Rajarshi Shahu Mahavidyalaya (Autonomous), Latur
Department of Computer Science
B. Voc. in Computer Technology
B. Voc. F. Y. (Semester I + Semester II)
NSQF Level-5 Qualification Pack Job Role: Web Developer
(with effect from 2018-19)
Academic Year 2021-22

	Course Code	Course Title	Credits	Hrs / Week	Marks ESE	Marks CE	Total Marks
Semester I	CT.GE.101	Communicative English-I (General Education)	4	4	60	40	100
	CT.GE.102	Statistical Methods (General Education)	4	4	60	40	100
	CT.GE.103	Introduction to Information Technology (General Education)	4	4	60	40	100
		Total Credit (A)	**12**		**Total Marks (A)**		**300**
	CT.SC.101	Basics of Computer Programming (Skill Component)	4	4	60	40	100
	CT.SC.102	Office Automation Tool (Skill Component)	4	4	60	40	100
	CT.SC.103	Image Processing (Skill Component)	4	4	60	40	100
	CT.SC.PR.1	LAB Open Office (Skill Component)	2	4	30	20	50
	CT.SC.PR.2	LAB BCP (Skill Component)	2	4	30	20	50
	CT.SC.PR.3	LAB Photo Shop (Skill Component)	2	4	30	20	50
		Total Credit (B)	**18**		**Total Marks (B)**		**450**
		Total Credit (Sem – I) (A + B)	**30**		**Total Marks(A+B)**		**750**

	Course Code	Course Title	Credits	Hrs / Week	Marks ESE	Marks CE	Total Marks
Semester-II	CT.GE.201	Communicative English-II (General Education)	4	4	60	40	100
	CT.GE.202	Environmental Studies (General Education)	4	4	60	40	100
	CT.GE.203	Mathematical Foundation (General Education)	4	4	60	40	100
		Total Credit (A)	**12**		**Total Marks (A)**		**300**
	CT.SC.201	Programming for the Web (Skill Component)	4	4	60	40	100
	CT.SC.202	Analysis, Design and Testing of Web based Applications (Skill Component)	4	4	60	40	100
	CT.SC.203	Media Content Development and Graphics Design (Skill Component)	4	4	60	40	100
	CT.SC.PR.4	LAB: Web Development (Skill Component)	2	4	30	20	50
	CT.SC.PR.5	LAB: Flash (Skill Component)	2	4	30	20	50
	CT.SC.PR.6	LAB: Software Engineering (Skill Component)	2	4	30	20	50
		Total Credit (B)	**18**		**Total Marks (B)**		**450**
		Total Credit (Sem-II) (A + B)	**30**		**Total**		**750**
		Total Credit (Sem I + Sem II)	**60**	Total Marks (Sem I +Sem II)			**1500**

ESE- End Semester Examination CE-Continuous Evaluation

Split-up of Continuous evaluation marks

Total Marks: 40

Unit Test 1	Unit Test II	Total Marks	Converted Marks	Marks for Attendance	Total Marks
30	30	60	**30**	**10**	**40**

B. Voc. Computer Technology
Semester: I
General Education-I

Communicative English-I CT.GE.101

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

Learning Objectives:

i. To enhance learner's communication skills by giving adequate exposure (use of language lab) in listening and speaking skills and the related sub-skills.
ii. To create learner's confidence in oral and interpersonal communication by reinforcing the Basics of pronunciation.
iii. To help learners to recognize and make use of sentence structures in English.

Course Outcomes:

i. Students will be aware of speaking and speaking skills and the related sub-skills.
ii. They can focus a lot on writing style to be the better speaker of English language
iii. Students can realize the proper style of English for oral and speaking communication and can use words and sentences with proper accent and intonation.
iv. Students will listen and speak English by using proper sentence structures.

Unit I: Fundamental of Speech and Basics of Grammar	**NOS**	**Hours**
A) Phonetics 1. Sounds- vowels and consonants (44) 2. Stress: i) Monosyllabic ii) Disyllabic iii) Polysyllabic 3. Intonation- i) Falling Tone ii) Rising tone **B) Functional Grammar** 1. Word Classes 2. Articles 3. Preposition 4. Phrases 5. Clauses	SSC/N9005	15
Unit II: What is Communication?	**NOS**	**Hours**

1. Definition 2. Types of communication: i) Informal ii) Formal 3. Forms (Modes) communication	SSC/N9005	15
Unit III: Oral Communication	**NOS**	**Hours**
1. Communication through body language i) Eye Contact ii) Gesture iii) Posture 2. Communication through technology i) Email ii) PPT	SSC/N9005	15
Unit IV: Written Communication	**NOS**	**Hours**
1. Comprehension 2. Précis Writing	SSC/N9005	15
	Total	60

Reference Books:

1. Adair, John. Effective Communication. London: Pan Macmillan Ltd., 2003.
2. Ajmani, J. C. Good English: Getting it Right. New Delhi: Rupa Publications, 2012.
3. Amos, Julie-Ann. Handling Tough Job Interviews. Mumbai: Jaico Publishing, 2004.
4. Bonet, Diana. The Business of Listening: Third Edition. New Delhi: Viva Books, 2004.
5. Bovee, Courtland L, John V. Thill & Barbara E. Schatzman. Business Communication Today: Tenth Edition.

B. Voc. Computer Technology

Semester: I General Education-II

Statistical Methods CT.GE.102

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

Learning Objectives:

i. Classification of data, Types of graphs.
ii. Types of Mean, Median, Mode and their properties.
iii. Dispersion, Mean deviation and their properties.
iv. Types of correlations, Regression and their properties.

Course Outcomes:

After successful completion of this course student will be able to

i. Analyze the data and represent it graphically.
ii. Calculate the mean, mode, median and deviation of given data.
iii. Analyze correlation and regression of data.

Unit I: Elementary statistic	**NOS**	**Hours**
Introduction, classification of data, presentation of statistical data, presentation of statistical data, values of variable and frequency, cumulative frequency distribution, diagrammatic presentation of statistical data, type of graphs, charts and diagrams, Histogram Bar chart, pie chart, frequency polygon, OGIVE.	SSC/N9004	15
Unit II: Measures of central frequency	**NOS**	**Hours**
Introduction, central tendency of data, mean, properties of arithmetic mean, Short- cut method of calculating A.M for discrete series, Calculation of arithmetic mean for grouped frequency, Distribution: continuous series, calculation of arithmetic mean from grouped frequency distribution with open end class, geometric mean, Harmonic mean, advantages and disadvantages of A.M, G.M and H.M. median quartiles deciles and percentiles, mode.	SSC/N9004	15
Unit III: Measures of Dispersion	**NOS**	**Hours**

Introduction, Dispersion, Range, Mean deviation, standard Deviation, Relative measure of Dispersion, moments and measures of skewness and Kurtosis: Introduction, moments, skewness, Kurtosis.	SSC/N9004	15
Unit IV: Correlation and Regression	**NOS**	**Hours**
Introduction, correlation, determination of correlation by Two-way frequency table, scatter diagram, co-variance method or karlpearson's method, Rank method, concurrent deviation method, properties of correlation, coefficient, regression equation of X on Y, Regression coefficients, properties of linear regression.	SSC/N9004	15
	Total	60

Text book:

Mathematics and Statistics by Suranjan Saha (Fifth Edition) New central Book Agency(P) ltd.

Reference Book:

1) Basic Business Mathematics and Statistics by D.N. Elhance, Rajesh Elhance.

B. Voc. Computer Technology
Semester: I
General Education-III

Introduction to Information Technology CT.GE.103

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

Learning Objectives:

i. The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization.
ii. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry.

Course Outcomes:

At the end of this course, student should be able to

i. Understand basic concepts and terminology of information technology.
ii. Have a basic understanding of computers and their operations.
iii. Identify issues related to basic parts.
iv. Understand number systems used in computers.

Unit I: Introduction to Computers	**NOS**	**Hours**
Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification of Computers, Applications of Computer, Capabilities and limitations of computer.	SSC/N9001	15
Unit II: Basic Computer Organization	**NOS**	**Hours**
Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.	SSC/N9001	15

Unit III: Storage Fundamentals	NOS	Hours
Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks, hard disks, Floppy disks, Optical Disks, Compact Disks, Zip Drive, Flash Drives.	SSC/N9001	15
Unit IV: Computer Arithmetic and Basics of Internet	**NOS**	**Hours**
Binary, Binary Arithmetic, Number System: Positional & Non-Positional, Binary, Octal, Decimal, Hexadecimal, converting from one number system to another, Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR, History of Internet, Applications of Internet, Web browsers, web Servers, creating email accounts, Managing emails, Search engines.	SSC/N9001	15
	Total	60

Reference Books:

1. Computer Fundamentals by P. K. Sinha.
2. Inside the PC by Peter Nortan.
3. Fundamentals of Microprocessor and Microcontrollers by B. Ram.

B. Voc. Computer Technology
Semester: I
Skill Component-I

Basics of computer Programming CT.SC.101

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-501

Learning Objectives

i. Learn writing algorithms.
ii. Drawing flowchart to solve given problem.
iii. C-Syntax, Function, Operators, Array, File Handling etc.

Course Outcome

i. Student should write Algorithm to solve given problem.
ii. Drawing flowchart to solve given problem.
iii. Able to convert algorithm to flowchart.
iv. Write program to solve any problem through C Program.
v. Writing Logical Program to prepare complex output.

UNIT I: Algorithm, Flowchart &Programming Basic	NOS	Hours
Algorithm and flowcharts Definition and properties Developing well known algorithms Principles of flowcharting Flow charting symbols Converting algorithm to flowchart **Programming Basic** What is Programming? Tokens Data Type Variables Constants Operators	SSC/No501	15
UNIT II: C Language Basic	**NOS**	**Hours**
Introduction to C Introduction and History of C Formatted input and output Structure of C program Hello World Program	SSC/No501	15

Decision Making and Looping Decision making Statements: - simple if, if else, nested if else Switch Statement Looping Statements: - for, while and do while break, continue Nested Loop Programs on above statements		
UNIT III: Array, String and Function	**NOS**	**Hours**
Array and String Difference between Variable and Array Array Memory Structure One Dimensional Array Multi-Dimensional Array String **Introduction to function** What is Function? Function Signature No Arguments and no return values Arguments but no return values Arguments with return values	SSC/No501	15
UNIT IV: Pointer and Structure	**NOS**	**Hours**
Pointers Understanding pointers Declaring and initializing pointers Accessing a variable through pointers. **Introduction to Structure** Difference between Array and Structure Structure Member Structure Variable Union Programs on Pointers, Structure and Union	SSC/No501	15
	Total	60

Reference Books:

1. Let us C-YashwantKanetkar.
2. Programming in C- Balguruswamy.
3. The C programming Lang., Pearson Ecl – Dennis Ritchie.
4. Structured programming approach using C- Forouzah & Ceilberg Thomson learning publication.
5.Pointers in C – YashwantKanetkar.

B. Voc. Computer Technology
Semester: I
Skill Component-V

Office Automation Tools CT.SC.102

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- SSC/N9004

Learning Objectives:

i. This Microsoft Office training course aims to provide new users with the essential skills needed to create, edit and print professional looking documents using text, covering simple mail merge.
ii. Particular emphasis is placed on developing accurate and well-designed documents.

Course Outcomes:

Upon successful completion of this course, students should be able to:

i. Work with the basic features of Word like creating, editing, formatting and printing document.
ii. Able to work effectively with the page layout of document.
iii. Use the Mail Merge Wizard to perform mail merges.
iv. Work with a Spreadsheet, Charts, Perform basic Calculations.
v. Create effective presentations, Apply Designs to Enhance the looks of the Presentation, Print a Presentation.
vi. Design a simple database with related tables.

Unit I: Word Processing	NOS	Hours
Introduction, Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing, Formatting a Document, Find & Replace, Using Thesaurus, Using Auto-Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- HTML, PDF etc.	SSC/N9004	15

Unit II: Spreadsheet	NOS	Hours
Introduction, Worksheet basics, creating worksheet, heading information, data, text, dates, alphanumeric values, saving worksheet. Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formula & cell referencing, Auto sum, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Creating and Using macros, Multiple worksheets- concepts, creating and using.	SSC/N9004	10
Unit III: Presentation	**NOS**	**Hours**
Creating slide show with animations. Auto content Wizard, creating a blank presentation, auto layout, Power point screen: screen layout and Views, insert a new slide, applying design template, changing slide layout, reordering and hiding slides, slide show and editing custom slide. Resizing a text box ,Text box properties, Delete a text box, Bulleted lists, Numbered lists, Adding notes, Video and Audio, Adding text Editing options, Formatting text, Replace fonts, Line spacing ,Change case Spelling check, Color schemes , Adding clip art, Adding an image from a file Editing graphic, AutoShapes, WordArt, Backgrounds, Action buttons Slide animation preview Slide transitions Slide show options Slide master Header and footer Slide numbers Date and time.	SSC/N9004	20
Unit IV: Database	**NOS**	**Hours**
Access basics, Database concepts and terminology, **Creating Databases,** Using the table wizard, Working in design view, **Working with Fields and Records:** Changing the Design of a table, Adding and deleting records, Closing a database and Access.	SSC/N9004	15
	Total	60

Reference Books:

1. Foundations of Information Technology: Windows 7 and MS-Office 2007, Sangeeta Panchal, Alka Sabharwal.
2. Learning Microsoft Office 2010, Lisa Bucki, Chirsty Parish, SuznneWeixel.

B. Voc. Computer Technology
Semester: I
Skill Component-III

Image Processing CT.SC.103

Credit: 04 Periods:60
(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/NO503

Learning Objectives:

i. Learn how to use Photoshop.
ii. Learn the basics so that you can complete fundamental tasks.
iii. Learn how to make use of more advanced features that will make your Photographs pieces of art.

Learning Outcomes:

At the end of this course, student should be able to

i. Identify and specify file formats and image resolution for print and web.
ii. Gain proficiency using the selection tools (wand, marquee, lasso, quick selection)
iii. Demonstrate proficiency with layers (naming, organizing sets, styles, adjustment layers).
iv. Edit using retouching tools (healing brush, clone tool, patch tool).
v. Open and save images in Camera Raw.
vi. Use sharpening techniques (Unsharp Mask, sharpen tool, luminosity and Smart Sharpen).
vii. Use and control the adjustments and filters to improve images.

Unit I: Introduction	NOS	Hours
Introduction to Adobe Photoshop Information of Photoshop, Uses of Photoshop, Supporting Software of Photoshop, **Version History** Early History, Version of Photoshop: Photoshop7.0, Cs, Cc and Other Difference between Photoshop Versions **Installation of Photoshop** Required Configuration Different Version of Photoshop, Installation of Various Version Types of Photoshop like Photoshop 7.0, Cs, Cc and Other. Purchasing Photoshop Online, Offline, Activation of Photoshop.	SSC/NO503	10

Getting Started Using Photoshop Creating New File, Navigating Photoshop, Menus & Panel, Open New File, Open Exiting File, Information of Photoshop File, Photoshop Starting Ways, **Selections Work** Selecting with the Elliptical Marquee Tool, Using the Magic Wand & Free Transform Tool, Selecting with the Regular & Polygonal Lasso Tools, Combining Selections, Using the Magnetic Lasso Tool, Using the Quick Selection Tool & Refine Edge, Modifying Selections.		
Unit II: Image Processing	**NOS**	**Hours**
Resizing and Cropping Images Photo Editing, Cropping, Mixing, Convert Photo To Pdf& Other Format, Zooming & Panning an Image Working with Multiple Images, Rulers, Guides & Grids Undoing Steps with History Adjusting Color with the New Adjustments Panel The New Masks Panel & Vibrancy Color Correction Command The New Note Tool & the Save for Web & Devices Interface The New Auto-Blend & Auto-Align Layers Commands The New 3d Commands **Working with Panels** Uses of Panel & Bar, Pen Tool, Clone Stamp Tool, Shape Tools, Measuring and Navigation, Selection Tools, Cropping, Slicing, Moving, Marquee, Lasso, Magic Wand, Eraser. **Layers Module** Information Layer, Layer Types, Creating, Selecting, Linking, Merging, Deleting Layers, Creating & Modifying Text, Blending Modes, Opacity & Fill, Layer Styles, Copying Layer, Using Perspective & Layer Styles, Under Standing the Background Layer.	SSC/NO503	20

Unit III: Photo Editing	NOS	Hours
Painting in Photoshop Using the Brush Tool, Working with Color, Creating & Using Gradients, Creating &Working with Brush, Using the Pencil & Eraser Tool, The Patch Tool & the Heading Brush Tool, The Spot Healing Brush Tool, the Color Replacement Tool, The Toning & Focus Tool, Painting with History. **Photo Retouching** The Red Eye Tool, The Patch Tool & the Healing Brush Tool, The Spot Healing Brush Tool, The Color Replacement Tool, The Toning & Focus Tools, Painting with History. **Color Correction** Color Spaces & Color Modes, The Variations Command, The Auto Commands, Adjusting Levels, Adjust Curves, Non-Destructively, with Adjustment Layers. **Using Masks and the Quick Mask Mode** Quick Mask Option, Painting & Selection, Saving & Removing a Selection from the Background.	SSC/NO503	20
Unit VI: Working With Tools	**NOS**	**Hours**
Creating Special Effects Getting Started with Photoshop Filters, Smart Filters, Creating Text Effects, Applying Gradients to Text. **Working with the Pen Tool**: Understanding Paths & the Pen Tool, Creating Straight & Curved Paths, Creating Combo Paths, Creating a Clipping Path, **Printing and Exporting Your Work** Exporting Your Work, Saving with Different File Formats, Saving for Web & Devices, Printing Options.	SSC/NO503	10
	Total	60

Reference Books:

1. Adobe Photoshop Cs4 One-On-One PAP/CDR Edition (English, Paperback, McClelland).
2. Mastering Photoshop CS4 1st Edition (English, Paperback, Webtech Solutions Inc.).
3. ADVANCED PHOTOSHOP CS4 TRICKERY & FX 1st Edition.
4. Photoshop CS4: The Missing Manual 1st Edition (English, Paperback, Lesa Snider King).

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Semester: I

Skill Laboratory Course-I

Credit: 02 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- SSC/NO501

Experiments based on Skill Component-IV

1. Introduction to Turbo C Editor.
2. Write a program to print “Hello World”.
3. Write a program to demonstrate addition of Two numbers.
4. Write a program to calculate square of given number.
5. Write a program to find Prime Number.
6. Write a program to demonstrate constant.
7. Write a program to demonstrate Logical Operator.
8. Write a program to demonstrate Simple if.
9. Write a program to demonstrate if else.
10. Write a program to demonstrate Nested if else.
11. Write a program to demonstrate Switch.
12. Write a program to demonstrate while loop.
13. Write a program to demonstrate do-while loop.
14. Write a program to demonstrate for loop.
15. Write a program to demonstrate Nested Loop.
16. Write a program to demonstrate Array.
17. Write a program to demonstrate string.
18. Write a program to demonstrate Pointer.
19. Write a program to demonstrate Structure.
20. Write a program to demonstrate Union.

B. Voc. Computer Technology

Semester: I

Skill Laboratory Course-II

Credit: 02 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- 2102, 9003, 9004

Experiments based on Skill Component-V

1. Create a cover page of a project report in MS-Word.
2. Create a resume in tabular form in MS-Word.
3. Create simple newsletter with any two news articles including picture in MS-Word.
4. Create and Design Admission/Enquiry Forms in MS-Word.
5. Create business cards using shapes, text and colors in MS-Word.
6. Insert image into shape in MS-Word.
7. Decorate word document with page border, content border, add pattern, write some text in it.
8. Create a mail merge letter for at least three recipients in MS-Word.
9. Create a result sheet of at least five students in MS-Excel.
10. Create a column chart having chart title, legends, axis titles and data labels to high light the sales of a company for 3 different periods in MS-Excel.
11. Create a presentation to deliver a seminar on any topic of your choice along with simple animation (at least five slides) in MS-PowerPoint.
12. Create a database named “company.accdb” having a table named “employee” with fields: EmpId(Number),Empname(Text),Designation (Text),Salary(Number) in MS-Access.

1.

B. Voc. Computer Technology

Semester: I

Skill Laboratory Course-III

Credit: 02 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/NO503, SSC/N9005

Experiments based on Skill Component-VI

1. Study of photoshop environment.
2. Study of menus and panels in photoshop.
3. Use of marquee tool in photoshop.
4. Using the Magic Wand & Free Transform Tool,
5. Use of the Magnetic Lasso Tool.
6. Modifying Selections.
7. Performing Photo Editing.
8. Performing Cropping, Mixing.
9. Working with Multiple Images, Rulers, Guides & Grids.
10. Adjusting Color with the New Adjustments Panel.
11. Use of Brush Tool, Working with Color.
12. Creating & Using Gradients.
13. Creating &Working with Brush.
14. Using the Pencil & Eraser Tool.

B. Voc. Computer Technology
Semester: II
General Education-IV

Communicative English II CT.GE.201

Credit: 04 Periods: 60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/N9002, SSC/N9005

Learning Objectives:

1. To enhance learner's communication skills by giving adequate exposure (use of language lab) in speaking and Writing skills and the related sub-skills.
2. To create learner's confidence in oral and interpersonal communication by reinforcing the basics of pronunciation.
3. To help learners to recognize and make use of sentence structures in English.

Course Outcomes:

1. Students will be aware of writing and speaking skills and the related sub-skills. They can focus a lot on writing style to be the better speaker of English language.
2. Students can realize the proper style of English for oral and written communication and can use.
3. words and sentences with proper accent and intonation.
4. Students will speak and write English by using proper sentence structures.

UNIT I: Oral Communication	**NOS**	**Hours**
1) Telephonic Communication 2) Intercultural Communication To be assessed through MCQ, short /long answer questions.	SSC/N9002	15
UNIT II: Effective Communication Skills	**NOS**	**Hours**
1) Interviews 2) Public Speaking/Speech 3) Oral Presentation To be assessed through MCQ, short /long answer questions.	SSC/N9002	15

Unit III: UNIT-3: Reading Skill	NOS	Hours
1) Reading Instructions and guidelines 2) Rules, Procedures and Service level agreements To be assessed through MCQ, short /long answer questions.	SSC/N9005	15
Unit IV: Writing Skill	**NOS**	**Hours**
1) Notice, Agenda and Minutes 2) Business letter and repot writing 3) Memo writing and Resume writing To be assessed through MCQ, short /long answer questions.	SSC/N9005	15
	Total	60

Reference Books:

1. Adair, John. Effective Communication. London: Pan Macmillan Ltd., 2003.
2. Ajmani, J. C. Good English: Getting it Right. New Delhi: Rupa Pubications, 2012.
3. Amos, Julie-Ann. Handling Tough Job Interviews. Mumbai: Jaico Publishing, 2004.
4. Bonet, Diana. The Business of Listening: Third Edition. New Delhi: Viva Books, 2004.

B. Voc. Computer Technology
Semester: II
General Education-V

Environmental Studies CT.GE.202

Credit: 04 Periods: 60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/N9003, SSC/N9005

Learning Outcomes:

i. After successful completion of the course students will be able to:
ii. Explain core concepts about natural resources and associated problems.
iii. Appreciate the environmental issues and the links between human and natural systems. Understand the environmental problems and ways of addressing them.
iv. Comply with their organization's current health, safety and security policies and procedures, report any identified breaches to the designated person, Identify and correct any hazards that they can deal with safely, competently and within the limits of their authority.

Unit I: Introduction to Natural Resources	**NOS**	**Hours**
Environment: Definition, Scope, Importance, Need for public awareness. **Natural Resources:** Renewable and Non-Renewable resources, Natural resources and associated problems. a) **Energy Resources**: Needs, Types of energy and quantities available, growing energy needs, renewable and non-renewable energy resources, Use of alternate energy sources. b) **Water Resources**: Uses of water, Over utilization of surface and ground water, Floods, Draughts, **Dams:** Benefits and problems. c) **Agricultural Resources:** Changes caused by agriculture and overgrazing, Effects of modern agriculture, Fertilizer and pesticide problems, Water logging, Salinity. d) **Land Resources:** Land as a resource, Effects on productivity, Man induced landslides, Soil erosion, Desertification.	SSC/N9005	15
Unit II: Ecosystems and Environmental pollution and its mitigation	**NOS**	**Hours**
Concepts of an ecosystems, Structure and function of an ecosystem, Producers, Consumers, and Decomposers, Energy flow in an ecosystem, Ecological succession, Food chain, Food webs,Ecological pyramids, Introduction, Types, Characteristic features &Structure of following ecosystems Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries). Definition of Pollution; Causes, effects and control measures of (i)	SSC/N9005	15

Air pollution, (ii) Water pollution, (iii)Soil pollution, (iv) Noise pollution.		
Unit III: Solid waste management	**NOS**	**Hours**
Causes, effects and control measures of urban and industrial wastes, nuclear hazards, Environmental hazards and their mitigation, Role of an individual in pollution and abatement.	SSC/N9005	15
Unit V: Maintain a healthy, safe and secure working environment	**NOS**	**Hours**
Need for a Health and Safety at Work; Security Analyst's role; Emergency Situations; Skills Required to Maintain a Health and Safety at Work.	SSC/N9003	15
	Total	60

Reference Books

1) Introduction to Environment - M. N. Sastri, Himalaya Publishing House, New Delhi.
2) Environmental Studies - H. Kaur, PragatiPrakashan, Meerut
3) Environmental Studies - ErachBharucha, University press Pvt. Ltd., Hyderabad
4) Environmental Studies - S. V. S. Rana, Rastogi Publication, Meerut
5) Environmental Studies - C. P. Kaushik, New age international Ltd. New Delhi
6) Environmental Studies - Arumugam, Saras Publication Kanyakumari
7) Facilitator Guide, NASSCOM
8) Student Handbook, NASSCOM

B. Voc. Computer Technology
Semester: II
General Education-VI

Mathematical Foundation CT.GE.203

Credit: 04 Periods: 60

(To be implemented from the Academic year 2018-19)

Course Outcomes:

After successful completion of the course students will be able to:

i. Use the language of set theory.
ii. Use basic Linear Algebra to solve problems.
iii. Use basic counting techniques.

Unit I: Set Theory	**NOS**	**Hours**
Introduction, Definition of set, Representation of set, ϵ-notation, Types of sets, Equality of sets, Subset of set, Union of sets,Intersection of sets, Disjoint sets, Universal set, Complement of set, Difference of sets, Venn diagram, Application of sets.	SSC/NO501	15
Unit II: Determinants	**NOS**	**Hours**
Formation of determinants, Minors & Co-factors of the elements of the determinant, Properties of determinant, Application of determinants in Business problems.	SSC/NO501	15
Unit III: Vectors & Matrices	**NOS**	**Hours**
Vectors, Matrices, Difference between matrices and determinants, Types of matrices, Equality of matrices, Matrix addition-multiplication, Scalar multiplication, System Of Linear Equations, Transpose, Adjoint, Inverse of a square matrix, Solution of linear equation by matrix method, Elementary transformation, Solution of linear equation by Gauss-Jordan Elimination method, Rank of matrix, Linear dependence & independence of vectors, Linear Combination, Application of matrices in solving problems relating to business and economics, Application of matrix algebra input output analysis.	SSC/NO501	15
Unit IV: Permutation & Combination	**NOS**	**Hours**
Definition, Properties, Theorems, Problems, Binomial theorem, Independent term, Middle term, Theorems.	SSC/NO501	15
	Total	60

Reference Books:

1- A Textbook of Business Mathematics
-PadmalochanHazarika(S. Chand)
2- Basic Business Mathematics & Statistics
-S. Saha
-New central book agency(P) Ltd
3-Mathematics & Statistics
-S. Saha-New central book agency(P) Ltd

B. Voc. Computer Technology
Semester: II
Skill Component-IV

Programming for the Web CT.SC.201

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM – NOS-SSC/NO501, SSC/N9004

Course Outcomes:

After successful completion of the course students will be able to:

i. Design basic programming structures to implement functionality in line with requirements defined in BRS/URS, SRS and HLD.
ii. Establish and agree with appropriate people the data/information they need to provide, the formats in which they need to provide it, and when they need to provide it, Obtain the data/information from reliable sources, Check that the data/information is accurate, complete and up-to-date.

Unit I: HTML5	**NOS**	**Hours**
Why HTML5, Difference between HTML 4 and HTML5, Formatting text by using tags, Using lists and backgrounds. Creating hyperlinks and anchors, Creating tables, creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, Formatting tables, applying table borders, applying background and foreground fills, changing cell padding, spacing andalignment, creating user forms creating basic form, using check boxes and radio buttons creating lists, additional input types in HTML5, Incorporating sound and video, Audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page, Image Mapping.	SSC/N0501	15
Unit II: CSS 3	**NOS**	**Hours**
Introduction to CSS, how does CSS work? Syntax, identification and grouping of elements, selectors, colors, background, fonts, text, links, lists, tables. CSS Box model, Margin, Padding, Border, height and width, floating elements, positioning of elements, align, dropdowns, navigation bar, counters, Image gallery.	SSC/N0501	15

Unit III: Java Script	NOS	Hours
Introduction to Client-Side Scripting, Introduction to Java Script, JavaScript Types, Variables in JS, Operators in JS, Conditional statements, JavaScript Loops, JS Popup Boxes, JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions, Document and its associated objects, Document, Link, Area, Anchor, Image, Applet, Layer Events and Event Handlers, Using Java Script in Realtime, Validation of Forms.	SSC/N0501	20
Unit IV: Web Hosting	**NOS**	**Hours**
Web Hosting - What is Domain? Introduction to DNS, how to register a Domain? What is web hosting? How to get a web hosting? Host your website on web Server. FTP - FTP Introduction, FTP Commands Viewing Files and Directories, FTP Commands Transfer and Rename files, FTP with WS FTP/ CuteFTP, FileZilla on Windows.	SSC/N9004	10
	Total	60

References:

1) Start Here Learn HTML5, FaitheWempen, Microsoft Publication
2) HTML and CSS Design and Build Websites, John Duckett, Willy Publications
3) JavaScript 2.0: The Complete Reference, Second Edition by Thomas Powell and FritzSchneider
4) Internet & Web Development, Soma Das Gupta, Khanna Publishing House
5) Web Designing and Development, TanweerAlam, Khanna Publishing House

B. Voc. Computer Technology
Semester: II
Skill Component-V

Analysis, Design and Testing of Web based Applications

CT.SC.202

Credit: 04 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- SSC/N2102, SSC/N9005

Learning Outcomes: After successful completion of the course students will be able to:

1) Check their understanding of the BRS/URS, SRS, and HLD with appropriate people.

2) Review their designs with appropriate people, analyze inputs from appropriate people to identify, resolve and record designs defects and inform future designs.

3) Document their designs using standard templates and tools, comply with their organization's policies, procedures and guidelines when contributing to the design of software products and applications.

4) Obtain advice and guidance from appropriate people to develop their knowledge, skills and competence, identify accurately the knowledge and skills they need for their job role, identify accurately their current level of knowledge, skills and competence and any learning and development needs, agree with appropriate people a plan of learning and development activities to address their learning needs.

Unit I: Software Development Models	NOS	Hours
Defining Software, Software Application Domains, The Unique Nature of WebApps, Software Engineering, The Software Process, Software Engineering Practice, A Generic Process Model, defining a Framework Activity, Identifying a Task Set, Process Patterns, Process Assessment and Improvement. The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Concurrent Models, **Understanding Requirements**: Requirements Engineering, Establishing the Groundwork, Identifying Stakeholders Recognizing Multiple Viewpoints, working toward Collaboration, Asking the First Questions, Eliciting Requirements, Developing Use Cases, Building the Requirements Model, Analysis Patterns, Negotiating Requirements, Validating Requirements.	SSC/N2102	15

Unit II: Requirement Modeling: Flow, Behavior, Patterns and Webapps	NOS	Hours
Requirements Modeling Strategies, Flow-Oriented, Modeling, creating a Data Flow Model, Creating a Behavioral Model, Patterns for Requirements Modeling, Requirements Modeling for WebApps. How Much Analysis Is Enough?, Requirements Modeling Input Requirements Modeling, Output Content Model for WebApps, Interaction Model for WebApps, Functional Model for WebApps, Configuration Models for WebApps Navigation Modeling. Design within the Context of Software Engineering, The Design Process, Software Quality Guidelines and Attributes Design Concepts, The Design Model, Data Design Elements, Architectural Design Elements, Interface Design Elements, Component-Level Design Elements, Deployment-Level D	SSC/N2102	20
Unit III: Web Application Testing	**NOS**	**Hours**
Starting on Web Testing Testing HTML—The Static Web The Dynamic Web Testing Character Sets, Code Pages, and Glyphs Performance Testing Security Testing	SSC/N2102	15
Unit IV: Learning and Self Development	**NOS**	**Hours**
I: Importance of Self Development II: Knowledge and Skills Required for the Job III: Avenues of Self Development IV: Planning for Self-Development	SSC/N 9005	10
	Total	60

References:

1) Software Engineering: A Practitioner's Approach.
ByRoger Pressman.
2) The Web Testing Companion: The Insider'sGuide to Efficient and Effective Tests.
ByLydia Ash John Wiley.
3) Facilitator Guide, NASSCOM.
5) Student Handbook, NASSCOM.

B. Voc. Computer Technology
Semester: II
Skill Component-VI

Media Content and Graphics Design CT.SC.201

Credit: 04 Periods: 60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- SSC/NO503

Learning Outcomes: After successful completion of the course students will be able to:

1) Access reusable components, media and graphical packages and tools from their organization's knowledge base.
2) Convert requirements into media content and graphic designs, leveraging reusable components where available.
3) Review media content and graphic designs with appropriate people and analyze their feedback, record any defects and corrective actions taken to inform future work, Rework media content and graphic designs, incorporating feedback, Submit media content timely and graphic designs for approval by appropriate people.

Unit I: Flash Basics	**NOS**	**Hours**
Flash Basics: Creating a Flash Document, Reviewing the Interface, Managing the Workspace. Getting Started: Creating Shapes Using the Primitive Tools, Drawing with Pen, Pencil and Line Tools, Editing Shapes Using the Selection Tools, Managing Color and Gradients, Importing Files. Working with Graphics: Creating Rectangles Using a Gradient, Drawing Ovals, creating a Simple Animation, Working with Lines, Manipulating Objects, Masking Objects, Testing a Movie. Creating and Editing Symbols: Importing Illustrator Files, About Symbols, Converting Objects to Symbols, Importing Bitmap Images, Adding Bitmaps to a Movie Clip, Symbol Working with Buttons, Adding Transparency.	SSC/N0503	10
Unit II: Creating and Managing Contents with Flash	**NOS**	**Hours**
New Document Settings & Navigation: Drawing & Selecting Simple Vector Shapes, Drawing Curves with the Pen & Pencil Tools, Exploring Other Drawing Tools, Interaction between Shapes, Grouping Objects, Working in Object Drawing Mode. Managing Website Contents: Working with Layers Using Bitmaps,Adding Text, Use the Regular & Primitive Shape, Tools to Build aGraphic, Creating & Adjusting a Symbol, Transforming Objects withthe Free Transform Tool,		

Exploring Color Types & Gradients Animation Techniques: Importing Slideshow Content, working in aMovie Clip, Timeline Animating the First Image in the Slideshow,Non-linear Animation Swapping, Objects Using the Distribute toLayers Command, Timeline View Options & Animation Timing,Introducing ActionScript's and Behavior Using sound and video: Adding a Sound File to the Timeline, Adding Sound to a Button, Encoding Video for Import into Flash, Set Import Options & Choose a Player Skin, The FLVPlayback Component & Component Inspector, Flash Video for ActionScript 2 & Older PlayersPublishing your site: Overview of Flash Publish, Settings Compression in Bitmaps & Sounds, Other Flash Publish Settings, HTML Settings, Publishing Your Flash Movie, Uploading Your Site to a Server via FTP Credits.	SSC/N0503	20
Unit III: WordPress	**NOS**	**Hours**
What is WordPress?, Setting up WordPress website, How to pick and Register a domain name, choosing WordPress hosting for website, Installing WordPress, Things to do after installing WordPress, Managing Contents, creating, editing, publishing and deleting blog posts, Managing comments, Managing pages, use of media library, Creating, editing, deleting navigation menus, how to add remove widgets, Design and Layout, Choosing and installing WordPress theme, Keeping your website update.	SSC/N0503	20
Unit IV: WooCommerce and Keeping your website update	**NOS**	**Hours**
Installing WooCommerce, WooCommerce compatible themes, Adding and Managing Products, setting up payment Methods, Manage WooCommerce shop, why should always update website, how to update WordPress, installation, how to update WordPress theme.	SSC/N0503	10
	Total	60

References:

1) Exploring Adobe Flash CS4-Annesha Hartman, Cengage Learning Publication.
2) WordPress: Build your own WordPress for small business Kinndleedision -The WP Genie.

B. Voc. Computer Technology
Semester: II
Skill Laboratory Course-IV

Credit: 02 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS- SSC/NO501, SSC/N9001, SSC/N9002

Experiments based on Skill Component-IV

1. Write HTML program to demonstrate Formatting text.
2. Write HTML program to demonstrate List tag.
3. Write HTML program to demonstrate Ordered List.
4. Write HTML program to demonstrate Unordered List.
5. Write HTML program to demonstrate Definition list.
6. Write HTML program to demonstrate Nested List.
7. Write HTML program to demonstrate table tag.
8. Write HTML program to demonstrate rowspan & Colspan.
9. Write HTML program to demonstrate Cell spacing & cell Padding.
10. Write HTML program to demonstrate frames.
11. Write HTML program to demonstrate forms.
12. Write HTML program to demonstrate Image mapping.
13. Write HTML program to demonstrate Audio & video Tag.
14. Write HTML program to demonstrate inline, internal and external CSS.
15. Design a webpage using Table tag so that the content appears well placed and apply CSS on it.
16. Design a webpage using HTML forms that uses all types of control and style it with CSS.
17. Design a webpage using HTML, CSS and display Horizontal and Vertical Navigation bar.
18. Write a JavaScript program to demonstrate operators.
19. Write a JavaScript program to demonstrate control statements.
20. Write a JavaScript program to displays the working of events and event handlers such as On Change, On Click, on Double Click, on Drag Drop etc.

B. Voc. Computer Technology

Semester: II

Skill Laboratory Course-V

Credit: 02 Periods:60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/N2102, SSC/N9003, SSC/N9004

Experiments based on Skill Component-V

1. Problem Definition, Identifying& Understanding the system, its functions, desired inputs, outputs etc.

2. Conducting Feasibility Study – Deciding S/W, H/W requirements, Type of system (Single-User/Multi-user etc), Limitations of current system, Benefits of the proposed.
3. Requirement Analysis, Interviews, Questionnaire, Creating SRS.
4. Drawing ERD & converting to tables.
5. Drawing Context Diagram, DFDs for understanding process flow.
6. Drawing Use Case Diagram.
7. Drawing Class, Object Diagrams.
8. Drawing Sequence & Collaboration Diagrams.
9. Drawing State Transition, State chart diagrams.
10. Drawing Activity Diagram.
11. Drawing Component Diagram.

B. Voc. Computer Technology

Semester: II

Skill Laboratory Course-VI

Credit: 02 Periods: 60

(To be implemented from the Academic year 2018-19)

SSC NASSCOM - NOS-SSC/NO503

Experiments based on Skill Component-VI

1. Introduction to Adobe Profession CS 5.
2. Creating Simple Animation.
3. Use of tools in adobe CS 5.
4. Practical on Masking an object.
5. Practical on Adding Sound to a button.
6. Installation of WordPress.
7. Introduction to WordPress.
8. Creating a Blog.
9. Installation of WooCommerce.
10. Adding Sound to a Time line.
11. Study of free transform tool.