



Estd. 1962
NAAC 'A' Grade

SHIVAJI UNIVERSITY, KOLHAPUR-416 004. MAHARASHTRA

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शिवाजी विद्यापीठ, कोल्हापूर – 416004.

दुरध्वनी (ईपीएबीएक्स) २६०९०००० (अभ्यास मंडळे विभाग- २६०९०९४)

फॅक्स : ००९१-०२३१-२६९१५३३ व २६९२३३३. e-mail: bos@unishivaji.ac.in

SU/BOS/Science/ No 1357

Date: 25 JUN 2020

To,

The Principal, All Concerned Affiliated Colleges/Institutions Shivaji University, Kolhapur	The Head/Co-ordinator/Director All Concerned Department (Science) Shivaji University, Kolhapur.
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Subject: Regarding syllabi of M.Sc. Tech Mathematics Part-III degree programme under the Faculty of Science and Technology.

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the revised syllabi, nature of question paper and equivalence of M.Sc.Tech Mathematics Part-III degree programme under the Faculty of Science and Technology.

1.	M.Sc. Tech Mathematics Part-III
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This syllabi and equivalence shall be implemented from the academic year 2020-2021 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in

The question papers on the pre-revised syllabi of above mentioned course will be set for the examinations to be held in October /November 2020 & March/April 2021. These chances are available for repeater students, if any.

You are, therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours faithfully,

Dy Registrar

Copy to:

1	The Dean, Faculty of Arts & Fine Arts	8	P.G.Seminar Section
2	Director, Board of Examinations and Evaluation	9	Computer Centre
3	The Chairman, Respective Board of Studies	10	Affiliation Section (U.G.)
4	B.Sc. Exam	11	Affiliation Section (P.G.)
5	Eligibility Section	12	P.G.Admission Section
6	O.E. I Section	13	Centre for Distance Education
7	Appointment Section		

SHIVAJI UNIVERSITY,
KOLHAPUR



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CHOICE BASED CREDIT SYSTEM

Syllabus For

M.Sc. Tech. Mathematics Part -III

SEMESTER V AND VI

(Syllabus to be implemented from June, 2020 onwards.)

1) Title of the course: M.Sc. Tech. (Mathematics)

M.Sc. Tech. (Mathematics) program has semester pattern and Choice Based Credit System.

2) Duration: 3 years.

2) Structure of the course

The following table gives the scheme of Examination at M.Sc. Tech. (Mathematics) (Part III) according to the New Syllabus and pattern of Examination.

M. Sc. Tech. (Mathematics) (Part III) (Semester V) (25 credits)

Course Code	Title of course	Instruction hrs/week	Duration of Term end Exam	Marks Term end exam	Marks- (Internal) Continuous Assessment	Credits
MTT 501	Advanced Web Technology	4	3	80	20	4
MTT 502	Software Engineering	4	3	80	20	4
MTT 503	Computer Networks	4	3	80	20	4
MTT 504	Cyber Security	4	3	80	20	4
MTT 505	Departmental Elective 1.Compiler Techniques 2.Linux Operating System 3.Android Programming 4. Machine Learning	4	3	80	20	4
MTT 506	Lab Work V	5	3	100	---	5

M. Sc. Tech. (Mathematics) (Part III) (Semester VI) (25 credits)

Course Code	Title of course	Duration of Term end Exam	Evaluation Schema(Marks)				Credits
				Internal	External	Total	
MTT 601	A. Industrial Project	1	Mid Term Viva	50	---	50	24
			Final Viva and Report	100	150	250	
	B. Technical Communication	1	Presentation	50		50	1
			Report	50		50	
Final Total				--	---	400	25

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT501
Title of Course: Advanced Web Technology

Course Outcomes: Students will able to

1. develop windows form application using C#
2. Understand client-server architecture
3. Develop web form application using ASP.NET
4. Develop application using MVC

UNIT -I

15 Lectures

Introduction: .NET framework and its architecture, CLR, JIT, CTS, Metadata, .NET Revolution, Characteristics of C#, Programming structure of C#, scope of variables, boxing & unboxing, Nullable Data types, Conditional statements, Arrays, Loops, Procedures and functions, Exception handling, Windows form controls, containers, Data Controls, Dialog Controls, sample application development, Deployment of C# application

UNIT -II

15 Lectures

ASP.NET: Page Life Cycle, Standard controls, Data Controls, Sample Application Development, Web services, Server side Validation Controls, Working with ADO.NET, Data Binding using DataBound Control, Working With GridView Control, Working With DetailsView Control, Working With FormView Control, Working With Repeater , Connected architecture, Disconnected architecture. Microsoft SQL Server: Creation of Table, Views, Stored Procedures

UNIT -III

15 Lectures

ASP.Net State Management: Server side State management, Client Side state management. Caching in ASP.NET: Page caching, data caching, fragment caching AJAX: Introduction to AJAX, Calendar Extender, Always Visible Control Extender, Confirm Button Extender, Filtered text Box extender, Password Strength, Drag Panel Extender

UNIT -IV

15 Lectures

Introduction to MVC, Benefits of using ASP.NET MVC, Role of Model, View, and Controller, ASP.NET MVC Works, Naming conventions, Creating views, Defining controllers, Defining a data model, Creating strongly-typed views, Creating strongly-typed views

Razor View Engine: Razor Basics, Razor design goals, Implementation of Razor view, Razor syntax, Accessing Model Data in Razor views

Reference Books:

1. Asp.Net: The Complete Reference, by Matthew MacDonald
2. Microsoft Visual C# 2013 - Microsoft Press, by John Sharp
3. Jesse Liberty, "Programming C#", 4th Edition, O'Reilly Media
4. A Beginners Guide, ASP.NET 3.5 by William B. Senders
5. Professional ASP.NET MVC 5, By Jon Galloway, Brad Wilson, K. Scott Allen, David Matson

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)

Course Code: MTT502

Title of Course: Software Engineering

Course Outcome: student will be able to

1. Understand various models of Software Development.
2. Understand requirement gathering and requirement modeling.
3. Explore concepts and models in software design.
4. To understand the testing and debugging methods for software.

Unit I :

15 Lectures

Introduction – Software problem, Software Engineering problem, Software Engineering approach . **Software process** - Software process, characteristics, **Software development process:** A Process Step Specification, Waterfall Model, Prototyping Model, Iterative Enhancement, The Spiral Model, project management process, Software configuration management process, process management process.

Unit II:

15 Lectures

Software requirement analysis and specification – Software requirement, problem analysis, requirement specification, Validation, **Matrices:** Size Measures, case study. **Planning a Software project** – Cost estimation, Project scheduling, Staffing and personal planning, **Quality assurance plan:** Verification and Validation, Inspections and Reviews, project maintaining plans, **Risk management:** Risk Management Overview, Risk Assessment, Risk Control.

Unit III:

15 Lectures

Function oriented design – **Design principles:** Problem Partitioning and Hierarchy, Abstraction, Modularity, Top-Down and Bottom-Up Strategies, **Modulo level concepts:** Coupling, Cohesion, **Design notation and specification:** Structure Charts, Structured design Methodology, Verification, **Metrics:** Network Metrics, Stability Metrics, Information Flow Metrics, **Object oriented design** –object oriented analysis and design, UML, design methodology, Metrics.

Unit IV:

15 Lectures

Detailed design – modulo specification, **Detailed design verification:** Design Walkthroughs, Critical Design Review, Consistency Checkers, **Testing - Testing fundamentals:** Error, Fault, and Failure, White box and black box testing, Functional Testing: Equivalence Class Partitioning, Boundary Value Analysis, Structural Testing, testing object oriented program, **Testing process:** Comparison of Different Techniques, Levels of Testing, Metrics.

1) Recommended Reading :

2) a) Basic Reading :

3) An interpreted approach to software engineering- Pankaj Jalote

4) b) Additional Reading :-

5) 1. Software Engineering – A Practitioners Approach 5th and 6th edition, Roger Pressman

6) 2. Software engineering concepts – Richard Fairley

7) 3. The Practical guide to Structural design – Miller Paige Jones

8) Software Engineering – Martin Shooman

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT503
Title of Course: Computer Networks

Course Outcomes

1. Understand basic computer network technology.
2. Identify the different types of network topologies and protocols.
3. Understand the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
4. Understand and study transport layer protocols and basics of cellular network
5. Identify and study application layer protocols

Units No. of Lectures

Unit I: Physical and Data Link Layer

15 Lectures

Use of Application of networks, Network Hardware and Software, Reference Models: OSI, TCP/IP, Physical Layer: Transmission Media, Digital Modulation and Multiplexing, Direct link networks, hardware building blocks, encoding, error detection, reliable transmission, Ethernet (802.3), token rings (802.5, FDDI), wireless (802.11), network adaptors.

Unit II: Network Layer

15 Lectures

Packet switching, switching and forwarding, bridge and LAN switches, implementation and performance. Internet networking IP, IPV4, IPV6, Address Mapping, routing, Routing Algorithms, Congestion control, congestion Avoidance End to end protocols, global internet, multicast, multiprotocol label switching.

Unit III: Transport Layer and Cellular Networks

15 Lectures

UDP, TCP, RPC, Overview of Cellular Networks, Ad-hoc Networks, Mobile Ad-hoc Networks, Sensor Networks

Unit IV: Application Layer

15 Lectures

Network security, cryptographic algorithms, security mechanisms, Examples, Application DNS, SMTP, MIME, HTTP, SNMP, RTP, SDP, overloading network, End-to-End data representation, compression.

Recommended Reading:

a) Basic Reading: -

1. Computer Networks by A. S. Tannenbaum.
2. Data Communications and Networking , Behrouz A Forouzan , Tata McGraw-Hill Co Ltd , Second Edition, ISBN: 0-07-049935-7

b) References :-

1. data and computer communication by w. stallis
2. computer networks –Peterson and Davis

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT504
Title of Course: Cyber Security

Course Outcomes:

- 1) Realize the need for Cyber Security
- 2) Understand the need for Security in day to day communications
- 3) Understand the vulnerabilities in the Network and Computer System
- 4) Understand the cyber law and Cyber Forensics

Unit-I

15 Lectures

Introduction to Cyber Security: Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace, Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness. Cyber Security Safeguards- Overview, Access control, Biometrics, Denial of Service Filters, Ethical Hacking, Response, Scanning, Security policy, Threat Management.

Unit-II

15 Lectures

Securing Web Application, Services and Servers: Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges. Intrusion Detection and Prevention: Intrusion, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

Unit –III

15 Lectures

Cryptography and Network Security: Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Protocols:-security at the Application Layer- PGP and S/MIME,.

Unit –IV

15 Lectures

Cyberspace and the Law: Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.Cyber Forensics: Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

References:

1. Preston Gralla, How Personal and Internet Security Work, Que Publications
2. Alfred Basta and Wolf Halton, Computer Security Concepts, Issues and Implementation, Cengage Learning
3. Digital Defense: A Cybersecurity Primer by Joseph Pelton , Indu B. Singh
4. Cryptography and Network Security: Principles and Practice by William Stallings
5. Computer and Information Security Handbook by John R. Vacca .
6. Cyberlaw: The Law of the Internet and Information Technology by Brian Craig .
7. Cyber Warfare: Techniques, Tactics and Tools for Security Practitioners 2nd Edition by Jason Andress (Author), Steve Winterfeld (Author)
8. <https://www.studocu.com/en/document/edith-cowan-university/computer-security-lecture-notes/lecture-notes-lectures-1-8-computer-security-notes/709625/view> /

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT505(1)
Title of Course: Compiler Techniques

Course Outcomes: student will be able to

1. Initiate an understanding of phases of compiler and lexical analysis.
2. Understand how compiler performs syntax analysis using grammar.
3. Explore how intermediate code generated and syntax directed translation occurs.
4. To understand the code optimization and code generation techniques.

UNIT I

15 Lectures

Introduction to compilation and lexical analysis: Compiler, phases of compiler, compiler construction tools, role of lexical analysis, input buffering, specification of tokens, finite automata implications, designing a lexical analyzer generator.

UNIT II

15 Lectures

Syntax analysis: Role of syntax analyzer/parser, context free grammar (CFG), top-down parsing – introduction, recursive descent parsing, problems in recursive procedures, bottom-up parsing – actions of shift reduce parser, construction of parse tree, operator precedence parsing, components of operator precedence parsers, parsing action, LR parsing, simple LR parser and LALR parsers.

UNIT III

15 Lectures

Intermediate code generation and syntax directed definitions: Need for intermediate code generation, intermediate forms, implementation of three address code, syntax directed translation – introduction, syntax directed translation for declaration, assignment, Boolean and control flow statements, syntax directed translation for procedure calls.

UNIT IV

15 Lectures

Code optimization and code generation: Introduction, Flow graphs, principle sources of optimization, optimization of basic blocks, issues in code generation, the target machine, runtime storage management, code generation from Directed acyclic graphs and the dynamic code generation algorithm.

REFERENCE BOOKS:

- 1) Introduction to Automata theory, Languages and Computation, J.E.Hopcraft, R.Motwani, and Ullman. 2nd edition, Pearson Education Asia.
- 2) Compilers-Principles, Techniques and Tools, Aho A.V., Sethi R. and Ullman J.D., Addison Wesley.
- 3) The Theory of Parsing, Translation and Compiling- Volume I: Parsing, Aho A. V. and Ullman J. D., Prentice Hall
- 4) “Compiler Construction”, Dhamdere, Mc-Millan.
- 5) Compiler Design , Sadasivam, G. Sudha, Scitech Publications (India) Pvt Limited.

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT505(2)
Title of Course: Linux Operating System

Course Outcomes

1. Understand basic concept of operating system and system calls.
2. Understand and able to perform the basic set of commands and utilities in Linux/UNIX systems.
3. able to create file systems and directories and operate them understand and able to write shell script and understand basics of system administration

UNITS

No. of Lectures

Unit-I: Basics of Operating System

15 lectures

Overview of Operating System Concepts: Kernel Basics, Architecture of Kernel, Files and File System. **Internal Representation of Files:** i-nodes, directories, superblocks, disk blocks.

System Calls: open, read, write, close, creation of files, mount and unmount, link and unlink. Processes, Users and Groups, Permissions, Signals, Interprocess Communication.

Unit-II: Linux Basics

15 lectures

Introduction to Linux: History, Open Source Technology, Linux Distributions. **Installation:** System Requirements, Partitions, Boot Loaders, Installation Procedure. **Linux**

Interfaces: User Accounts, Display Managers, Command Line Interface. **KDE:** Introduction and Features, the KDE Desktop, KDE Control Center. **Gnome:** The Gnome interface, Gnome Desktop, Window Manager, Panel.

Unit-III:

15 lectures

Editors: commands and working of vim and emacs editor. **File Structure:** files and directories, permissions, utilities. **The gawk scripting language:** syntax, variables, operators, arrays, structured commands. **Shell:** Introduction, types, command line, various built-in shell commands, Shell Expansion and Redirection, input/output, pipes, variables, Shell Scripts.

Unit-IV:

15 lectures

Shell Programming: variables, operators, control structures, user input/output, and pattern matching/searching, command line arguments. Basic System Administration (Run levels, User accounts),

Recommended Books:

- 1) Maurice J. Bach : "The Design of Unix Operating System", Prentice Hall India
- 2) Sumitbha Das: "UNIX concepts and applications", Tata McGraw Hill, New Delhi, 2001, Ninth reprints.

Reference Books:

- 1) Richard Peterson : "The Complete Reference – Linux, 5th Edition", Tata McGraw Hill.
- 2) E.Siever, S.Figgins, R.Love and A.Robbins: "Linux in a Nutshell, 6th Edition", O'Reilly
- 3) Robert Love: "Linux System Programming, 2nd Edition", O'Reilly.
- 4) Richard Blum: "Linux Command Line and Shell Scripting Bible" Wiley Publishing Inc.

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT505(3)
Title of Course: Android Programming

Course Outcomes:

1. Install and configure Android application development tools.
2. Describe Android platform, Architecture and features.
3. To learn activity creation and Android UI designing.
4. Design User Interface and develop activity for Android App.
5. Use Intent, Broadcast receivers and Internet services in Android App.
6. Design and implement Database Application and Content providers.

Unit I:

15 Lectures

Introduction :-Android Versions , Features of Android, Architecture of Android , **Obtaining the Required Tools:-** Eclipse,Android SDK, Android Development Tools (ADT), Creating Android Virtual Devices (AVDs),Creating Your First Android Application, Anatomy of an Android Application, **UnderstandingActivities:-** Applying Styles and Themes to Activity, Hiding the Activity Title, Displaying aDialog Window, Displaying a Progress Dialog

Unit II :

15 Lectures

Linking Activities Using Intents: - Resolving Intent Filter Collision, Returning Results from anIntent, Passing Data Using an Intent Object, **Calling Built-In Applications Using Intents:** Understanding the Intent Object, Using Intent Filters, Adding Categories, **Displaying Notifications,Understanding the Components of a Screen :-** Views and ViewGroup, LinearLayout, AbsoluteLayout, TableLayout, RelativeLayout, FrameLayout, ScrollView, **Adapting to Display Orientation:** - Anchoring Views, Resizing and Repositioning.

Unit III :

15 Lectures

Designing Your User Interface Using Views:- Basic Views: TextView View, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView View, **Picker Views:** TimePicker View, Displayingthe TimePicker in a Dialog Window, DatePicker View, Displaying the DatePicker View in aDialog Window, **Displaying Pictures and Menus with Views : Using Image Views to DisplayPictures:** -Gallery and ImageView Views, ImageSwitcher, GridView.

Unit IV :

15 Lectures

Data Persistence:Saving and Loading User Preferences: Using getSharedPreferences(), Using getPreferences() , **Persisting Data to Files :** Saving to Internal Storage, Saving to ExternalStorage (SD Card), Choosing the Best Storage Option, Using Static Resources, **Creating andUsing Databases:** Creating the DBAdapter Helper Class, Using the Database Programmatically,Adding, Retrieving, Updating, Deleting, Bundling the Database with an Application

Recommended Reading:

1. Beginning Android 4 Application Development - Wei-MengLee(Wiley Publishing, Inc.)

2. Professional Android 4 Application Development-Reto Meier Wrox
3. A press Pro Android 4 (2012) - Satya Komatineni
4. Head First Android Development - Jonathan Simon(O'Reilly)
5. Android Application Development: Programming with the Google SDK 2009 by Rick Rogers, John Lombardo, ZigurdMednieks, G. Blake Meike

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT505(4)
Title of Course: Machine Learning

Course Outcomes: Students will able to

- 1) learn the basic concepts, techniques and applications of machine learning
- 2) become familiar with regression methods, classification methods, clustering methods.
- 3) become familiar with Dimensionality reduction Techniques.
- 4) understand the range of machine learning algorithms along with their strength and weakness

UNIT-I

15 Lectures

Introduction: Machine Learning – Examples of Machine Learning Applications. Supervised Learning: Learning a Class from Examples – Vapnik-Chervonenkis (VC) Dimension – Probably Approximately Correct (PAC) Learning – Noise – Learning Multiple Classes – Regression – Model Selection and Generalization – Dimensions of a Supervised Machine Learning Algorithm. Bayesian Decision Theory: Introduction – Classification – Losses and Risks – Discriminant functions – Association Rules.

UNIT -II

15 Lectures

Parametric Methods: Maximum Likelihood Estimation – Evaluating an Estimator: Bias and Variance – The Bayes' Estimator – Parametric Classification – Regression – Tuning Model Complexity: BiasVariance Dilemma – Model Selection Procedures. Nonparametric Methods: Nonparametric Density Estimation – Generalization to Multivariate Data – Nonparametric Classification – Condensed Nearest Neighbor – Distance-Based Classification – Outlier Detection – Nonparametric Regression: Smoothing Models

UNIT-III

15 Lectures

Linear Discrimination – Generalizing the Linear Model – Geometry of the Linear Discriminant – Pairwise Separation – Gradient Descent – Logistic Discrimination – Discrimination by Regression – Learning to Rank. Multilayer Perceptrons: The Perceptron – Training a Perceptron – Learning Boolean functions – Multilayer Perceptrons – MLP as a Universal Approximator – Backpropagation Algorithm. Combining Multiple Learners: Generating Diverse Learners – Model Combination Schemes – Voting – Bagging – Boosting – Stacked Generalization – In-Tuning an Ensemble – Cascading

UNIT-IV

15 Lectures

Reinforcement Learning: Elements of Reinforcement Learning – Model-Based Learning – Temporal Difference Learning – Generalization – Partially Observable States, Design and Analysis of Machine Learning Experiments: actors, Response, and Strategy of Experimentation – Response Surface Design – Randomization, Replication, and Blocking – Guidelines for Machine Learning Experiments – Cross-Validation and Resampling Methods – Measuring Classifier Performance – Interval Estimation – Hypothesis Testing – Assessing a Classification Algorithm's Performance – Comparing Two Classification Algorithms – Comparing Multiple Algorithms: Analysis of Variance – Comparison over Multiple Datasets

References:

- 1) Ethem Alpaydin, "Introduction to Machine Learning" Third Edition, 2014.
- 2) Bertt Lantz, Machine Learning with R, Packt Publishing, 2013
- 3) Jason Bell, Machine Learning: Hands-On for Developers and Technical Professionals, Wiley Publication, 2015.
- 4) T. M. Mitchell, Machine Learning, McGraw-Hill, 1997
- 5) C. M. Bishop, Pattern Recognition and Machine Learning, Springer, 2006.
- 6) Shawe-Taylor J. and Cristianini N., Cambridge, Introduction to Support Vector Machines, University Press, 2000.
- 7) Vladimir N. Vapnik, Statistical Learning Theory, John Wiley and Sons, 1998
- 8) R. O. Duda, P. E. Hart, and D.G. Stork, Pattern Classification, John Wiley and Sons, 2001.

M. Sc. Tech. Mathematics (Part III) (Semester V)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT506
Title of Course: Lab Work V

Specific Objectives: Objectives are to apply theory studied in computer based papers in the semester.

No. of Credits: 5

The programs related to Advanced Web Technology.

Practical : 50 Marks(Internal Examiner).

Project : 50 Marks(External Examiner).

M. Sc. Tech. Mathematics (Part III) (Semester VI)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT601
Title of Course: Industrial Project

A. Industrial Project

At the end of the sixth semester of study, a student will be examined in the course "Industrial Project".

1. Project work may be done individually or in groups in case of bigger projects. However, if project is done in groups, each student must be given a responsibility of a distinct module and care should be taken to see the progress of individual module.
2. Students should take guidance from an internal guide and prepare a Report on "Industrial Project" in 2 copies to be submitted to the Department.
3. The Project Report should contain an Introduction to Project, which should clearly explain the project scope in detail. Also, Data Dictionary, DFDs, ERDs, File designs and a list of output reports should be included.
4. The project Work should be of such a nature that it could prove useful or should be relevant from the commercial/management angle.
5. Project viva-voce (Mid-Term) by the internal examiner will be conducted during the period of the project. The Mid-Term work carries 50 marks for internal assessment.
6. The final project work carry 100 marks for internal assessment and 150 marks for external viva. The final viva shall be conducted by external and internal examiners.
7. Project viva-voce (final) by the external and internal examiner will be conducted after completion of 14 weeks training.

M. Sc. Tech. Mathematics (Part III) (Semester VI)
(Choice Based Credit System)
(Introduced from June 2020 onwards)
Course Code: MTT601
Title of Course: Industrial Project

B. Technical Communication

Unit No. of Lectures

15 Lectures

Written Communication: Letter Writing - Personal Letter, Business Letter and Letter for Application, Report Writing, Preparation of CV, Summarizing.

Oral Communication: Interview, Group Discussion, Professional Presentation and Public Speaking.

Examination pattern: Before the commencement of industrial project there shall be 100 marks examination (50 marks written examination + 50 marks oral) on Technical communication.

❖ Nature of the Theory Question Papers:

1. There shall be 7 questions each carrying 16 marks
2. Question No.1 is compulsory. It consists of objective type questions.
3. Students have to attempt any four questions from Question No.2 Question No.7.
4. Question No.2 shall consists of short-answer type sub-questions
5. Question No.3 to Question No.7 shall consists of descriptive-answer type sub-questions.

❖ Nature of the Lab work Question Papers:

Lab Work Examinations will be conducted at the end of semester. The exam will be conducted in 2 sessions.

1. Practical Examination session (50 Marks)
2. Project Viva (50 Marks)

In Practical Examination there shall be 2 questions each of 20 marks, of which a student has to attempt any 1 question. There shall be 10 marks for practical assignments.