practical Content

Part-A

1. Write a Python function to calculate the factorial of a number
2. Write a Python to generate Fibonacci Sequence
3. Write a Python program to get the sum of digits of a non-negative integer.
4. Write a Python program to create a module Calculation.py that contains functions to perform basic arithmetic operations.
5. Write a python program to reverse a string without using built-in functions.
6. Write a python program to generate random numbers.
7. Write a python program to display Multiplication Tables
8. Demonstrate importing the math module and perform any five math functions.
9. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
10. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area and perimeter of rectangle.

Part-B

1. Demonstrate usage of basic regular expression with match (), search (), findall (), sub () and split ().
2. Find the largest and smallest element in the list
3. Demonstrate use of Dictionaries to store and retrieve contact information.
4. Create SQLite Database and Write a Python program to demonstrate modification of an existing table data from SQLite Database
5. Write a python program that prompts the user for a number and handles a “ValueError”
6. Inherit a class Box that contains additional method volume. Override the perimeter method to compute perimeter of a Box.
7. Write a Python program to read a file line by line store it into an array.
8. Write a python program to create a class representing a basic bank account class with deposit and withdrawal methods.
9. Design Student Registration form using any 5 widgets using Tkinter Module.
10. Write a python program to create a GUI interface for temperature converter using Tkinter

Program Name	**B.Sc.**	Semester	**V**
Course Title	**Computer Networks (Theory)s**		
Course Code:	**DSC6**	No. of Credits	**04**
Contact hours	**52 Hours**	Duration of SEA/Exam	**2 hours**
Formative Assessment Marks	**40**	Summative Assessment Marks	**60**

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1	Define various data communication components in networking.
CO2	Describe networking with reference to different types of models and topologies.
CO3	Understand the need for Network and various layers of OSI and TCP/IP reference model.
CO4	Explain various Data Communications media.
CO5	Describe the physical layer functions and components
CO6	Identify the different types of network topologies and Switching methods.
CO7	Describe various Data link Layer Protocols.
CO8	Identify the different types of network devices and their functions within a network.
CO9	Analyze and Interpret various Data Kink Layer and Transport Layer protocols.
CO10	Explain different application layer protocols.

Unit	Contents	52 Hrs
UNIT I	**Introduction:** Computer Network: Definition, Goals, Structure; Broadcast and Point-To-Point Networks; Network Topology and their various Types; Types of Network, Network software, Design issues for the layers, Connection-oriented vs. Connectionless service, Applications of Computer network, Protocols and Standards, The OSI Reference Model, The TCP/IP Protocol suite, Comparison between OSI and TCP/IP Reference model.	12
UNIT II	**Physical Layer:** Functions of Physical Layer**,** Analog signals, Digital signals, Transmission Impairment, Data Rate Limits, and Performance. Data Transmission Media: Guided Transmission Media, Magnetic Media, Twisted Pairs, Coaxial Cable, Power Lines, Fiber Optics, Wireless Transmission, Electromagnetic Spectrum, Radio Transmission, Microwave Transmission, Infrared Transmission, Light Transmission, Digital Modulation and Multiplexing, Public Switched Telephone Networks. Switching: Circuit switching, Message switching & Packet switching	10
UNIT III	**Data Link Layer:** Functions of Data Link Layer, Data Link Control: Framing, Flow and Error Control, Error Detection and Correction, High-Level Data Link Control (HDLC) & point — to — Point protocol (PPP), Channel Allocation Problem, Multiple Access: Radom Access (ALOHA, CSMA, CSMA/CD, CSMA/CA), Controlled Access(Reservation, Polling, Token Passing), Channelization(FDMA, TDMA, CDMA),	10

UNIT IV	**Wired LAN:** Ethernet Standards and FDDI, Wireless LAN: IEEE 802.1 Ix and Bluetooth Standards. **Transport Layer:** Functions of Transport Layer, Elements of Transport Protocols: Addressing, Establishing and Releasing Connection, Flow Control & Buffering, Error Control, Multiplexing & De-multiplexing, Crash Recovery,	10
UNIT V	**User Datagram Protocol (UDP):** User Datagram, UDP Operations, Uses of UDP, RPC, Principles of Reliable Data Transfer: Building a Reliable Data Transfer Protocol, Pipelined Reliable Data Transfer Protocol, Go Back-N(GBN), Selective Repeat (SR). **Application layer :** Functions of Application layer, Application Layer Protocols: DNS, DHCP, WWW, HTTP, HTTPs, TELNET, FTP, SMTP, POP, IIMAP	10

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

References	
1	Andrew S Tanenbaum, David. J. Wetherall, –Computer Networks‖, Pearson Education, 5th Edition,
2	Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition
3	Kurose and Ross, Computer Networking- A Top-Down approach, Pearson, 5th edition
4	William Stallings, Data and Computer Communications, 7th Edition,PHI.
4	http://highered.mheducation.com/sites/0072967757/index.html
7	Larry L. Peterson, Bruce S. Davie, –Computer Networks: A Systems Approach‖, Morgan Kaufmann Publishers, Fifth Edition, 2011.
8	Brijendrasingh, Data Communication and Computer Networks,PHI.

Course Title	**Computer Networks Laboratory (Practical)**	Practical Credits	**02**
Course Code	**DSC6 Lab**	Contact Hours	**04 Hours/week**
Formative Assessment	**25 Marks**	Summative Assessment	**25 Marks**

Practical Content

Part A:

1. Prepare hardware and software specification for basic computer system and Networking.
2. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
3. Identifying the networking devices on a network.
4. Configure the IP address of the computer.
5. Create a basic network and share file and folders.
6. Study of basic network command and Network configuration commands.
7. Installation process of any open source network simulation software.

Part B:

1. Implement connecting two nodes using network simulator.
2. Implement connecting three nodes considering one node as a central node using network simulator. Implement a network to connect three nodes considering one node as a central node using network simulator
3. Implement bus topology using network simulator.
4. Implement star topology using network simulator.
5. Implement ring topology using network simulator.
6. Demonstrate the use of wireless LAN using network simulator.
7. Implement FTP using TCP bulk transfer using network simulator.

Links for open source simulation software:

- NS3 software: https://www.nsnam.org/releases/ns-3-30/download/
- Packet Tracer Software: https://www.netacad.com/courses/packet-tracer
- GNS3 software: https://www.gns3.com/

Syllabus for B. Sc VI Semester

Program Name	**B.Sc.**	Semester	**VI**
Course Title	**Web Technologies (Theory)**		
Course Code:	**DSC8**	No. of Credits	**04**
Contact hours	**52 Hours**	Duration of SEA/Exam	**2 hours**
Formative Assessment Marks	**40**	Summative Assessment Marks	**60**

Course Pre-requisite(s): Basic Knowledge About Programming and Internet and Web Browsing

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- Understand basics of Internet technology
- Use of HTML in designing static web pages.
- Use of CSS in designing attractive web pages
- Use of Java Script in designing dynamic web pages.
- Students are able design a own website at the end of the course.

Unit	Contents	52 Hrs
UNIT I	**Fundamentals of Web**: Internet, WWW, Web Browsers, Web Protocols and Web Servers, URLs, MIME, HTTP, Security, the Web Programmers Toolbox. **HTML5 and XHTML:** Origins and evolution of HTML5 and XHTML, Basic syntax, Standard XHTML document structure, Basic Text Markup, HTML5 Page Layout and Navigation, Hypertext Links, Lists, Tables, Forms, Frames in HTML5 and XHTML, Syntactic differences between HTML5 and XHTML, Images, audio and video.	12
UNIT II	**Introduction to XML:** Introduction; Syntax; Document structure; Document Type Definitions (DTD); XSLT style sheets; XML Processors; Web services. **Cascading Style Sheets:** Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The and tags.	10
UNIT III	**Introduction to Java Script:** Overview of JavaScript; Object orientation and JavaScript; General syntactic characteristics; Primitives, Operations, and expressions; Screen output and keyboard input; Control statements; Object creation and Modification; Arrays; Functions; Constructor; Pattern matching using expressions; Errors in scripts; Examples.	10
UNIT IV	**Java Script and HTML Documents:** The JavaScript execution environment; The Document Object Model; Element access in JavaScript; Events and event handling; Handling events from the Body elements, Button elements, Text box and Password elements; The DOM 2 event model; The navigator object; DOM tree traversal and modification. Dynamic Documents with JavaScript	10
UNIT V	**Dynamic Documents with JavaScript:** Introduction to dynamic documents; Positioning elements; Moving elements; Element visibility; Changing colors and fonts; Dynamic content; Stacking elements; Locating the mouse cursor; Reacting to a mouse click; Slow movement of elements; Dragging and dropping elements.	10

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

References	
1.	Robert W Sebesta, "Programming the World Wide Web", 4th Edition, Pearson Education, 2008.
2	M.Deitel, P.J.Deitel, A.B.Goldberg, "Internet & World Wide Web How to program", 3rd Edition, Pearson Education / PHI, 2004.
3	Chris Bates, "Web Programming Building Internet Applications", 3rd Edition, Wiley India, 2006.
4	Xue Bai et al, "The Web Warrior Guide to Web Programming", Thomson, 2003
5	Sklar, "The Web Warrior Guide to Web Design Technologies", 1st Edition, Cengage Learning India.
6	Internet and World Wide Web – How to program, Dietel and Nieto, Pearson.

Program Name	**B.Sc.**	Semester	**VI**
Course Title	**Web Technology Lab**		
Course Code:	**DSC 8- Lab**	No. of Credits	**02**
Contact hours	**04 Hours per week**	Duration of SEA/Exam	**3 hours**
Formative Assessment Marks	**25**	Summative Assessment Marks	**25**

Part A

1. Design web pages for your college containing college name and Logo, departments list using href, list tags.
2. Create a class timetable using table tag.
3. Write a HTML code to design Student registrations form for your college Admission
4. Design Web Pages with includes Multi-Media data (Image, Audio, Video, GIFs etc)
5. Create a web page using frame.
6. Write code in HTML to develop a webpage having two frames that divide the webpage intotwo equal rows and then divide the row into equal columns fill each frame with a different background color.
7. Write CSS code to Use Inline CSS to format your ID Card.
8. Using HTML, CSS create display a text called –Hello India !‖ on top of an image of India- Map using an overlay.

Part B

1. JavaScript Program to perform Basic Arithmetic operations.
2. JavaScript Program to implement all string operations.
3. JavaScript Program to Check Prime Number.
4. JavaScript Program to implement Java script Object Concept
5. JavaScript Program to Create Array and inserting Data into Array
6. JavaScript Program to Validate an Email Address.
7. Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade.
8. Write a program for implementing XML document for Employee Details

Program Name	**B.Sc.**	Semester	**VI**
Course Title	**Statistical Computing & R Programming (Theory)**		
Course Code:	**DSC-8**	No. of Credits	**04**
Contact hours	**52 Hours**	Duration of SEA/Exam	**2 hours**
Formative Assessment Marks	**40**	Summative Assessment Marks	**60**

Course Pre-requisite(s): Basic Knowledge About Programming and Web browsers	
Course Outcomes (COs): After the successful completion of the course, the student will be able to	
CO1	Explore fundamentals of statistical analysis in R environment.
CO2	Describe key terminologies, concepts and techniques employed in Statistical Analysis.
CO3	Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
CO4	Conduct and interpret a variety of Hypothesis Tests to aid Decision Making.
CO5	Understand, Analyze, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables.

Contents	**52 Hrs**
UNIT-I: Introduction to R: Overview and History of R, R Console Input and Evaluation, R Objects and Attributes, Data Types – Vectors, Lists, Matrices, Arrays, Factors, String and Data Frame, Variables and Constants, Variable scope, Getting User Input and Output, R-Operators.	12
UNIT-II: R-Controls Structures: Decision Making in R-if, if-else, if-else ladder, switch statement. Loops in R-repeat, while, for; Loop Control Statements-Break, next; R-functions-Definition, function calls, lazy evaluation of a function, return, multiple returns, recursive functions	10
UNIT-III: Classes and Objects: Class Definition, Creating objects from constructors, Methods and generic functions, Creating Own Methods for S3-class, S4-Class and Reference Class, Error handling in R, Packages in R-Programming.	10
UNIT-IV: Exploratory Data Analysis: R-statistics-Mean, median, mode, variance, standard deviation, Descriptive analysis, Linear Regression, Normal Distribution, Binomial Distribution, Poisson distribution,	10
UNIT-V: Data Analysis and Visualization with R: T-Tests , ANOVA Test, Covariance and Correlation, Hypothesis Testing, Pie-Charts, Bar charts, Boxplots, Histograms, Line Graphs, Scatter Plots	10

Preferred Text Books	
1	Tilman M. Davies, “The book of R: A first course in programming and statistics”, San Francisco, 2016.
2	Vishwas R. Pawgi, “Statistical computing using R software”, Nirali prakashan publisher, e1-edition, 2022.
3	Daniel Bell-R-Programming A step by step guide for absolute guide
4	https://www.youtube.com/watch?v=KlsYCECWEWE https://www.geeksforgeeks.org/r-tutorial/ https://www.tutorialspoint.com/r/index.htm

References	
1	Introductory Statistics with R (Statistics and Computing) Dalgaard, Peter (Author) English (Publication Language) 267 Pages - 02/10/2004 (Publication Date) - Springer (Publisher) Read more at: https://examupdates.in/statistics-with-r-programming-notes/
2	Statistics: An Introduction using R Crawley, Michael J. (Author) English (Publication Language) 342 Pages - 03/11/2005 (Publication Date) - Wiley–Blackwell (Publisher) Read more at: https://examupdates.in/statistics-with-r-programming-notes/
3	A Handbook of Statistical Analyses using R RC Press Hothorn, Torsten (Author) English (Publication Language) 304 Pages - 06/25/2014 (Publication Date) - Chapman and Hall/CRC (Publisher) Read more at: https://examupdates.in/statistics-with-r-programming-notes/
4	A First Course in Statistical Programming with R Braun, W. John (Author) English (Publication Language) 230 Pages - 07/18/2016 (Publication Date) - Cambridge University Press (Publisher) Read more at: https://examupdates.in/statistics-with-r-programming-notes
5	Statistical Analysis with R For Dummies Schmuller, Joseph (Author) English (Publication Language) 464 Pages - 05/16/2017 (Publication Date) - For Dummies (Publisher) Read more at: https://examupdates.in/statistics-with-r-programming-notes

Program Name	**B.Sc.**	Semester	**VI**
Course Title	**R Programming Lab**		
Course Code:	**DSC 8-Lab**	No. of Credits	**02**
Contact hours	**04 Hours per week**	Duration of SEA/Exam	**3 hours**
Formative Assessment Marks	**25**	Summative Assessment Marks	**25**

PART A

1. Write a R program to find Area and Circumference of Circle
2. Write an R program Illustrate with if-else statement and how does it operate on vectors of variable length.
3. Write an R program Illustrate with for loop and stop on condition, to print the error message.
4. Write an R Program to find Factorial of given number.
5. Write an R Program to append a value to given empty vector .
6. Implementation of Vectors data objects operations.
7. Implementation of matrix, arrays and factors objects operations.
8. Write an R Program to Find Mean, Mode & Median.

PART B

1. Write an R Program to implement T-Test.
2. Write an R Program Compute mean values for vector aggregates defined by factors tapply and sapply.
3. Write an R Program to find Unique element of a given string and unique value from vector.
4. Write a R program to demonstrate Binomial Distribution.
5. Write a R program to demonstrate Normal Distribution.
6. Write an R Program Illustrate Reading & Writing Files.
7. Write a R program for simple bar plot for 5 subject marks
8. Implementation of Data visualization using ggplot.

Program Name	**B.Sc.**	Semester	**VI**
Course Title	**Project Work**		
Course Code:	**Proj 1**	No. of Credits	**02**
Contact hours	**02 Hour per week**	Duration of SEA/Exam	**3 hours**

Project Work Guidelines for B. Sc Graduate Programme

1. Students are expected to work out a real life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. However, it is not mandatory for a student to work on a real life project. The student can formulate a project problem with the help of Guide.
2. Project mentor/supervisor shall avail work allotment during 6th semester is 2 hour per week and Maximum 20 hours in a semester.
3. The student should submit the final project report to the college through the mentor for completion of the project work.

Formative Assessment for Practical	
Assessment Occasion/ type	**Marks**
Practical Test	20
Journal	05
Total	**25 Marks**
Formative Assessment as per NEP guidelines are compulsory	

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A	Writing the Program	03
	Execution and Formatting	07
Program -2 from Part B	Writing the Program	03
	Execution and Formatting	07
Viva Voice		05

	Formative Assessment for Theory	
Components	**Assessment Occasion/ type**	**Marks**
C1	Test	10
	Seminar/Activity	10
C2	Test	10
	Assignment/Projects/Quiz	10
	Total	**40 Marks**

Summative Assessment for Theory

Semester End Exam Question Paper Pattern

Duration of the examination: 2hour **Max. Marks:60**

Section A

Answer any TEN from the following, each carries 2 marks: **[10X2=20]**

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------
8. ----------
9. ----------
10. ----------
11. ----------
12. ----------

Section B

Answer any FOUR from the following questions each carries 5 marks.

[4X5=20]

13. ----------
14. ----------
15. ----------
16. ----------
17. ----------

Section C

Answer any two from the following questions each carries 10 marks.

(The Question may have consist two sub-questions)

[2X10=20]

18. ----------
19. ----------
20. ----------