



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ

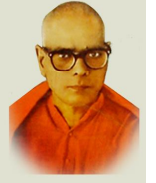
नांदेड- ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY

NANDED-431606, MAHARASHTRA STATE, INDIA.

स्वामी रामानंद तीर्थ  
मराठवाडा विद्यापीठ, नांदेड.

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



## ACADEMIC (1-BOARD OF STUDIES) SECTION

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### परिपत्रक

सर्व संबंधितांना या परिपत्रकान्वये कळविण्यात येते की, प्रस्तुत विद्यापीठातील विज्ञान व तंत्रज्ञान विद्याशाखेंतर्गत B.Sc. Information Technology (Optional) Third Year C.B.C.S. Pattern सोबत जोडल्याप्रमाणे अभ्यासक्रमास शैक्षणिक वर्ष २०१८-१९ पासून लागू करण्यासाठी मा. कुलगुरू यांनी विद्यापरीषदेच्या वतिने मान्यता प्रदान केली आहे.

तरी उपरोक्त प्रमाणे ही बाब सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

“ज्ञानतीर्थ” परिसर )(  
विष्णुपूरी, नांदेड. )(  
जा.क्र.शै. ०१/अभ्यासक्रम/२०१८-१९/ ८५४ )(  
दिनांक : ०८/०८/२०१८ )(  
स्वा/—  
उपकुलसचिव  
शैक्षणिक (अभ्यासमंडळे) विभाग,

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) प्राचार्य, सर्व संबंधित महाविद्यालये, प्रस्तुत विद्यापीठ.
- २) संचालक, परीक्षा व मुल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
- ३) कुलसचिव, (निवडणूक व सभा कक्ष) यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ४) उपकुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टीम एक्सपर्ट, प्रस्तुत विद्यापीठ. (सदरील परिपत्रक व अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर प्रसारित करावे.)



**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SEMESTER PATTERN**

Faculty of Science & Technology  
 Under Graduate (UG) Programmes

**INFORMATION TECHNOLOGY (OPTIONAL) - SYLLABUS**  
**(W. E. F. Academic Year 2018-2019)**  
**CLASS: B. Sc. I.T. (Optional) Third Year**

**OUTLINE**

Semester pattern	Section and course code	Paper Number & Title	Periods /Week	Marks for		Total Credits (Marks)
				External Marks: ESE (Theory)	Internal: CA & SECIT	
Semester-V	Section-A DECCIT	<b>Theory Paper No.XII</b> Software Engineering and Design Concepts	03	40	10	Credits: 02 (Marks:50)
	Section-B DECCIT ( Elective)	<b>Theory Paper No. XIII[A]</b> Programming in Visual Basic <b>OR</b> <b>Theory Paper No. XIII[B]</b> Cloud Computing and Platforms	03	40	10	Credits: 02 (Marks:50)
	Section-A SECIT-III	<b>Skill Enhancement Course-III:</b> Data Mining and Data Warehousing <b>OR</b> Fundamental of Multimedia, Graphics and Video Applications	03	25	25	Credits: 02 (Marks:50)
Semester-VI	Section-A DECCIT	<b>Theory Paper-XIV</b> RDBMS & PL/SQL	03	40	10	Credits: 02 (Marks:50)
	Section-B DECCIT ( Elective)	<b>Theory Paper No. XV[A]</b> Information Security <b>OR</b> <b>Theory Paper No. XV[B]</b> E-Commerce Technologies	03	40	10	Credits: 02 (Marks:50)
	Section-B SECIT-IV	<b>Skill Enhancement Course-IV:</b> Fundamental of Office Automation Tools <b>OR</b> Android Programming and Development Tools	03	25	25	Credits: 02 (Marks:50)
Practical	Section-A CCITP	<b>Paper No. XVI</b> <b>Laboratory Course Work-IV:</b> Practical based on theory papers- XII & XIII	04	50	--	Credits: 02 (Marks:50)
	Section-B CCITP	<b>Paper No. XVII</b> <b>Laboratory Course Work-V:</b> Project Dissertation	04	50	NA	Credits: 02 (Marks:50)
	ESE Marks:260	SECIT+CA Marks:100+40=140	Credits:16 Marks:400	NA	NA	NA
	ESE Marks:260	SECIT+CA Marks:100+40=140	Credits:16 Marks:400	NA	NA	NA
<b>Total</b>				<b>ESE Marks:260</b>	<b>SECIT+CA Marks:100+40=140</b>	<b>Credits:16 Marks:400</b>

**DECCIT:** Discipline Elective Core Course Information Technology, **CCITP:** Core Course Informational Technology Practical, **SECIT-** Skill Enhancement Course Information Technology, **ESE:** End Semester Examination, **CA :** Continuous Assessment

## **Paper No. XII**

### **Software Engineering and Design Concepts**

#### **Unit 01: The Nature of Software & Software Engineering**

The Nature of Software, The Changing Nature of Software, Defining the Discipline, Software engineering process, Software engineering practice, Software Myths

#### **Unit 02: Software Process Structure & Models**

A Generic process model, defining a framework activity, Process patterns, Process assessment & improvement, Prescriptive process models, Personal & team process models

#### **Unit 03: Agility development & Human Aspects**

Introduction to Agility, Agility & Cost of Change, Agility principles, Extreme programming, Characteristics of Software engineer, Psychology of Software engineering, Software team structures.

#### **Unit 04: Understanding Requirements & Design Concepts**

Requirement Engineering ,Building the analysis model, Requirement Analysis, Design within the context of software engineering, The design process, Design model, Software Architecture, Element of quality assurance, Software testing fundamentals

#### **Reference Books:**

1. Software Engineering A practitioner's approach By Rogers S. Pressman, 8<sup>th</sup> Ed.(McGraw Hill)
2. Software Engineering A practitioner's approach By Rogers S. Pressman, 7<sup>th</sup> Ed.(McGraw Hill)
3. Software Engineering Principles and practices By Waman S. Jawadekar (Tata McGraw Hill)

**Paper No. XIII [A]**  
**Programming in Visual Basic**

**Unit 01: Getting Started with VB**

The IDE, The Elements of user interface, Designing user interface, Programming an Application Visual Development and Event Driven Programming.

**Unit 02: Visual Basic The language**

Variable, Constants, arrays, collections, Procedures, control flow & loop statements.

**Unit 03: Working with forms**

Form types, Appearance of forms, Form properties, Designing menu structure, Building dynamic forms at run time, Introduction to MDI forms.

**Unit 04: Basic Active X controls**

Command button control-properties, Text Box control- properties, List Box & Combo Box control - properties, combo Box control-properties, Scroll Bar control-properties, Slider control-properties, Understanding Visual data manager.

**Reference Books:**

1. Mastering Visual Basic 6 by Evangelos Perroutosos (BPB Publications)
2. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill
3. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill

**Paper No. XIII [B]**  
**Cloud Computing and Platforms**

**Unit 01: Enterprise Computing: A Retrospective**

Introduction, Mainframe architecture, Client-server architecture, 3-tier architectures with TP monitors

**Unit 02: The Internet as a Platform**

Internet technology and web-enabled applications, Web application servers, Internet of services

**Unit 03: Software as a Service & Cloud Computing**

Emergence of Software as a Service (SaaS), Successful SaaS architectures, Dev 2.0 platforms, Cloud computing, Dev 2.0 in the cloud for enterprises

**Unit 04: Cloud Computing Platforms**

Infrastructure as a service (IaaS): Amazon EC2, Platform as a service (PaaS): Google App Engine, Microsoft Azure, Introduction to Web Services, AJAX & Mashups: user interface services

**Reference Books:**

1. Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff
2. Cloud Computing: A Practical Approach by Anthony T. Velte Toby J. Velte publication McGraw Hill

## **Skill Enhancement Course-III (SECCS-III)**

### **Data Mining and Data warehousing**

#### **Unit 01: Introduction**

Introduction: Data mining as a subject, what is Data mining, Definition, DBMS Vs Data mining, DM techniques, Issues and challenges in DM, DM application areas?

#### **Unit 02: Data warehousing**

Data warehousing: Introduction, Definition, OLAP operation, warehouse schema, Data warehouse architecture, metadata, data ware house usage

#### **Unit 03: Data pre-processing**

Data pre-processing, Data cleaning, Data integration, Data transformation, Data reduction.

#### **Unit 04: An application**

Understanding basic techniques in Classification, Prediction, Clustering and Association Rules

#### **Reference Books:**

1. Data mining Techniques by Arun K Pujari.
2. Data mining concepts and techniques 2<sup>nd</sup>ed. By Jawei Han & Micheline Kamber.
3. Data mining- Introductory and Advanced Topics, Margaret H Dunham,  
Pearson Education

**Skill Enhancement Course-III (SECCS-III)**  
**Fundamental of Multimedia, Graphics and Video Applications**

**Unit 01: Introduction to multimedia**

Introduction to multimedia, elements of multimedia, multimedia and hypermedia, characteristics of multimedia, hardware and software requirement, uses of multimedia, WWW, multimedia software tools.

**Unit 02: Text**

Text: Introduction, types of text, Unicode standard, insertion of text, text compression, text file formats, image file format (bmp, jpg, png).

**Unit 03: Introduction to graphics**

Introduction to graphics, advantages and uses of graphics, Audio-introduction, Components of audio system, digital audio processing, and Audio file formats.

**Unit 04: Video-introduction**

Video-introduction, Motion Video, Analog Video Camera, Digital Video, Digital Video Processing, Storage formats, video file format.

**Reference Books:**

1. Principles of multimedia 2<sup>nd</sup> edition by Ranjan Parekh, Tata McGraw-Hill
2. Fundamentals of multimedia by Ze-Nian Li and mark S. Drew
3. Introduction to Multimedia and its Application by Ramesh Jain

**Laboratory Course Work- IV**

**Paper No. XVI**

**Practical Based on theory papers – XII & XIII**

- At least 20 practical sessions based on paper no XII and XIII.



**Paper No. XIV**  
**RDBMS & PL/SQL**

**Unit 01: Introduction**

Introduction to DBMS, Applications of DBMS, Data Models, Database Architecture, Database Users & Administrators, Entity, Attributes & Entity Set, Database Languages, DDL,DML,DCL.

**Unit 02: Relational Algebra and Calculus:**

Introduction to Selection, Projection, Union, and Joins, introduction to SQL, Basic SQL Query and Examples of SQL Queries: select, where, from, Introduction to views, Aggregate Operators Group by & Order by Clause.

**Unit 03: Integrity Constraints**

Introduction, Domain Constraint, Primary Key, Unique Key, Foreign Key

**Unit 04: Introduction to PL/SQL**

Introduction, Architecture of PL/SQL, Data types, operators, Decision making and looping statements, Simple PL/SQL programs, Introduction to Triggers.

**Reference Books:**

1. SQL, PL/SQL the programming language of ORACLE 4<sup>th</sup> Edition, Ivan Bayross
2. An Introduction to Database Systems, Bipin C Desai , Galgotia Publication

**Paper No. XV [A]**  
**Information Security**

**Unit 01: Security Polices, Standards & Guidelines**

Different Types of polices standards & guidelines, Common Elements, Policy Standards & Guide development, Policy Creation, Regulatory Considerations.

**Unit 02: Security Attacks, Services & Mechanisms**

Security Attacks, Services & Mechanisms, Security Services, A model for network security.

**Unit 03: Conventional Encryption**

Conventional Encryption Techniques, Steganography, Classical Encryption techniques.

**Unit 04: Intruders, Viruses, Worms & Firewall**

Intruders, Viruses & Related Threats, Introduction to Firewalls, Firewall design principles, Trusted Systems, Introduction to Antivirus.

**References Books:**

1. Security Architecture Design, Deployment & Operations by Cistopher M king, Curtis E. Dalton, T. Ertem Osmanoglu
2. Cryptography & Network Security Principles & Practice (Second Edition)

**Paper No. XV [B]**  
**E-Commerce Technologies**

**Unit 01: Electronic Commerce**

Introduction, E-Commerce types, Value Added Networks, Electronic commerce over the Internet.

**Unit 02: Intranet**

Introduction to Intranet, Intranet services, Intranet Implementation.

**Unit 03: Internet**

Internet-Introduction, Internet Engineering Task Force, Internet Architecture Board, Internet Communication Protocols, Internet Search Tools: Telnet, FTP, World Wide Web. Gopher, HTTP, Concerns about Internet.

**Unit 04: Electronic Data Interchange**

EDI introduction, Cost & Benefits of EDI, Components of EDI Systems: EDI Standards, EDI Software's, EDI Communication Networks, EAN system, EAN/COM, Article numbering system, Bar-coding, Serial Shipping Container Code & EAN label.

**References Books:**

1. E-commerce (The cutting Edge of Business) by Kamlesh K. bajaj and Debjani Nag. 1<sup>st</sup> & II<sup>nd</sup> Edition (Tata McGraw Hill publication.)

**Skill Enhancement Course-IV (SECCS-IV)**  
**Fundamental of Office Automation Tools**

**Unit 01: Introduction to MS Office**

Introduction to MS Office, Characteristics of office automation system, Goals of office automation.

**Unit 02: Introduction to MS Word**

Introduction to MS Word, Opening screen of word, Creating document, Typing text, Formatting text, Editing text, Line Spacing, Borders and shading, Inserting headers and footers, Creating tables, inserting graphics, Drawing objects.

**Unit 03: Introduction to MS Excel**

MS Excel, Opening screen of Excel, Functions in excel, Creating worksheets, Printing Worksheets, Creating and printing charts.

**Unit 04: Introduction to PowerPoint**

PowerPoint Basic Terminology, Creating presentations, Auto content wizard, Using blank presentation option, Using design template option, Adding slides, Deleting slides, Importing images, drawing in PowerPoint, numbering a slide, saving presentation, printing presentation.

**Reference Books:**

1. PC Software Made Simple by R.K Taxali
2. Office 2010 course complete book, Prof. Satish Jain, Kratika, M.Geetha, BPB Publication

**Skill Enhancement Course-IV (SECCS-IV)**  
**Android Programming and Development Tools**

**Unit 01: Introduction**

History of Android, Introduction to Android Operating System, Android Development tools, Android Architecture.

**Unit 02: Overview of Object Oriented Programming Using Java**

OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract Class, Threads, Overloading and Overriding, Java Virtual Machine.

**Unit 03: Development Tools**

Installing Virtual Machine for Android Ice-cream Sandwich/Jellybean, configuring the installed tools, creating a android project- Hello word, run on emulator, Deploy it on USB-connected android device.

**Unit 04: User Interface Design**

Form widgets, Text fields, Layouts, Button control, toggle buttons, spinners, Images, Menu and dialog.

**Reference Books:**

1. Android application development for java programmers by James C. Sheusi, publisher Cengage Learning, 2013.

## Laboratory Course Work- V

### Paper No. XVII

#### Project Dissertation

- ✚ Maximum a group of 03 students are allowed to work on a project.
- ✚ Project Synopsis should be submitted by the students to their concern faculty and a declaration should be submitted by the students regarding the originality of work.
- ✚ Project report should prepared by the students & it should be certified by concern faculty & head of the department.
- ✚ Students should submit one hardcopy of report with CD/DVD to the department.

#### Distribution of marks for project is as

Project Dissertation:	30
Project Viva:	10
Project Report:	10
<b>Total Marks:</b>	<b>50</b>