॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड – ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

Established on 17th September, 1994, Recognized By the UGC U/s 2(f) and 12(B), NAAC Re-accredited with'B++' grade

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विज्ञान व तंत्रज्ञान विद्याशाखे अंतर्गत राष्ट्रीय शैक्षणिक धोरण २०२० नुसार पदवी द्वितीय वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २७ मे २०२५ रोजी संपन्न झालेल्या मा. विद्यापरिषद बैठकीतील विषय क्रमांक १६/६१–२०२५ च्या ठरावानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील राष्ट्रीय शैक्षणिक धोरण–२०२० नुसारचे पदवी द्वितीय वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्यास मा. विद्यापरिषदेने मान्यता प्रदान केली आहे. त्यानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील बी. एस्सी द्वितीय वर्षाचे खालील विषयाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२५–२६ पासून लागू करण्यात येत आहेत.

01	B.Sc. Computer Management (Single Major)
02	B.Sc. Information Technology (Single Major)
03	B.Sc. Software Engineering (Single Major)
04	B.Sc. Computer Network Technology (Single Major)
05	B.Sc. Computer Science (Single Major)
06	B.Sc. Artificial Intelligence & Machine Learning (Single Major)
07	B.Sc. BCA (Single Major)
08	B.Sc. Computer Maintenance
09	B.Sc. Computer Science
10	B.Sc. Information Technology
11	B. Sc. Computer Application
12	B. Sc. Software Development
13	B. Sc. Data Science
14	B. Sc. Computer Science (with data Science specialization)

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या **www.srtmun.ac.in** या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी, ही विनंती.

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
जा.क्र.:शै–१/एनइपी/विवत्रंविपदवी/२०२५–२६/126
दिनांक १२.०६.२०२५

सहाय्यक कुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

प्रत : माहितीस्तव तथा कार्यवाहीस्तव.

१) मा. कुलगुरू महोदयांचे कार्यलय, प्रस्तुत विद्यापीठ.
२) मा. प्र. कुलगुरू महोदयांचे कार्यलय, प्रस्तुत विद्यापीठ.
३) मा. आधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
४) मा. संचालक, परीक्षा व मुंल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
५) मा. प्राचार्य, सर्व संबधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
६) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. याना देवून कळविण्यात येते की, परिपत्रक अभ्यासक्रम संकेतस्थळावर प्रसिध्द करण्यात यावेत.

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED - 431 606 (MS)

(Credit Framework and Structure of

B. Sc. Computer Management (Single Major)

Second Year

with Multiple Entry and Exit Options as per NEP-2020)

UNDERGRADUATE PROGRAMME OF

SCIENCE & TECHNOLOGY

Major in **CMG** and Minor in **DSM** (Subject)

Under the Faculty of Science & Technology

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science and Technology (Three Optional in the First Year)

Credit Framework for Second Year with Multiple Entry and Exit

Subject: CMG (Major) /DSM (Minor 1)

B.Sc. Computer Management (Single Major) Second Year

Year & Level	Semester	Optional 1 (Major) *(From the same Faculty)*	Optional 2 (Minor 1) *(From the same Faculty)*	Optional 3 (Minor 2) *(From the same Faculty)*	Generic Elective (GE) (select from Basket 3 of *Faculties other than Science and Technology*)	Vocational & Skill Enhancement Course	Ability Enhancement Course (AEC) (Basket 4) Value Education Courses (VEC) / Indian Knowledge System (IKS) (Basket 5) *(Common across all faculties)*	Field Work / Project/Internship/ OJT/ Apprenticeship / Case Study Or Co-curricular Courses (CCC) (Basket 6 for CCC) *(Common across all faculties)*	Credits	Total Credits
1	2	3	4	5	6	7	8	9	10	11
2 (5.0)	III	SCMGCT1201 (T 2Cr) SCMGCT1202 (T 2Cr) SCMGCP1203 (P 2Cr) SCMGCP1204 (P 2Cr) 8 Credits	SCMGMT1201 SCMGMP1201 (2T+2P) 4 Credits	--	SCMGGE1201 2 Credits	SCMGSC1201 2 Credits	AECENG1201 (2cr) AECMIL1201 (2Cr) (MAR/HIN/URD /KAN/PAL) 4 Credits	CCC(2Cr) (NCC/NSS/SPT/ CLS/ HWS/YGE/FIT) 2Credits	22	44
	IV	SCMGCT1251 (T 2Cr) SCMGCT1252 (T 2Cr) SCMGCP1253 (P 2Cr) SCMGCP1254 (P 2Cr) 8 Credits	SCMGMT1251 SCMGMP1251 (2T+2P) 4 Credits	--	SCMGGE1251 2 Credits	SCMGVC1251 2 Credits	AECENG1251 (2cr) AECMIL1251 (2Cr) (MAR/HIN/URD /KAN/PAL) VECEVS1251 (2Cr) 6 Credits	-------	22	
	Cum. Cr.	16	08	00	04	04	10	02	44	

Abbreviations:

1. **DSC:** Department/Discipline Specific Core (Major)
2. **DSE:** Department/Discipline Specific Elective (Major)
3. **DSM:** Discipline Specific Minor
4. **GE/OE:** Generic/Open Elective
5. **VSEC:** Vocational Skill and Skill Enhancement Course
6. **VSC:** Vocational Skill Courses
7. **SEC:** Skill Enhancement Courses
8. **AEC:** Ability Enhancement courses
9. **MIL:** Modern Indian languages
10. **IKS:** Indian Knowledge System
11. **VEC:** Value Education Courses
12. **OJT:** On Job Training: (Internship/Apprenticeship)
13. **FP:** Field Projects
14. **CEP:** Community Engagement and Service
15. **CC:** Co-Curricular Courses
16. **RM:** Research Methodology
17. **RP:** Research Project/Dissertation
18. **CMG** : Computer Management

B. Sc. CM Second Year Semester III *(Level 5.0)*

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs./ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	SCMGCT1201	Programming in Java	02	--	**08**	03	--
	SCMGCT1202	PHP and MySQL	02	--		03	--
	SCMGCP1203	Programming in Java (P)	--	02		--	04
	SCMGCP1204	PHP and MySQL (P)	--	02		--	04
Optional 2	SCMGMT1201	Software Engineering	02	--	**04**	02	--
	SCMGMP1201	Software Engineering (P)	-	02		--	04
Generic Electives *(from other Faculty)*	SCMGGE1201	Cyber Security	02	--	**02**	02	--
Skill Based Course (related to Major)	SCMGSC1201	JavaScript (P)	--	02	**02**	--	04
Ability Enhancement Course	AECENG1201	Select from **(Basket 4)**	02	--	**02**	02	--
Ability Enhancement Course	AECMIL1201	Select from **(Basket 4)**	02	--	**02**	02	--
Field Work / Project/Internship	SCMGFP1201	---	---	--	**---**	--	----
Community Engagement Services (CES)	CCCXXX1201	Select from **(Basket 6)**	--	02	**02**	--	02
Total Credits			**12**	**10**	**22**	**14**	**18**

B. Sc. CM Second Year Semester III *(Level 5.0)*

Examination Scheme

[20% Continuous Assessment (CA) and 80% End Semester Assessment (ESA)]

Subject (1)	Course Code (2)	Course Name (3)	Theory				Practical		Total Col (6+7) / Col (8+9) (10)
			Continuous Assessment (CA)			ESA			
			Test I (4)	Test II (5)	Average of T1 & T2 (6)	Total (7)	CA (8)	ESA (9)	
Optional 1	SCMGCT1201	Programming in Java	10	10	10	40	--	--	50
	SCMGCT1202	PHP and MySQL	10	10	10	40	--	--	50
	SCMGCP1203	Programming in Java (P)	--	--	--	--	20	30	50
	SCMGCP1204	PHP and MySQL (P)	--	--	--	--	20	30	50
Optional 2	SCMGMT1201	Software Engineering	10	10	10	40	--	--	50
	SCMGMP1201	Software Engineering (P)	--	--	--	--	20	30	50
Generic Elective	SCMGGE1201	Cyber Security	10	10	10	40	--	--	50
Skill Based Course	SCMGSC1201	JavaScript (P)	--	--	--	--	20	30	50
Ability Enhancement Course	AECENG1201	Select from **(Basket 4)**	10	10	10	40	--	--	50
Ability Enhancement Course	ACEMIL1201	Select from **(Basket 4)**	10	10	10	40	--	--	50
Field Work / Project/Internship	-----	-----	--	--	--	--	----	---	---
Community Engagement Services (CES)	CCCXXX1201	Select from **(Basket 6)**	--	--	--	--	20	30	50

B. Sc. CM Second Year Semester IV *(Level 5.0)*

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs./ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	SCMGCT1251	Programming in C#	02	--	**08**	03	--
	SCMGCT1252	Python Programming	02	--		03	--
	SCMGCP1253	Programming in C# (P)	--	02		--	04
	SCMGCP1254	Python Programming (P)	--	02		--	04
Optional 2	SCMGMT1251	Software Testing	02	--	**04**	02	--
	SCMGMP1251	Software Testing (P)	-	02		--	04
Generic Electives *(from other Faculty)*	SCMGGE1251	Content Management System	02	--	**02**	02	--
Vocational Course *(related to Major)*	SCMGVC1251	Fundamentals of Linux (P)	--	02	**02**	--	04
Ability Enhancement Course	AECENG1251	Select from **(Basket 4)**	02	--	**02**	02	--
Ability Enhancement Course	AECMIL1251	Select from **(Basket 4)**	02	--	**02**	02	--
Value Education Courses	VECEVS1251	Select from **(Basket 5)**	02	--	**02**	02	--
Community Engagement Services (CES)	--	--	---	--	**--**	--	--
Total Credits			**14**	**08**	**22**	**16**	**16**

B. Sc. CM Second Year Semester IV *(Level 5.0)*

Examination Scheme

[20% Continuous Assessment (CA) and 80% End Semester Assessment (ESA)]

Subject (1)	Course Code (2)	Course Name (3)	Theory				Practical		Total Col (6+7) / Col (8+9) (10)
			Continuous Assessment (CA)			ESA			
			Test I (4)	Test II (5)	Average of T1 & T2 (6)	Total (7)	CA (8)	ESA (9)	
Optional 1	SCMGCT1251	Programming in C#	10	10	10	40	--	--	50
	SCMGCT1252	Python Programming	10	10	10	40	--	--	50
	SCMGCP1253	Programming in C# (P)	--	--	--	--	20	30	50
	SCMGCP1254	Python Programming (P)	--	--	--	--	20	30	50
Optional 2	SCMGMT1251	Software Testing	10	10	10	40	--	--	50
	SCMGMP1251	Software Testing (P)	--	--	--	--	20	30	50
Generic Elective	SCMGGE1251	Content Management System	10	10	10	40	--	--	50
Vocational Course	SCMGVC1251	Fundamentals of Linux (P)	--	--	--	--	20	30	50
Ability Enhancement Course	AECENG1251	Select from **(Basket 4)**	10	10	10	40	--	--	50
Ability Enhancement Course	AECMIL1251	Select from **(Basket 4)**	10	10	10	40	--	--	50
Value Education Courses	VECEVS1251	Select from **(Basket 5)**	10	10	10	40	--	--	50
Community Engagement Services (CES)	CCCXXX1251	Select from **(Basket 6)**	--	--	--	--	20	30	50

Detailed Curriculum

Course Structure:

Major 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCT1201	Programming in Java	03	--	02	--	02

Major 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCT1201	Programming in Java	10	10	10	40	--	--	**50**

SCMGCT1201: **Programming in Java** (Major 1)

Course pre-requisite:

1. Basic knowledge of Programming.
2. Basic knowledge of RDBMS.

Course Objectives:

1. To understand architecture of JVM.
2. To study concept of Object oriented programming.
3. To understand concept of package and exception handling.
5. To study Java 8 features.

Course Outcomes:

Students will be able to:

1. Use the syntax and semantics of java programming language and basic concepts of OOP.
2. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
3. Apply the concepts of Exception handling to develop efficient and error free codes.
4. Use java standard API library to write complex programs.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Java Fundamentals**	
	1.1	Java History and Java Architecture	**7**
	1.2	Java Program Structure	
	1.3	Command Line Arguments	
	1.4	Data Types and Variables	
	1.5	Flow Control Statements	
	1.6	Arrays	
2.0		**OOPS**	
	2.1	Classes and Objects	**8**
	2.2	Constructors and Static members	
	2.3	Encapsulation, Inheritance, this and super keyword	
	2.4	Polymorphism	
	2.5	Garbage Collection	
3.0		**Abstraction, Packages and Exception Handling**	
	3.1	Final Keyword, Abstract class & Abstract Methods	**7**
	3.2	Interfaces	
	3.3	System Packages and User defined Packages	
	3.4	Try, catch block and finally clause	
	3.5	User defined exceptions	
4.0		**String Handling and Java 8 Features**	
	4.1	String and StringBuffer class	**8**
	4.2	IO stream classes and Object Serialization	
	4.3	Default and Static methods in Interface	
	4.4	Functional Interfaces and Lambda Expressions	
	4.5	Method References and Stream API	

Reference Books:

1. Herbert Schildt, "Java The Complete Reference 9th Edition", McGraw Hill Education (India) Private Limited, New Delhi.
2. Balaguruswamy E., "Programming with JAVA: A Primer. 7th edition", McGraw Hill Education (India) Private Limited, New Delhi.
3. Arunesh Goyal, The Essentials of JAVA, Khanna Book Publishing Company Private Limited

Major 2 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCT1202	PHP and MySQL	03	--	02	--	02

Major 2 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCT1202	PHP and MySQL	10	10	10	40	--	--	**50**

SCMGCT1202: PHP and MySQL (Major 2)

Course pre-requisite:

1. Basic knowledge about Web Technology like html, css and Javascript.
2. Basic knowledge about Object Oriented Programming like C++.
3. Introductory knowledge about RDBMS like SQL.

Course Objectives:

1. The Core-PHP, Server Side Scripting Language.
2. Design a dynamic and interactive Web page.
3. The PHP-Database handling.

Course Outcomes:

Students will be able to:

1. Design dynamic and interactive web pages and websites.
2. Run PHP scripts on server and retrieve results.
3. Handle databases like MySQL using PHP in websites.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Introduction to PHP**	
	1.1	Introduction to PHP language	**7**
	1.2	Introduction to XAMPP	
	1.3	Basic syntax of PHP and Sending Data to the Web Browser.	
	1.4	Writing Comments in PHP	
	1.5	Implementation of White Space and magic Quote in PHP.	
	1.6	Using Variable in PHP	
	1.7	Using Constant in PHP	
2.0		**Programming with PHP**	
	2.1	Data types in PHP	**7**
	2.2	Operators in PHP	
	2.3	Sending Data to PHP using HTML Form	
	2.4	Conditional statements in PHP	
	2.5	Looping statements in PHP	
	2.6	Types of Arrays	
	2.7	Element Looping with indexed and associative array	
3.0		**Using Functions**	
	3.1	Defining and calling a custom functions in PHP	**8**
	3.2	Date and time using Date Function	
	3.3	Formatting with String functions	
	3.4	Searching substring & Replacing from string	
	3.5	Including Multiple Files with Include() and Require()	
	3.6	Handling HTML Forms with PHP Redux	
	3.7	Using Sessions and Cookies	
4.0		**Database Connectivity with MySql**	
	4.1	Creating database and table structure in MySQL using phpMyAdmin	**8**
	4.2	Connection with MySql Database	
	4.3	Inserting records in to MySQL table.	

	4.4	Updating records in to MySQL table.	
	4.5	Deleting records in to MySQL table.	
	4.6	Selecting records from MySQL table and displaying it in HTML.	
		Total	**30**

Reference Books:

1. Learning PHP, MySQL & JavaScript", 7th Edition Author by Robin Nixon, Publisher(s): O'Reilly Media, Inc. ISBN: 9781098152352
2. PHP and MYSQL Web Development", 5th Edition Author by Luke Welling and Laura Thomson, Publisher(s):Pearson Education, ISBN-13978-9332582736
3. PHP: The Complete Reference", 5th Edition Author by by Steven Holzner, Publisher(s):McGraw Hill Education, ISBN-13978-0070223622

Course Structure:

Major 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCP1203	Programming in Java	--	04	--	02	02

Major 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCP1203	Programming in Java	--	--	--	--	20	30	**50**

SCMGCP1203: Programming in Java (Major 1) Practical List

Practical No.	Title of Practical
1	Write a program to read two numbers from user and print their product.
2	Write a program to print the square of a number passed through command line arguments.
3	Write a java program to find the Factorial of a number using recursive and non-recursive functions.
4	Write a Java program for sorting a given list of marks in descending order.
5	Write a program to demonstrate constructor overloading.
6	Write a Java program to create a class Employee with a method called calculateSalary(). Create two subclasses Manager and Programmer. In each subclass, override the calculateSalary() method to calculate and return the salary based on their specific roles.
7	Write a program to demonstrate encapsulation.
8	Write a program to demonstrate final keyword.
9	Write a program to demonstrate abstract class and abstract methods.
10	Write a program to create and import a custom package.
11	Write a Java program using an interface called 'Bank' having function 'rate_of_interest()'. Implement this interface to create two separate bank classes 'SBI' and 'PNB' to print different rates of interest. Include additional member variables, constructors also in classes 'SBI' and 'PNB'.
12	Write a Java program for demonstrating the divide by zero exception handling.
13	Write a Java program that reads a list of integers from the user and throws an exception if any numbers are duplicates.
14	Write a program to demonstrate String and StringBuffer class.
15	Write a program to serialize and de-serialize object.

Course Structure:

Major 2 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCP1204	PHP and MySQL	--	04	--	02	02

Major 2 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCP1204	PHP and MySQL	--	--	--	--	20	30	**50**

SCMGCP1204: PHP and MySQL (Major 2) Practical List

Practical No.	Title of Practical
1	Creating HTML FORM (User Registration Form)
2	Write php code to sending input from HTML to PHP.
3	Write PHP Code to demonstrate variables.
4	Write php code to implementation of Operators.
5	Write php code to demonstrate Indexed Array.
6	Write php code to demonstrate Associated Array in PHP.
7	Write php code to demonstrate String Manipulation Functions
8	Write php code to include multiple files with include() and required() function
9	Write php code to demonstrate concept of Forms with PHP Redux
10	Write php code to demonstrate different date format.
11	Write php code to Creating and Calling Your Own Functions
12	Write php code to demonstrate Session and Cookies
13	Write a program to Connecting to MySQL Database and insert records in to table.
14	Write php code to Update and Delete records from MySQL Table
15	Write php code to Select all records from MySQL table and displaying in to HTML table.

Course Structure:

Minor 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGMT1201	**Software Engineering**	02	--	02	--	02

Minor 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGMT1201	**Software Engineering**	10	10	10	40	--	--	**50**

SCMGMT1201: **Software Engineering** (Minor 1) Curriculum Details

Course pre-requisite:

1. Basic knowledge of Programming Language
2. Understanding of Data Structures and Algorithms
3. Familiarity with Database Management Concepts

Course Objectives:

1. To introduce the fundamental concepts of software engineering and various software process models.
2. To develop an understanding of software requirements engineering, risk analysis, and project planning techniques.
3. To expose students to design principles, modeling techniques, software testing strategies, and quality management practices.

Course Outcomes:

Students will be able to:

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

1. Describe the role and nature of software
2. Analyze and document software requirements
3. Apply software design principles and use UML diagrams for modeling software systems.
4. Demonstrate various software testing strategies
5. Implement software quality assurance techniques

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Software Process and Agile Development**	
	1.1	Understand the evolving role and changing nature of software in modern computing systems.	**8**
	1.2	Explain layered software technology and a generic software process framework.	
	1.3	Describe and compare software process models including the Waterfall, Incremental, Evolutionary, and Unified Process models.	
	1.4	Explore the principles and practices of Agile software development, including Agile methods and the contrast between plan-driven and agile development.	
	1.5	Apply Agile practices such as Extreme Programming (XP), Scrum, and recognize toolsets used in Agile processes.	
2.0		**Software Requirements and Project Planning**	
	2.1	**Introduction to Software Requirements Engineering**: Functional and non-functional requirements, Software Requirements Specification (SRS), and requirements documentation.	**10**
	2.2	**Requirements Engineering Process**: Activities involved in requirements specification, elicitation, analysis, validation, and management.	
	2.3	**Risk Management in Software Projects**: Proactive vs. reactive strategies, identification and analysis of software risks, risk projection and refinement, and the RMMM (Risk Mitigation, Monitoring, and Management) plan.	
	2.4	**Software Project Planning Fundamentals**: Principles of software pricing, plan-driven development approach, and basics of project scheduling.	
	2.5	**Agile Planning and Estimation Techniques**: Agile planning methods and techniques for effort and cost estimation in software projects.	
3.0		**Software Design, Testing Strategies, and Product Metrics**	
	3.1	**Software Design Process and Quality** Overview of the design process, design quality, and key design concepts.	**6**

		Introduction to the design model and principles of software architecture.	
	3.2	**Data and Architectural Design** Data design and architectural design approaches. Emphasis on modularity, separation of concerns, and scalable architecture.	
	3.3	**UML and Structural Modeling Techniques** Basic structural modeling using UML diagrams: Class, Sequence, Collaboration, Use Case, and Component Diagrams.	
	3.4	**Software Testing Strategies** Strategic approach to software testing. Conventional, black-box, and white-box testing. Validation testing, system testing, and debugging techniques.	
	3.5	**Software Product Metrics** Understanding software quality and reliability. Metrics for analysis, design, source code, testing, and maintenance.	
4.0		**Quality Management, Release Management, and Product Sustenance**	
	4.1	**Introduction to Software Quality** – Overview of quality concepts and the importance of software quality in modern development.	**6**
	4.2	**Software Quality Assurance (SQA)** – Processes and practices, including formal technical reviews and statistical quality control.	
	4.3	**Software Reliability and Reviews** – Understanding reliability, software reviews, and techniques for ensuring dependable software.	
	4.4	**Release Management Practices** – Planning for software releases, build strategies, risk assessment, and post-deployment monitoring.	
	4.5	**Product Sustenance and Maintenance** – Software maintenance, handling updates, managing end-of-life, and strategies for migration.	

Reference Books:

1. Stephen Schach, Software Engineering 7th ed, McGraw-Hill, 2007

2. Software Engineering: Principles and Practice Hans van Vliet

Course Structure:

Minor 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGMP1201	**Software Engineering(P)**	--	02	--	02	02

Minor 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGMP1201	**Software Engineering(P)**	--	--	--	--	20	30	**50**

SCMGMP1201: **Software Engineering(P)** (Minor 1) Practical List

Practical No.	Title of Practical
1	Create a Simple Software Development Life Cycle (SDLC) Model.
2	Agile Methodology Simulation.
3	Design a Software Process Framework.
4	Comparing Waterfall and Agile Models.
5	Case Study on Extreme Programming (XP).
6	Requirement Elicitation from Stakeholders.
7	Create a Software Requirements Specification (SRS).
8	Risk Identification and Mitigation Plan.
9	Software Project Estimation Exercise.
10	Agile Planning and Scheduling.
11	Design Class and Sequence Diagrams.
12	Black-box and White-box Testing for a Simple Application.
13	System Testing and Debugging.
14	Metrics Collection for Source Code.
15	Software Reliability Testing.

Course Structure:

Generic Elective – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGGE1201	**Cyber Security**	02	--	02	--	02

Generic Elective 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGGE1201	**Cyber Security**	10	10	10	40	--	--	**50**

SCMGGE1201: **Cyber Security** (***Generic Elective***) Curriculum Details

Course pre-requisite:

1. Basic Computer Skills.
2. Basics of networking.

Course Objectives:

1. To prepare students with the technical knowledge and skills needed to protect and defend computer systems and networks.
2. To develop students can identify the current Computer security and breaches.

Course Outcomes:

Students will be able to:

1. Analyze and evaluate the cyber security needs of an organization.
2. Measure the performance and troubleshoot cyber security systems.
3. To introduce the current cyber related activities.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Introduction to Cyber Security**	
	1.1	Overview of Cybersecurity	**7**
	1.2	Cyber Threat Landscape	
	1.3	Key Principles of Cybersecurity	
	1.4	Risk Management in Cybersecurity	
	1.5	Legal and Ethical Considerations	
2.0		**Basics of Networking and Security**	
	2.1	Networking Fundamentals	**8**
	2.2	Common Network Attack	
	2.3	Network Security Technologies	
	2.4	Wireless Network Security	
	2.5	Securing Network Devices	
3.0		**Operating System and Web Security**	
	3.1	Basics of Operating System Security	**7**
	3.2	Patch Management	
	3.3	Antivirus and Anti-malware Protection	
	3.4	Encryption and Secure Boo	
	3.5	Secure Web Browsing	
	3.6	HTTPS and SSL/TLS	
	3.7	Web Security Policies and Compliance	
4.0		**Security Best Practices and Emerging Trends**	
	4.1	Security Awareness and Training	**8**
	4.2	Incident Response and Management	
	4.3	Threat Intelligence and Information Sharing	
	4.4	Future Trends in Cybersecurity	

Reference Books:

1. Computer Security Basics by by Rick Lehtinen , Publisher : O'Reilly Media; 2nd edition
2. Fundamentals of Computer Security by Josef Pieprzyk ,Thomas Hardjono, Jennifer Seberry

Course Structure: ***Skill Based Course -Teaching Scheme***

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGSC1201	JavaScript (P)	--	02	--	02	02

***Skill Based Course* -Assessment Scheme**

Course Code (2)	Course Name (3)	Theory				Practical		Total [Col (6+7) or Col (8+9)] (10)
		CA			ESA (7)			
		Test I (4)	Test II (5)	Avg. of T1 & T2 (6)		CA (8)	ESA (9)	
SCMGSC1201	JavaScript (P)	--	--	--	--	20	30	50

SCMGSC1201: ***JavaScript (P) (Skill Based) Curriculum Details***

Course pre-requisite:

1. Basic knowledge of html5

Course Objectives:

- To learn the usage of CSS for styling web pages.
- To use Javascript for creating dynamic and interactive web content like applications and browsers

Course Outcomes:

Students will be able to:

- Apply CSS for styling web pages
- Demonstrate the usage of JavaScript for creating dynamic and interactive web content
- Develop an interactive website using, HTML, CSS, JavaScript.

Curriculum Details:

Sr. No	Unit No.
1.	Write a JavaScript program to calculate multiplication and division of two Numbers (input from user).
2.	Write a javascript program to calculate average of 3 numbers.
3.	Write a JavaScript function that accepts a string as a parameter and counts the number of vowels within the string.
4.	Write a javascript program to check whether the number is odd or even
5.	Write a javascript program to print sum of n natural numbers.
6.	Write a JavaScript function that returns a passed string with letters in alphabetical order. Example string : 'admin' Expected Output : 'adimn'
7.	Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string in upper case.
8.	Write a JavaScript program to get the current date.
9.	Write a JavaScript program to read firstname and lastname from user and display welcome message on screen.
10.	Write a JavaScript program that accept two integers and display the larger
11.	Write a JavaScript function to remove specified number of characters from a string.
12.	Write JavaScript to demonstrate loops: while, for, do-while
13.	Write a JavaScript program to demonstrate Event Handling.
14.	WAP to validate Email Address in JavaScript.
15.	Write a JavaScript for loop that will iterate from 0 to 15. For each iteration, it will check if the current number is odd or even, and display a message to the screen

Course Structure: SEMESTER - IV

Major 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCT1251	Programming in C#	03	--	02	--	02

Major 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCT1251	Programming in C#	10	10	10	40	--	--	**50**

SCMGCT1251: Programming in C# (Major 1) Curriculum Details

Course pre-requisite:

1. Basic knowledge of object-oriented programming (OOP's).

Course Objectives:

1. To learn and understand basic concepts of Windows Programming.
2. To understand and work on desktop, Console and MVC application.
3. To learn Design pattern of MVC.

Course Outcomes:

Students will be able to:

1. Understand the .NET core concept and Design pattern of MVC.
2. Gain experience working on desktop, Console and Web Based Application.
3. To develop database connectivity application.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Introduction to .NET Framework**	
	1.1	Introduction to .NET Framework and its components	**10**
	1.2	Overview of Visual Studio IDE	
	1.3	Common Language Runtime(CLR)	
	1.4	C# Introduction	
	1.5	C# Syntax	
	1.6	Variables and Datatypes	
	1.7	Operators in C#	
2.0		**Working with Console Application and OOPs**	
	2.1	Control flow statements	**10**
	2.2	Looping Statements	
	2.3	Functions in C#	
	2.4	.NET Collections a) Array b) ArrayList	
	2.5	Creating class,methods and object	
	2.6	Using Namespace (DLL)	
	2.7	creating and using interfaces,	
	2.8	Exception Handling	
3.0		**Windows Applications and Windows Controls**	
	3.1	Windows Applications and Windows Controls	**5**
	3.2	Creating and Customizing Windows Form	
	3.3	TextBox and Label Control	
	3.4	Button, CheckBox and RadioButton	
	3.5	ListBox and ComboBox control	
	3.6	Developing a Simple ADO.NET Based Application	
	3.7	Performing crud operations ado.net c#	
4.0		**Introduction to .NET Core and MVC**	
	4.1	Introduction to .NET Core	

	4.2	MVC Architecture	**5**
	4.3	Creating Controllers and Actions	
	4.4	Parameters in Action methods	
	4.5	Creating View	
	4.6	Introduction to Models	
	4.7	Creating models using 'CodeFirst approach'	

Reference Books:

1. Programming in C# E Balagurusamy Mc Graw Hill

2. Visual C#.Net C Muthu Mc Graw Hill

3. Learning ASP.NET Core MVC Programming 1st Edition, Kindle Edition

by Mugilan T. S. Ragupathi)

4. Pro ASP.NET Core MVC Develop cloud-ready web applications using Microsoft's latest framework, ASP.NET Core MVC Sixth Edition Adam Freeman

Course Structure:

Major 2 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCT1252	Python Programming	03	--	02	--	02

Major 2 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCT1252	Python Programming	10	10	10	40	--	--	**50**

SCMGCT1252: Python Programming (Major 2) Curriculum Details

Course pre-requisite:

1. Basic Computer Skills.
2. Fundamental Programming Concepts.
3. Basic Knowledge of Object-Oriented concepts

Course Objectives:

1. To learn how to design and program Python applications.
2. To learn how to use lists, tuples, and dictionaries in Python programs.
3. To do database operations in Python.
5. To construct Python programs as a set of objects.
6. To understand web page desiging.

Course Outcomes:

Students will be able to:

1. Develop and execute simple Python programs
2. Develop simple Python programs for solving problems.
3. Represent compound data using Python lists, tuples, and dictionaries.
4. Develop an application to handle database.
5. Develop a web application using Django.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required
1.0		**Python Fundamentals**	
	1.1	Features of Python, Python Interpreter and Structure of Python Program	**7**
	1.2	Variables, Operators, Data Types and I/O Statements	
	1.3	Control Structures: Decision and Loops	
	1.4	String and String Operation	
	1.5	Set, Dictionary, List and Tuple	
	1.6	Functions and Arguments	
2.0		**Exceptions, Object Oriented Design and Functional Programming**	
	2.1	Errors and Exceptions	**8**
	2.2	Handling Exceptions	
	2.3	Classes and Objects and Constructor Method	
	2.4	Classes with Multiple Objects	
	2.5	Class Attributes versus Data Attributes	
	2.6	Encapsulation, Inheritance and Polymorphism	
	2.7	Lambda, Iterators, Generators, List Comprehensions	
3.0		**Database Connectivity with MySQL**	
	3.1	Architecture	**7**
	3.2	Connecting with database	
	3.3	Database Operations[CRUD]	
	3.4	GUI using Tkinter Module	
	3.5	Creating Label, Text, Button, Info Dialog Boxes, Radio button, Check button	
4.0		**Web Development using Python**	
	4.1	Django Installation, Creating Project, Creating Application,	**8**
	4.2	Views, URLs, Templates and Models	
	4.3	Data Manipulation, Django Admin,	
	4.4	Django Syntax- variables, tags, if-else, loops	
	4.5	Django : Insert, Update and Delete Data	

Reference Books:

3. Mark Lutz, “Learning Python”, 5th Ed. O’REILLY.
4. Albert Lukaszcwskc, “MySQL for Python”, Packet publication.
5. Antonio Mele, “Django 2 by Example (Build powerful and reliable Python web applications from scratch)”.
6. John Paul Mueller, “Beginning Programming with Python for Dummies”.

Course Structure:

Major 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCP1253	Programming in C#	--	04	--	02	02

Major 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCP1253	Programming in C#	--	--	--	--	20	30	**50**

SCMGCP1253: Programming in C# (Major 1) Practical List

Practical No.	Title of Practical
1	Write program in c# to display "Welcome to C#"
2	Create console Application to demonstrate if else statement
3	Create Console Application to demonstrate looping statements.
4	Create Console Application to perform creating user define function.
5	Create Console Application to demonstrate ArrayList class in C#
6	Creating class, methods and object in c#
7	Creating and Using Namespace (DLL) in c#
8	creating and using interfaces
9	Write code to demonstrate Exception Handling in C#
10	Create Windows Applications to customizing form properties.
11	Create Windows Applications demonstrate adding control to form and setting properties of control.
12	Create windows application to Performing crud operations ado.net c#
13	Creating Controller and Actions methods in MVC

14	Creating ActionResult and ViewResult, Returning a view in MVC
15	Creating models using 'CodeFirst approach' in MVC

Course Structure:

Major 2 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGCP1254	Python Programming (P)	--	04	--	02	02

Major 2 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGCP1254	Python Programming (P)	--	--	--	--	20	30	**50**

SCMGCP1254: Python Programming (Major 2) Practical List

Practical No.	Title of Practical
1	Program to demonstrate different data types.
2	Program to demonstrate decision making statement.
3	Program to demonstrate Looping statement..
4	Program to demonstrate different string methods.
5	Program to demonstrate function declaration and passing arguments.
6	Program to demonstrate inheritance and its Types
7	Program to demonstrate polymorphism.
8	Program to demonstrate exception handling.
9	Program to demonstrate different collections.
10	Program to demonstrate database connectivity.
11	Program to demonstrate Different Pattern Program.
12	Program to demonstrate String operation.
13	Write a Python program to perform following operations on List: a) Create b) Access c) Update d) Delete elements from list.
14	Develop a Python program to demonstrate use of Lambda.
15	Write a program to develop a simple web application in Python.

Course Structure:

Minor 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGMT1251	Software Testing	02	--	01	--	01

Minor 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGMT1251	Software Testing	5	5	5	20	--	--	**25**

SCMGMT1251: Software Testing (Minor 1) Curriculum Details

Course pre-requisite:

1. Basic knowledge of computers

Course Objectives:

1. To learn detection of bugs and performance issues in software.
2. To understand the development and testing plans.
3. To learn various testing tools for quick detection of bugs and errors.
4. To work with various software testing methods.

Course Outcomes:

Students will be able to:

1. Determine the correctness, completeness and quality of software being developed.
2. Understand the technical documentation of software.

Curriculum Details:

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		**Quality concepts**	**8**
	1.1	Software Quality	
	1.2	McCall‟s Quality Factors	
	1.3	ISO 9126 Quality Factors	
	1.4	Targeted Quality Factors	
	1.5	The Cost of Quality	
	1.6	Quality and Security	
	1.7	Quality Control	
	1.8	Quality Assurance	
2.0		**Software Quality Assurance**	**7**
	2.1	Software Quality Assurarance	
	2.2	Software Reviews	
	2.3	Formal Technical Reviews	
	2.4	Software Reliability	
	2.5	The SQA Plan	
3.0		**Software Testing Strategies**	**8**
	3.1	A Strategic Approach to Software Testing	
	3.2	Unit Testing	
	3.3	Integration Testing	
	3.4	Validation Testing	
	3.5	System Testing	
	3.6	The Art of Debugging	
4.0		**Testing Application**	
	4.1	Software Testing Fundamentals	
	4.2	Internal and External Views of Testing	

	4.3	White-Box Testing	**7**
	4.4	Basic Path Testing	
	4.5	Control Structural Testing	
	4.6	Black Box Testing	
		Total	**30**

Reference Books:

1. Software Engineering -A Practitioner's approach, Sixth Edition, Roger S. Pressman, McGraw-Hill Higher Education; (1 August 2007),ISBN-10: 0077227808
2. Software Engineering -A Practitioner's approach, Fifth Edition, Roger S. Pressman,McGraw-Hill Higher Education; (1 August 2005)
3. Software Testing Concepts and Tools NageswaraRoo Dreamtech Publication

Course Structure:

Minor 1 – Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGMP1251	Software Testing (P)	--	02	--	01	01

Minor 1 – Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGMP1251	Software Testing (P)	--	--	--	--	5	20	**25**

SCMGMP1251: Software Testing (Minor 1) Practical List

Practical No.	Title of Practical
1	Any 10 practical that cover complete syllabus

Course Structure: *Generic Electives -Teaching Scheme*

Course Code	Course Name (Paper Title)	Teaching Scheme(Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGGE1251	Content Management System	02	--	02	--	02

Generic Electives -Assessment Scheme

Course Code (2)	Course Name (3)	Theory				Practical		Total [Col (6+7) or Col (8+9)] (10)
		CA			ESA (7)			
		Test I (4)	Test II (5)	Avg. of T1 & T2 (6)		CA (8)	ESA (9)	
SCMGGE1251	Content Management System	10	10	10	40	--	--	50

SCMGGE1251: *Content Management System (Generic Electives)* ***Curriculum Details***

Learning Objectives:

i. Provide the skills to effectively create and operate WordPress sites.

Course Outcomes:

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

i. Plan website by choosing colour schemes, fonts, layouts, and more.

ii. Select, install, and activate a theme in word press.

iii. Design e-commerce site using woo commerce plugin.

Curriculum Details: ***(There shall be FOUR Modules in each course)***

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		**Website Development using WordPress**	**8**
	1.1	Installing WordPress,	
	1.2	Installing Themes,	
	1.3	Creating a Child Theme, ,	
	1.4	Modifying a Theme,	
	1.5	Setting Up a WordPress Site,	
	1.6	Starting the MRP Theme,	
	1.7	The WordPress Loop,	
	1.8	Continuing with the Loop	
2.0		**Customizing Page and Form**	**7**
	2.1	Splitting the Page into Templates,	
	2.2	Creating a Page for Single Posts, Creating Pages,	
	2.3	Customizing the Navigation Menu, Customizing the Sidebar,	
	2.4	Creating a Custom Page Template, Adding a Contact Form,	
	2.5	Uploading a WordPress Site	
3.0		**Installing plugins**	**8**
	3.1	What are plugins?	
	3.2	Finding plugins,	
	3.3	Installing plugins,	
	3.4	Activating and deactivating plugins,	
	3.5	Editing plugin settings,	
	3.6	Deleting plugins,	
4.0		**Adding, editing, and deleting users**	**7**
	4.1	Adding, editing, and deleting users,	
	4.2	User roles and permissions,	
	4.3	Importing content from another site,	
	4.4	Exporting your WordPress data,	

	4.5	WordPress General settings.	
		Total	**30**

Reference Books:

1. Professional WordPress: Design and Development by Brad Williams, David Damstra, Hal Stern
2. WordPress To Go bySarah McHarry.
3. WooCommerce Explained by Stephen Burge

Course Structure:

Vocational Course -Teaching Scheme

Course Code	Course Name (Paper Title)	Teaching Scheme(Hrs.)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
SCMGVC1251	Fundamentals of Linux (practical)	--	02	--	02	02

Vocational Course - Assessment Scheme

Course Code (1)	Course Name (2)	Theory				Practical		Total [col (5+6) Or Col(7+8)]
		CA			ESA (6)			
		Test I (3)	Test II (4)	Avg. (T1&t2) (5)		CA (7)	ESA (8)	
SCMGVC1251	Fundamentals of Linux (practical)	--	--	--	--	20	30	**50**

SCMGVC1251**:** Fundamentals of Linux ***(Vocational Course) Practical List***

Practical No.	Title of Practical
1	Study of step by step Linux installation.
2	Study of Linux shells and its types.
3	Study of file and folder permissions.
4	Study of text editors.
5	Study of backup software.
6	Study of file and folder handling commands.
7	Study of networking commands.
8	Study of communication commands.
9	Study of printing commands.
10	Study of different run levels of Linux.
11	Study of RPM.
12	Study of Linux boot process.

Guidelines for the Course Assessment:

A. Continuous Assessment (CA) (20% of the Maximum Marks) of theory and practical courses:

i. **For Theory Course:** CA shall form 20% of the Maximum Marks and shall be carried out over the entire semester. It shall be done by conducting **Two Tests** (Test I on 40% curriculum) and **Test II** (on remaining 40% syllabus) and average of the marks scored by a student in these two tests of a particular paper shall be taken as the **CA** score.

ii. **For Practical Course:** CA score of the practical course shall be marks scored by a student in the internal practical examination conducted by the concerned teacher.

B. End Semester Assessment (80% of the Maximum Marks) of theory and practical courses:

(For illustration a paper of 02 credits, 50 marks has been considered and shall be modified appropriately depending upon credits of the individual paper)

Question Paper Pattern of the ESA:

i. **ESA Question paper shall consist 6 questions, each of 10 marks**
ii. **Question No.1 shall be compulsory and shall be based on the entire syllabus**
iii. Students shall have to solve ***ANY THREE*** of the remaining Five Questions (i.e. from question 2 to 6)
iv. **Students shall have to solve a TOTAL of 4 Questions.**

C. Assessment of On Job Training (OJT) Course (for 04 credits):

a. Continuous assessment part (**40%, 40 marks out of 100**) of this course shall be done by the mentor of the student, where he /she is supposed to complete his On Job Training. This shall be based on the regularity, participation and performance of the students at the place of OJT.

b. Semester End Assessment (ESA) (**60% of the total marks, 60 marks out of 100**) of this course shall be done by a panel of examiners in two parts

i. based on the work report submitted by the student (**50% i.e. 30 marks)** and

ii. **Remaining 50%** (30 marks) shall be based on his presentation and viva-voce on the work carried to be assessed by the panel of examiners. This assessment shall be done along with practical examinations of respective courses / subjects.

D. Assessment of Field Project (FP) and Research Project (RP) (e.g. for 02 credits)

a. Continuous assessment part (**40%, 20 marks out of 50**) of this course shall be done by the mentor of the student and shall be based on regularity, experimental work and performance of the student.

b. Semester End Assessment (ESA) (**60% of the total marks, 30 marks out of 50**) of this course shall be done shall be done by a panel of examiners in two parts

i. based on the work report submitted by the student (**50% i.e. 30 marks)** and

ii. **Remaining 50%** (30 marks) shall be based on his presentation and viva-voce on the work carried out by the student. This assessment shall be done along with practical examinations of the respective courses / subjects.

E. Assessment of Co-Curricular courses (CCC):

a. Assessment of the CCC course shall be done by the respective course coordinator as a part of CA and be based on the regularity, performance of a student and his participation in various activities as prescribed in the regulations prepared in this regard.

b. The End Semester Assessment (ESA) of the CCC courses shall be done as per the regulations prepared in this regard and shall be done on the basis of the write-up, presentation by the student on the activities that he has carried out in a semester.

c. Students shall have freedom to opt for more than one CCC courses. However, score of the best performing CC shall be considered for preparing his result.

F. Syllabi, Teaching and Examination Scheme for the courses in Column 7 and Column 8 (AEC, VEC, IKS, CI, EVS, CCCs, etc.) shall be common for all the students from different faculties.

Note: Number of lectures required to cover syllabus of a course depends on the number of credits assigned to a particular course. One credit of theory corresponds to 15 Hours lecturing and for practical course one credit corresponds to 30 Hours. For example, for a course of two credits 30 lectures of one-hour duration are assigned, while that for a three credit course45 lectures.

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