

 Estd. 1962 "A++" Accredited by NAAC (2021) With CGPA 3.52	SHIVAJI UNIVERSITY, KOLHAPUR - 416004, MAHARASHTRA PHONE: EPABX-2609000, www.unishivaji.ac.in, bos@unishivaji.ac.in शिवाजी विद्यापीठ, कोल्हापूर - ४१६००४, महाराष्ट्र दूरध्वनी-ईपीएबीएक्स -२६०९०००, अभ्यासमंडळे विभाग दूरध्वनी ०२३१-२६०९०९४ ०२३१-२६०९४८७	 
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Ref.No.SU/BOS/Science/150

Date: 26/05/2026.

The Principal,
All Concerned Affiliated Colleges/Institutions
Shivaji University, Kolhapur

The Head/Co-ordinator/Director
All Concerned Department (Science)
Shivaji University, Kolhapur.

Subject: Regarding revised syllabi of degree programme under the Faculty of Science and Technology as per NEP-2020.

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 degree programme under the Faculty of Science and Technology as per NEP-2020.

1.	B.Sc. Part II Medicinal Chemistry (Entire) (2.0)	6.	BCA Part III
2.	B.A./B.A.B.Ed Part III Geography (2.0)	7.	B.Sc. Part II Data Science
3.	B.Sc. Part II Artificial Intelligence	8.	B.Sc.-M.Sc. Part III AI & ML
4.	B.Sc.-M.Sc. Part IV Nano Science and Technology (1.0)	9.	MCA Part II (YCSRD)
5.	B.Sc.-M.Sc. Part III Nano Science and Technology (2.0)	10.	MCA Part II

This syllabus, nature of question and equivalence shall be implemented from the academic year 2026-2027 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in>Syllabus>Syllabus as per NEP2020.

The question papers on the pre-revised syllabi of above-mentioned course will be set for the examinations to be held in October /November 2026 & March/April 2027. 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

Encl: as above

for information and necessary action

Copy to:

1	Dean, Faculty of Science & Technology	6	Appointment Section A & B
2	Director, Board of Examinations and Evaluation	7	I.T.Cell /Computer Centre
3	Chairman, Respective Board of Studies	8	Eligibility Section
4	B.A.,OE-II & B.Sc.-M.Sc. Exam Section	9	Affiliation Section (T.1) (T.2)
5	Internal Quality Assurance Cell (IQAC Cell)	10	P.G. Seminar Section

SHIVAJI UNIVERSITY, KOLHAPUR

Yashwantrao Chavan School of Rural Development



Established: 1962

A⁺⁺ Accredited by NAAC (2021) with CGPA 3.52

Structure and Syllabus in Accordance with

National Education Policy - 2020

with Multiple Entry and Multiple Exit

Master of Computer Applications Part II

under

Faculty of Science and Technology

(To be Implemented from Academic Year 2026-27)

Programme Structure

Structure in Accordance with National Education Policy - 2020
With Multiple Entry and Multiple Exit Options
M.C.A. Part – II (Level-6.5)

	Course Code	Teaching Scheme			Examination Scheme					
		Theory and Practical			University Assessment (UA)			Internal Assessment (IA)		
		Lectures + Tutorial (Per week)	Hours (Per week)	Credit	Maximum Marks	Minimum Marks	Exam. Hours	Maximum Marks	Minimum Marks	Exam. Hours
Semester-III										
Mandatory	MT-301	4	--	4	60	24	2	40	16	1 ½
	MT-302	4	--	4	60	24	2	40	16	1 ½
	MT-303	2	--	2	30	12	1	20	08	1
	MT-304	4	--	4	60	24	2	40	16	1 ½
	MPR-305	--	8	4	60	24	2	40	16	1 ½
Elective-III	ET-306	4	--	4	60	24	2	40	16	1 ½
	ET-307									
Total				22	330			220		
Semester-IV										
Research Project	RP-401	--	36	18	300	120	--	150	60	--
Elective-IV	ET-402	4	--	4	60	24	2	40	16	1 ½
	ET-403									
	ET-404									
Total				22	360			190		
Total (Sem III + Sem IV)				44						

• MT–Mandatory Theory • MPR–Mandatory Practical • ET–Elective Theory • RP- Research Project/ Industrial Project	• Total Marks for M.C.A.-II : 1100
	• Total Credits for M.C.A.-II (Semester III & IV) : 44
	• <i>Separate passing is mandatory for University and Internal Examinations</i>
# Evaluation scheme for Research Project/ Industrial Project shall be decided by concerned BOS	
• Requirement for Exit after Level 6.5: Students can exit after completion of Level 6.5 with Master of Computer Application	
• NOTE: As per Approval Process Handbook 2024-27 AICTE, clause 6.11: ➤ As per the UGC/AICTE Regulation and AICTE (Credit Framework for online learning course through SWAYAM) Regulations, 2016 as amended from time to time, 40% of the courses may be offered in a particular program through SWAYAM/MOOCs platform. ➤ For ET: 402/ET: 403/ET 404: ONE of the available NPTEL, Swayam Courses will be selected in November/December for Registration on the NPTEL Portal. The Swayam Coordinator of the school will select/finalize the suitable courses and will initiate the registration process on the NPTEL portal in November/December of the A.Y. As suggested in NEP-2020	

Course Codes

M.C.A. Semester-I	
Course Code	Mandatory
MT-101	Object Oriented Programming using C++ (4 credits)
MT-102	Database Management System (4 credits)
MT-103	Web Technology (2 credits)
MPR-104	Practical-I (4 credits)
MT-105	Python Programming (4 credits)
Elective-I	
ET-106	Computer Networks (4 credits)
ET-107	Data Warehousing and Data Mining (4 credits)
M.C.A. Semester-II	
	Mandatory
MT-201	Advanced Data Structures (4 credits)
MT-202	Java Programming (Core Java) (4 credits)
MT-203	Advanced Operating System (2 credits)
MPR-204	Practical-II (4 credits)
OJT-205	Internship (4 credits)
	Elective-II
ET-206	Software Engineering (4 credits)
ET-207	Cloud Computing (4 credits)
M.C.A. Semester-III	
	Mandatory
MT-301	Artificial Intelligence (4 credits)
MT-302	Mobile Application Development (4 credits)
MT-303	Cyber Security (2 credits)
MT-304	Advanced Java Programming (4 credits)
MPR-305	Practical-III (4 credits)
	Elective-III
ET-306	Data Science (4 credits)
ET-307	PHP (4 credits)
M.C.A. Semester-IV	
	Mandatory
RP-401	Research Project/ Industry Project (18 credits)
	Elective-IV
ET-402	NPTEL, SWAYAM Course (4 credits)
	OR
ET-403	NPTEL, SWAYAM Course (4 credits)
	OR
ET-404	NPTEL, SWAYAM Course (4 credits)

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Artificial Intelligence

Course Code: MT-301 Total Credits: 04

Internal Marks: 40 External Marks: 60 Theory: 04 hours/week

Course Outcomes:

- 1) Apply problem solving by intelligent search approach.
- 2) Represent knowledge using knowledge representation techniques.
- 3) Understand working of Artificial Neural Networks and problems solving with Fuzzy logic.
- 4) To develop a good understanding of Natural Language Processing and Genetic algorithm

Unit-I

[15 Hrs.]

Introduction: Artificial Intelligence (AI) overview, historical perspective, Turing test, AI Problems, State Space Search, Depth First Search, Breadth First Search, Best First Search, Hill Climbing, constraint satisfaction, A* algorithm, AO* algorithm, Game playing: Minmax search procedure, refining Minmax, Alpha –Beta pruning.

Unit-II

[15 Hrs.]

Knowledge Representation: Introduction, Propositional Logic, First Order Logic, WFF, Normal Forms, Inference Techniques, Resolution, Unification, Modes Ponens, Frames, Frame Representation Language, Semantic Net, Forward and Backward Chaining.

Unit-III

[15 Hrs.]

Artificial Neural Networks: Introduction, Basic Concepts of Artificial Neural Networks, Model of an Artificial Neuron, Activation Functions, Feed forward Network, Recurrent Network, Introduction to deep learning and deep neural network. Fuzzy Set Theory, Fuzzy Membership, Fuzzy Operations, Fuzzy Logic Systems.

Unit-IV

[15 Hrs.]

Natural Language Processing: Introduction, Phases of NLP, advantages, disadvantages, applications. Genetic Algorithm: Genetic Algorithm (GA), Genetic Representations, (Encoding) Initialization and Selection, Different Operators of GA, Analysis of Selection Operations, the Hypothesis of Building Blocks, Schema Theorem and Convergence of Genetic Algorithm, Introduction to Expert System.

References:

1. Elaine Rich and Kelvin Knight, Artificial Intelligence, Tata McGraw Hill
2. Nils J Nilson, Artificial Intelligence: A New Synthesis, Morgan Kaufmann Publishers , Inc., San Francisco, California, 2000.

3. Saroj Kaushik , Artificial Intelligence, Cengage Learning
4. B. Yegnanarayana, Artificial Neural Networks, Prentice-Hall of India
5. Neural Networks, Fuzzy Logic, and Genetic Algorithms: Synthesis and Applications, S. Rajasekaran, G. A. Vijayalakshmi Pai, Prentice-Hall of India, 2003
6. Artificial Intelligence: A Modern Approach, 2nd edition, by Russell and Norvig, Prentice Hall

Suggested internal evaluation: Python mini-projects for Artificial Intelligence (MCA).

- Rural Healthcare Advisory System (Logic-Based)
- Government Scheme Eligibility Expert System
- Agricultural Land Distribution using Genetic Algorithm
- Emergency Medical Service Path Finder
- Village Water Supply Route Planner (State Space Representation, DFS, BFS): Model villages as nodes and roads as edges to find feasible and shortest water tanker routes. Inputs: Village map, source & destination Output: Optimal route and cost Tools: Python, dictionaries, queues

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Mobile Application Development

Course Code: MT-302 Total Credits: 04

Internal Marks: 40 External Marks: 60 Theory: 04 hours/week

Course Outcomes:

- 1) Learn about the features and installation of Android and Kotlin.
- 2) Create Android activity and UI designing.
- 3) Understand Intent, Broadcast receivers and Internet services.
- 4) Develop mobile applications using database Connections.

UNIT 1

(15 HOURS)

Introduction to Android platform and the Android Studio IDE, Android Architecture, setting up development environment, How to create project in Android Studio using Kotlin, Deploying sample application on a real device, Emulator-Android Virtual Device.

UNIT 2

(15 HOURS)

Activities, UI Design, and Navigation: Introducing the Application Manifest. Using the Manifest Editor. The Android Application Life Cycle. Understanding Application Priority and Process States. Externalizing Resources. A Closer Look at Android Activities and Activity lifecycle. Fundamental Android UI Design. Introducing Views. Introducing Layouts and fragments, Using Adapters, Creating New Views.

UNIT 3

(15 HOURS)

Intents, Broadcast Receivers, working with the Background: Using Intents to Launch Activities, Explicit Intents, Implicit Intents, Pending Intents, Intent Filters and Broadcast Receivers, Android Text View and Edit Text, Using Toast, Introducing Notifications. Introducing Dialogs and Action Bars.

UNIT 4

(15 HOURS)

Preferences, Databases and Content Providers: Introducing Android Databases, Shared Preferences: Creating, Saving, Retrieving, SQLite Databases, Content Providers, Content Values and Cursors, Storing Data in your app, Storing Data using SQLite, Kotlin Android SQLite Database CRUD, publishing app.

References:

1. Professional Android 4 Application Development Reto Meier Wrox
2. Android Application Development: Programming with the Google SDK 2009 by Rick Rogers, John Lombardo, Zigurd Mednieks, G. Blake Meike
3. Auxiliary Resources: <https://developer.android.com/index.html>

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Cyber Security

Course Code: MT-303 Total Credits: 02

Internal Marks: 20 External Marks: 30 Theory: 02 hours/week

Course Outcomes:

- 1) Realize the need for Cyber Security
- 2) Understand the vulnerabilities in the Network and Computer System
- 3) Understand ethical hacking.
- 4) Understand social media forensics.

Unit-I

[15 Hrs.]

Introduction to Cyber Security: Overview of Cyber Security, Cyber Threats: - Cyber Warfare- Cyber Crime-Cyber Terrorism-Cyber Espionage, Cyber Security Vulnerabilities and Cyber Security Safeguards: Cyber Security Vulnerabilities -Overview, vulnerabilities in software, System administration, Weak Authentication, Poor Cyber Security Awareness. Passive attacks: Network Analysis; eavesdropping; Traffic control Active attacks: Phishing, Sniffing, spoofing, Denial of service attack. Hackers, Crackers Authentication, Biometrics, Cryptography.

Unit-II

[15 Hrs.]

Ethical Hacking, Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Digital certificate, Applications of Cryptography, Social media forensics: Types of social networking platforms, social media crimes: hacking, photo morphing, offer & shopping scams, Dating scams, Cyberbullying, Link Baiting. Evidence Collection in Social Media Forensics: Evidence Identification, Collection, Examination

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 Cyber security Primer by Joseph Pelton , Indu B. Singh
- 4) Cryptography and Network Security: Principles and Practice by William Stallings
- 5) Cyber Warfare: Techniques, Tactics and Tools for Security Practitioners 2nd Edition by Jason Andress (Author), Steve Winterfeld (Author).

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Advanced Java Programming

Course Code: MT-304 Total Credits: 04

Internal Marks: 40 External Marks: 60 Theory: 04 hours/week

Course Outcomes:

1. To become familiar with the advanced features of Java Language as generic programming, collection framework and to understand Java Servlets.
2. To understand Java server Pages (JSP) technology.
3. To understand java beans and enterprise JavaBeans (EJB).
4. To understand Strut and Hibernate technology.

UNIT 1 (15 HOURS)

Generic programming: Generic Class, Generic Method, Generic Interface; **The Collection framework:** HashSet, LinkedHashSet, Stack, LinkedList, ArrayList, HashMap. Vector Class, HashMap Class, Arrays Class. **Servlets:** Concepts, Architecture, Servlet Container Writing Process, API, Life Cycle, Programming and deployment, Servlet and HTML Form, Session Management.

UNIT 2 (15 HOURS)

Java Server Pages: Introduction, JSP Containers, Architecture, JSP and Servlets. Life Cycle of JSP Page, JSP Processing, Setting Up the JSP Environment, JSP Directives, JSP Action, JSP Implicit Objects, JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling.

UNIT 3 (15 HOURS)

Java Bean: Basics of designing JavaBeans, Java Bean design patterns, creating and using properties, using events to communicate with other components Concepts, Writing process, Applications, Properties and Events, **Enterprise JavaBeans:** Introduction, preparing a Class to be a JavaBean, Creating a JavaBean, JavaBean Properties, Types of beans, Stateful Session bean, Stateless Session bean, Entity bean Specification, Architecture, Container, Life cycle, Applications.

UNIT 4 (15 HOURS)

MVC: Introduction, Model-View-Controller Layers, Advantages and Disadvantages. **Strut:** Introduction, Simple Validation, Processing Business Logic, Basic Struts Tags, Configuring Struts, building a simple struts application. Introduction to struts tag libraries and struts configuration files. **Hibernate :** Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate Query Language.

References:

1. Java 2 Complete Reference - (Tata McGraw Hill)
2. Java server pages
3. Java 2EE – Ivan Bayross (PHI)
4. Java 2 Black Book –(DreamTech)
5. Orfali, "The essential Distributed Object Survival Guide".
6. Valesky, "Enterprise Java Beans", Addison Wesley.
7. A Complete Reference Struts (Second Edition) - JamesHomes. Tata McGraw-Hill Edition.
8. Struts 2 - Black Book. (Second Edition). Kogent Solutions Inc. dreamtech press.

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Practical-III

Course Code: MPR-305 Total Credits: 04

Internal Marks: 40 External Marks: 60 Practical: 08 hours/week

Course Outcomes:

- 1) To gain knowledge of installing Android Studio and to learn designing of User Interface and Layouts for Android App, intents to broadcast data within and between Applications.
- 2) To use Content providers and Handle Databases using SQLite.
- 3) Create dynamic web application to utilize the JavaBeans and EJBs reusable components.
- 4) Create web application using servlets, JSP, Strut and Hibernate technologies.

Lab work is based on Mobile Application Development and Advanced Java Programming. This laboratory course should consist of 15 to 20 programming exercises with focus on covering the hands-on aspects covered in theory course.

Suggested Practical Assignments Mobile Application Development:

- 1) Implement Demonstrate string manipulation by displaying at the middle of the screen in the red color with white background with change in fonts & styles of text.
- 2) Write a program to populate resources (res>>value folder). Show resource on changing selection of the resources.
- 3) Write a program to create UI with one screen having radio button of the types of cars. On selecting any car name, next screen should show car details.
- 4) Write a program for android application to demonstrate android life cycle stages.
- 5) Create the application to change colour of screen based on selected option from menu.
- 6) Create android application that takes input from user and shows messages on screen.
- 7) Create foreground application to display toast (Message) on specific interval time.
- 8) Demonstrate use of intents for any 3 native intents.
- 9) Create the android application that will read phonebook contact using content providers and display in list on selecting specific contact makes a call to selected contact.
- 10) Develop android application to take a picture using native application.
- 11) Use fragments to develop UI. Demonstrate use of fragments.
- 12) Demonstrate use of shared preferences.
- 13) Write code that will call maps using android application.
- 14) Develop application for database manipulation.

15) Mini project: Develop an app in android.

Suggested Practical Assignments Advanced Java Programming:

- 1) Write java program(s) that demonstrates generic programming.
- 2) Write a Java program(s) that demonstrates the use of Collection Classes/framework.
- 3) Write a Java program(s) that demonstrates Java Bean.
- 4) Write a Java program(s) that demonstrates EJB.
- 5) Write a Java program(s) that demonstrates use of Servlets.
- 6) Write a Java program(s) that demonstrates use of JSP technology.
- 7) Implement the dynamic web application(s) to demonstrate use of struts.

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Data Science

Course Code: ET-306 Total Credits: 04

Internal Marks: 40 External Marks: 60 Theory: 04 hours/week

Course Outcomes:

- 1) Understand data science and utilize data manipulation techniques and apply exploratory data analysis (EDA).
- 2) Understand fundamental statistical concepts used in data science.
- 3) Use the matplotlib library of Python for data visualization.
- 4) Understand machine learning algorithms and data ethics and privacy in data science projects.

UNIT-I

(15 Hours)

Introduction to Data Science: Definition and scope of data science, Data science applications in different domains, Introduction to data-driven decision making. Data Collection and Preprocessing: Data types and sources, Data acquisition and storage, Data cleaning and handling missing values. Exploratory Data Analysis (EDA): Data summarization and descriptive statistics, Data visualization techniques, Identifying patterns and outliers in data.

UNIT-II

(15 Hours)

Introduction to Statistics for Data Science: Probability distributions, Hypothesis testing, Correlation and regression analysis. Data Visualization: Introduction to data visualization tools (e.g., Matplotlib, Seaborn), Creating effective data visualizations, Design principles for data visualizations.

UNIT-III

(15 Hours)

Introduction to Machine Learning: Supervised vs. unsupervised learning, Model training and evaluation, Common machine learning algorithms (e.g., linear regression, decision trees). Ethics and Privacy in Data Science: Ethical considerations in data collection and analysis, Protecting sensitive information and ensuring privacy, Implications of biased data and algorithms.

UNIT-IV

(15 Hours)

Data Science Project: Forming teams and project planning, Data exploration and analysis, Presenting findings and conclusions.

References:

1. John D. Kelleher and Brendan Tierney, Data Science., ISBN 9780262535434, The MIT Press.
2. Wes Mc Kinney, Python for Data Analysis, O'Reilly.
3. Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, Introduction to Statistical Learning.
4. Jojo Moolayil, Smarter Decisions: The Intersection of IoT and Data Science, PACKT, 2016.

5. Cathy O'Neil and Rachel Schutt, Doing Data Science, O'Reilly, 2015.
6. David Dietrich, Barry Heller, Beibei Yang, Data Science and Big data Analytics, EMC 2013

M. C. A. (Part II) (Level-6.5) (Semester III) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: PHP

Course Code: ET-307 Total Credits: 04

Internal Marks: 40 External Marks: 60 Theory: 04 hours/week

Course Outcomes:

- 1) Understand the basic concept and object-oriented of PHP language.
- 2) Understand the construction of PHP scripts for development of dynamic web content.
- 3) Understand the PHP connection with MYSQL
- 4) Learn Laravel Framework and Create CRUD application with Laravel Framework.

Unit I

(15 hrs)

Introduction of PHP: Embedding PHP with HTML, Enhancing further, PHP Language Basics: Using variable in PHP, understanding Data types, operator and expressions. Making decisions: simple decision with if statements, switch, ternary operator, do..while loop, for statement, break, loop skip iteration, nested loop. Arrays: creating and accessing array elements, looping through arrays, multidimensional array, manipulating array. Function: calling functions, working with variable functions, own functions references, recursive functions. Strings: creating and accessing strings, searching strings, replacing text within strings and formatting strings..

Unit II

(15 hrs)

Handling HTML forms with PHP: HTML forms work, capture form data with PHP, multi value fields, web forms with PHP, storing PHP variables in forms, create file upload forms, redirecting PHP. Introducing Database and SQL: Deciding how to store data, quick play with MYSQL, connecting to MYSQL from PHP, retrieving data from MYSQL with PHP. PHP CRUD with MYSQL.

Unit III

(15 hrs)

Cookies – What is Cookie, Cookie Syntax, How to Create, Store, Retrieve and Delete Cookie. PHP File Upload – Create an Upload-File Form, Upload Script and Save Uploaded file, putting restrictions on uploads. Session – What is Session? Creating, Storing and Destroying Sessions. Classes & Object – OO Concepts, Define Class, Class Attributes, An Object, Creating an Object, Object Properties & Methods, Object constructors and destructors, Static Method, Class Inheritance, Abstract Class, Implement Inheritance.

Unit IV

(15 hrs)

PHP Framework(Laravel): Introduction of Framework, Features of Framework, installation, Application Structure, configuration, Routing, Middleware, Namespaces, Controllers, Requests, Cookie, Response, Views , Blade Templates, Redirections, Working with Database, Forms, Laravel CRUD.

Reference Books:

1. Introduction 1. Matt Doyle, Beginning PHP 5.3, Wiley India Edition, 2012 .
2. 2.PHP6 and MySQL, Steve Suehring, Tim Converse and Joyce Park, Wiley India 2010, Second
3. Edition
4. 3.VikramVaswani, PHP: A Beginners guide, TataMcgraw Hill, 2009.
5. 4.Core PHP Programming” by Atkinson Leon, Suraski Zeev, Pearson Publication
6. 5. Larry Ullman, PHP 6 and MySQL 5, Pearson Education, 2008.
7. 6. Laravel: Up & Running: A Framework for Building Modern PHP Apps by Matt Stauffer
8. OREILLY.

M. C. A. (Part II) (Level-6.5) (Semester IV) (NEP-2020)

(Introduced from Academic Year 2026-27)

Title of Course: Research Project/ Industry Project

Course Code: RP-401 Total Credits: 18

Internal Marks: 150 External Marks: 300 Practical: 36 hours/week

Course Outcomes:

1. Apply critical thinking skills and research skills to address a research question.
2. Identify suitable method (research/industry) to complete project.
3. Analyze data and synthesize research findings, to solve the problem
4. Prepare report of research findings/ industry experience in written forms.

At the end of the fourth semester of study, a student will be examined in the course "Research Project/ Industry 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 for a distinct module and care should be taken to see the progress of individual modules is independent of others.
2. Students should take guidance from an internal guide and prepare a Project Report on "Research Project/ Industry Project" in **2 copies** to be submitted to the Director of the Institute.
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. The project report will be duly accessed by the internal guide of the subject and internal marks will be communicated by the Director of the Institute to the University.
6. The project report should be prepared in a format prescribed by the University, which also specifies the contents and methods of presentation.
7. The major project work carries 150 marks for internal assessment and 300 marks for external viva. The external viva shall be conducted by a panel of minimum of three external examiners out of which one will be the Chairman of the panel.
8. Project work can be carried out in the Institute or outside with prior permission of the Institute.
9. Project viva-voce by the University panel will be conducted after completion of training.