



Seva Mandal Education Society's

**Smt. Kamlaben Gambhirchand Shah Department of Computer Applications**  
under

**Dr. Bhanuben Mahendra Nanavati College of Home Science (Autonomous)**

NAAC Re-Accredited 'A+' Grade with CGPA 3.69 / 4

UGC Status: College with Potential for Excellence

Selected under "Enhancing Quality and Excellence in select Autonomous College" by Rashtriya  
Uccharat Shiksha Abhiyan (RUSA)

'Best College Award 2016-17' adjudged by S.N.D.T. Women's University

Smt. Parmeshwari Devi Gordhandas Garodia Educational Complex

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## SHORT TERM SKILL BASE COURSES

**COURSE NAME: ADVANCED PYTHON PROGRAMMING**

**CREDITS – 2**

**DURATION : 60 HOURS**

### Objectives:

This Python course is designed to provide Basic knowledge of Python for Data Science. Python programming is intended for software engineers, system analysts, program managers, data analysts, data scientists and user support personnel who wish to learn the Python programming language.

### Outcomes:

Starts with the installation and basics of Python programming, you'll be able to boost your productivity with the most simple and popular Python libraries such as pandas, numpy, scipy, matplotlib seaborn etc. and data structures such as lists, tuples, set and dictionary followed by exploring control flow, and loops.

By the end of this course, you will get a firm hold on the fundamentals of Python through practical hands-on examples and practice. . You will also be able to start with Django web framework and Flask framework to develop web sites and web services.

Code No.	Course	TC	Th C	Tu C	Int	Ext	Total
-	Advanced Python Programming	2	-	2	25	25	50

Module	Course Objective	Course Content
Module 1		<ul style="list-style-type: none"><li>Start with basic programming structure and execute first program.</li><li>Understand data structure and collections.</li><li>Learn how to get input from user and type casting</li></ul>

		<p>with different type conversion functions.</p> <ul style="list-style-type: none"> <li>• Learn operators and uses.</li> <li>• Learn collection in detail with uses.</li> <li>• Learn string manipulation and dictionary.</li> <li>• Learn how to make decision and perform conditional programming and Loops..</li> </ul>
Module 2	Object Oriented Programming in Python	<ul style="list-style-type: none"> <li>• Learn how to group together command to perform specific task.</li> <li>• Uses of function and type of parameter.</li> <li>• Learn how to convert function in expression using Lambda and different uses of Lambda.</li> <li>• Learn Object Oriented concepts with real world examples.</li> <li>• Learn how to secure object and their properties.</li> <li>• Learn how to control errors and manage error free code to perform smooth task. Also learn how read, write and update text file.</li> <li>• Learn how to send emails using python.</li> </ul>
Module 3	Advanced libraries in Python	<ul style="list-style-type: none"> <li>• Learn how to manage large number set with built-in libraries and their functions.</li> <li>• Learn built-in libraries and manage different data sources and visualize data in different formats.</li> <li>• Revision and exams.</li> </ul>

### **EVALUATION:**

- 1) On Module of 50 marks
- 2) Final examination of 25 marks
- 3) Total marks = Internal 25 + External 25 = 50 marks

### **TEXT AND REFERENCE BOOKS:**

1. Beginning Programming with Python For Dummies, 2ed Paperback – 1 January 2018 by John Paul Mueller .
2. Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming Paperback – Illustrated, 3 May 2019 by Eric Matthes.
3. <https://docs.python.org/3/tutorial/index.html>
4. DevelLearn Python for Data Science eBook version 1.1.



**COURSE NAME: ADVANCED SPREADSHEET****CREDIT – 1****DURATION : 30 HOURS****Objectives:**

- Students will learn all basic data file operation like read, write and update data with formulas and formatting.
- Students will learn to manage financial, generate reports and display data with chart, graph and other visualization format.

**Outcomes:**

- The student will be able to use Excel to manage data, visualize data, basic and advanced calculations, data analysis and many more features in their day-to-day job, administrative staff, support staff and their managers, business owners and entrepreneurs alike.

Code No.	Course	TC	Th C	Pr C	Int	Ext	Total
-	Advanced Excel	1	-	1	12.5	12.5	25

Module No.	Objective	Content	Evaluation
1	<b>Fundamentals of MS-Excel</b>	<ul style="list-style-type: none"> <li>• Introduction to Excel</li> <li>• Home Tab</li> <li>• Insert Tab</li> <li>• Page layout Tab</li> <li>• Create, navigate, format worksheets and workbooks.</li> <li>• Create, modify, filter and sort a table.</li> <li>• Create Charts and Objects</li> <li>• Configure Worksheets and Workbooks to Print or Save</li> </ul>	Assignments (5 marks)  Test (10 marks)
2	<b>Data Analysis &amp; Visualization</b>	<ul style="list-style-type: none"> <li>• Data Tab               <ul style="list-style-type: none"> <li>➤ Get External Data</li> <li>➤ Connections</li> <li>➤ Sort and Filter</li> <li>➤ Data Tools</li> <li>➤ Outline</li> <li>➤ Analysis</li> </ul> </li> <li>• Review Tab</li> <li>• View Tab</li> </ul>	Assignments (5 marks)  Test (10 marks)

3	<b>Mathematics in Advanced Excel</b>	<ul style="list-style-type: none"> <li>• Formulas, AutoSum, Financial, Logical, Text, Date &amp; Time, Lookup &amp; Reference, Math &amp; Trigonometry</li> <li>• Utilize Cell ranges and references in formulas and functions.</li> <li>• Summarize Data with functions</li> <li>• Utilize Conditional Logic in Functions</li> <li>• Format and Modify Text with Functions</li> <li>• Introduction to Macros</li> </ul>	<p>Assignments (10 marks)</p> <p>Test (10 marks)</p>
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**EVALUATION:**

1. Three Modules with total internal evaluation worth 50% of the final grade.
2. Final examination of 50 marks (50% of final grade).
3. Total marks: 12.5 (Internal) + 12.5 (External) = 25 Marks

**TEXT AND REFERENCE BOOKS:**

1. Kumar, B. (29 January 2013). *Microsoft Office 2010*. INDIA: V&S Publishers.
2. Michael Alexander, R. K. (4 December 2018). *Excel 2019 Bible Paperback*. John Wiley & Sons; Illustrated edition.
3. "Microsoft Office 2019 Complete" : Amy Romanoff and Sherry bonelli, BPB Publisher
4. "Advanced Microsoft Office 2020"; Meredith Flynn, Nita Rutkosky, BPB Publication.
5. DeveLearn proprietary textbook on MS Excel & Advanced excel 2020– Develearn Technologies



**COURSE NAME: ANDROID APP DEVELOPMENT TRAINING****CREDITS: 2****DURATION : 60 HOURS****Objectives:**

- To familiarize students with the notion of Block based coding techniques.
- To on-board them onto one of the most widely used App Development Platforms in the world with over 34 million apps and used in 195 countries.
- To boost their confidence by equipping them with the knowledge of the most widely used tool in the present world: the smartphone.
- To help them hone a much-needed skill that can not only boost knowledge but also provide them income should they choose to monetize it.
- To provide a strong foundation for gaming, entertainment as well as business apps.
- To eradicate the notion “you need to be great at coding” for starting App Development.

**Outcomes:**

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

- Design and implement functionalities related to Labels, Buttons, Text Boxes etc.
- Choose different App Layouts: Horizontal, Vertical, Tabular, Scrolling.
- Password protecting an entire app or a segment thereof.
- Design and implement a Canvas with Animated sprites on it.
- Basics of animation: rotation, motion, size change, background audio, score board etc.
- Persistent Database: save and retain values after the app is closed.
- Connect to online API's to facilitate difficult tasks with ease.
- Use on-board sensors: Accelerometer, GPS, Proximity, Altitude, Orientation etc.
- Interconnectivity between devices: Bluetooth Client / Server, Wi-Fi, USB / OTG.

Code No.	Course	TC	Th C	Tu C	Int	Ext	Total
-	Android App Development Training	2	-	2	-	50	50

Module No.	Objective	Content	Evaluation
1	Students will learn about User Interface	Buttons, Textboxes, Images, Labels, Password textboxes, sliders, switches, date and time pickers, List views, Notifiers, Web viewers	
2	Knowledge about Layouts will be provided in this module	Horizontal, Vertical, Tabular, Horizontal scrolling, vertical scrolling	

3	This module will clear the concepts of Media and its implementation	Camera, Image picker, Audio player, Video player, Video recording, Audio recording, Speech recognition, Text to Speech	Upon completion of this course, students will be assigned an APP development project. This project will be evaluated by conducting presentations and viva. The students will also have to submit a Project report of the same. Total marks for this project will be 50.
4	The students will be able to understand and apply the Drawing and Animation skills	Canvas, Ball sprite, Image sprite, Motion, Rotation, Scoreboard, Background audio, Event based sounds	
5	In this module the students will be exposed to the technical details of Maps	Self Location, Latitude, Longitude, Altitude, Speed	
6	The students will be able to understand Social media tools and its applications	Call, Message, Email, Contacts, Sharing	
7	Practical knowledge about Sensors will be imparted to the students	Proximity, Accelerometer, Location, Pedometer, Orientation, Barcode / QR Scanner	
8	In this module the students will learn various Storage techniques with respect to App development	Files, On device Database, cloud Database	
9	The students will be able to understand Connectivity concepts and its implementation	Wi-Fi, Bluetooth Client / Server, Serial OTG	

#### **EVALUATION:**

- 1) Upon completion of this course, students will be assigned an APP development project. This project will be evaluated by conducting presentations and viva. The students will also have to submit a Project report of the same. Total marks for this project will be 50.

#### **TEXT AND REFERENCE BOOKS:**

1. Karl-Hermann Rollke, 23 January 2018, *Android Apps with App Inventor 2: Easy App Development for Everyone*. Createspace Independent Publishing Platform; 1st edition
2. David Wolber, 21 October 2014, *App Inventor 2, 2e: Create Your Own Android Apps*. O'Reilly; 2nd edition



**COURSE NAME : MACHINE LEARNING USING PYTHON****CREDITS : 2****DURATION: 60 HOURS****Objectives:**

- To provide basic knowledge of Python for Data Science.
- To impart the prerequisite knowledge in Probability theory and Statistics to grasp concepts in Machine Learning.
- To introduce students to the various concepts and techniques of Machine Learning.
- To analyse data, choose relevant models and algorithms for respective applications.

**Outcomes:**

- Start with the basics of Python Programming and build up to popular libraries such as pandas, NumPy & SciPy.
- Students will be able to gain knowledge about basic concepts of Machine Learning, Identify machine learning techniques suitable for a given problem and solve the problems using various machine learning techniques.

Code No.	Course	TC	Th C	Pr C	Int	Ext	Total
-	Machine Learning using Python	2	-	2	25	25	50

Module No.	Objective	Content	Evaluation
1	Python for Data Science	<ul style="list-style-type: none"> <li>• Python Basics               <ul style="list-style-type: none"> <li>○ Introduction &amp; Program Structure.</li> <li>○ Variable, Data Types &amp; Operators.</li> <li>○ Collection of Data &amp; Uses.</li> <li>○ String &amp; String Operations.</li> <li>○ Making Decision &amp; Loops.</li> <li>○ Functions &amp; Lambda.</li> <li>○ OOPs &amp; Error Handling.</li> <li>○ Pandas &amp; NumPy.</li> </ul> </li> <li>• Matplotlib &amp; Queries</li> </ul>	Written Unit Test – I (Marks 20)  Assignments (Marks 20)
2	Introduction to Machine learning	<ul style="list-style-type: none"> <li>• Introduction to Machine learning</li> <li>• Supervised Machine learning</li> <li>• Unsupervised Machine learning</li> </ul>	Written Unit Test – I (Marks 5)  Assignments (Marks 5)
3	Data handling	<ul style="list-style-type: none"> <li>• Python Libraries to deal with data.</li> <li>• Data wrangling</li> <li>• Data cleaning</li> <li>• Exploratory data analysis</li> </ul>	Written Unit Test – I (Marks 5)  Assignments (Marks 5)

<b>4</b>	Supervised Machine learning Algorithms	<ul style="list-style-type: none"> <li>• linear regression Algorithm</li> <li>• Logistic regression Algorithm</li> <li>• Decision tree Algorithm</li> <li>• Random forest Algorithm</li> <li>• Bagging and boosting Techniques.</li> <li>• KNN algorithm</li> <li>• Support vector machine</li> </ul>	Written Unit Test – I (Marks 5)  Assignments (Marks 5)
<b>5</b>	Unsupervised Machine learning Algorithms	<ul style="list-style-type: none"> <li>• Clustering techniques</li> <li>• K-Means Algorithm</li> <li>• Principle Component Analysis (PCA)</li> <li>• Apriori algorithm</li> </ul>	Written Unit Test – I (Marks 5)  Assignments (Marks 5)

**EVALUATION:**

1. Five Modules with a total internal evaluation of 80 marks (50% of the final grade)
2. Final examination of 60 marks (50% of the final grade)
3. Total grade: Internal 50% + External 50% = 50 marks

**TEXT AND REFERENCE BOOKS:**

1. Beginning Programming with Python For Dummies, 2ed Paperback – 1 January 2018 by John Paul Mueller.
2. Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming Paperback – Illustrated, 3 May 2019 by Eric Matthes
3. Machine Learning, Tom Mitchell, McGraw Hill, 1997, ISBN 0-07-042807-7.
4. Christopher M. Bishop. Pattern Recognition and Machine Learning, Springer 2007.
5. Kevin P. Murphy. Machine Learning: A Probabilistic Perspective, MIT Press 2012. (Electronic copy available through the Bodleian library.)
6. Pattern Classification, 2nd Ed., Richard Duda, Peter Hart, David Stork, John Wiley & Sons, 2001.
7. Python Machine Learning, Sebastian Raschka and Vahid Mirjalili ,ISBN: 978-1783555130





**COURSE: Ethical Hacking & IT Security****Credits: 2****Hours : 40****Objectives:**

Students will get an opportunity to learn about different tools and techniques in Ethical Hacking and Security and practically apply these tools.

**Outcomes:**

The students will be able to:

1. Identify and analyse the stages an ethical hacker requires to take in order to compromise a target system.
2. Identify tools and techniques to carry out a penetration testing.
3. Critically evaluate security techniques used to protect system and user data.
4. Demonstrate systematic understanding of the concepts of security at the level of policy and strategy in a computer system.

Code No.	Course	TC	Th C	Pr /tuts C	Int	Ext	Total
	<b>Ethical Hacking and IT Security</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>25</b>	<b>25</b>	<b>50</b>

Module No.	Objective	Content	Evaluation
<b>1</b>	The students will be able to understand the Key issues plaguing the information security world, incident management process, and penetration testing	Introduction to Ethical Hacking	<b>Assignment (Marks-5)</b>
	Students will get an insight in to Various types of foot printing, foot printing tools, and countermeasures	Foot printing, Surveying & Gathering Data	
	Students will be able to learn Internet Protocol and Mac address fundamentals	Understanding IP & MAC addresses	
	Students will be able to revise Networking fundamentals	Concepts of TCP/IP, Basic networking concepts	
	Students will be able to understand DNS, Webhosting server, Live website hosting and guidelines	Understanding domain registrations & Webhosting concepts	
	Students will be able to learn Network scanning techniques and scanning countermeasures	Network scanning	

2	Students will get an insight into Working of viruses, virus analysis, computer worms and countermeasures	Viruses, worms & Trojans	<b>Online Test (Marks – 10)</b>
	Students will be able to understand Different types of Trojans, Keyloggers Trojan analysis, and counter measures	Key loggers	
	Students will be able to learn Phishing Attacks, identifying phishing attack and Countermeasures.	Phishing	
	Students will be able to Work on Remote Administration tools and countermeasures	RAT	
	Students will be able to Work on Password Cracking tools and Counter measures	Passwords Cracking	
3	Students will be able to understand Social Engineering techniques, identify theft, and social engineering countermeasures	Hacking through Social Engineering	<b>Viva (Marks – 5)</b>
	Students will be able to learn different types of cryptography ciphers, Public Key Infrastructure (PKI), cryptography attacks, and cryptanalysis tools	Cryptography	
	Students will be able to understand System hacking methodology, steganography, steganalysis attacks, and covering tracks	Steganography	
	Students will be able to understand SQL injection attacks and injection detection tools	SQL Injections	
	Students will be able to learn DoS/DDoS attack techniques, botnets, DDoS attack tools, and DoS/DDoS countermeasures	Denial of Service	
	Students will be able to understand XSS attacks and detection tools	Cross-site scripting (XSS)	
	Students will be able to understand different types of web application attacks, web application hacking methodology, and countermeasures	OWASP TOP 10	<b>Viva (Marks – 5)</b>
	Students will be able to learn different types of webserver attacks, attack methodology, and countermeasures	Website & web application security	
	Students will be able to understand Firewall, evasion techniques, evasion tools, and countermeasures	Firewalls configurations	

4	Students will be able to learn IDS and honeypot evasion techniques, evasion tools, and countermeasures	IDS & Honeypots	
	Students will be able to understand Kali Linux Commands	Mastering Kali Linux	
	Students will be able to understand Wireless Encryption, wireless hacking methodology, wireless hacking tools, and wi-fi security tools	WI-FI hacking & Security	
5	Students will be able to learn Various types of penetration testing, security audit, vulnerability assessment, and penetration testing roadmap	IT security (for Home & Office)	<b>Online Test (Marks – 5)</b>
	Students will be able to understand Mobile platform attack vector, android vulnerabilities, jailbreaking iOS, windows phone 8 vulnerabilities, mobile security guidelines, and tools	Mobile Hacking & Security.	
	Students will be able to learn IOT Platform attack vectors, vulnerabilities and security guidelines	IOT Hacking	
	Students will be able to get an insight into ISO 27001 Standard and its application	Understanding ISO 27001 STANDARDS	
	Students will be to know about IT Act Law, and recent Guidelines on Cyber Crime.	The Information Technology ACT	
	Students will be able to understand various cloud computing concepts, threats, attacks, and security techniques and tools	Cloud Computing (Hacking & Security)	

**EVALUATION:**

- 1) On Modules of 25 marks
- 2) Final examination of 25 marks
- 3) Total marks = Internal 25 + External 25 = 50

**REFERENCE BOOKS:**

1. Baloch, R. (2014). *Ethical Hacking and Penetration Testing Guide*. New York: CRC Press Taylor and Francis Group.
2. Nastase, R. (n.d.). *Hacking with Kali Linux*.
3. Sabih, Z. (2018). *Learn Ethical Hacking from Scratch: Your Stepping Stone to Penetration Testing*. Birmingham: Packt Publishing Ltd.



**COURSE: DIGITAL MARKETING (SEM III)****CREDIT : 2****DURATION : 30 HOURS****OBJECTIVES:**

- To open new avenues and further boost opportunities for many of our students in the ever growing corporate sector
- To provide an opportunity to learn about latest market demands

**OUTCOMES :**

The students will be able to:

- Improve their employability skills by enhance their skill set
- Use Digital Marketing in sales and growth of businesses

Code No.	Course	TC	Th C	Pr C	Int	Ext	Total
-	Digital Marketing	2	-	2	25	25	50
Module No.	Objective	Content					Evaluation
1	<ul style="list-style-type: none"> <li>• Students will study Basic Html and Website Structure</li> <li>• Students will understand the different types of Website and the Frameworks to be used</li> </ul>	<b>1.1. Basics of Web Designing and Development:</b> <ul style="list-style-type: none"> <li>• Basic HTML layout</li> <li>• Wordpress based overview</li> <li>• Different types of website</li> </ul> <b>1.2. Website Analysis and Optimisation</b> <ul style="list-style-type: none"> <li>• Understanding Different types of website.</li> <li>• Understanding of different optimisation process</li> </ul>					Online Test will be conducted. (Marks 10)
2	<ul style="list-style-type: none"> <li>• Students will understand working of Google Algorithm and Structure</li> <li>• Students will study different Methods and processes used in SEO</li> <li>• Students will learn different SMO and SERPS</li> </ul>	<b>2.1. Search Engine Optimisation</b> <b>2.1.1. On Page SEO</b> <ul style="list-style-type: none"> <li>• Keyword Analysis.</li> <li>• Top Keywords Suggestion.</li> <li>• Basic Home Page Optimization</li> <li>• Body Text Optimization</li> <li>• Image Optimization</li> <li>• Page Title Optimization</li> <li>• Robot.txt Addition</li> <li>• XML Site Map Building</li> <li>• Analytics Setup</li> </ul> <b>2.1.2. Off Page SEO</b> <ul style="list-style-type: none"> <li>• Guest Posting</li> <li>• Link Building</li> <li>• Basic Search Engine Submission</li> </ul> <b>2.2. Social Engine Result Pages</b>					Viva will be conducted. (Marks 5)

		<ul style="list-style-type: none"> <li>• Analysis of Results</li> <li>• Tools</li> </ul>	
3	<ul style="list-style-type: none"> <li>• Students will learn how to reach the online target market and develop basic Digital Marketing objectives</li> </ul>	<p><b>3.1. Search Media Marketing &amp; Link Building</b></p> <ul style="list-style-type: none"> <li>• Using Facebook, Google Plus, Instagram.</li> <li>• Creating chain of Network</li> <li>• User Engagement</li> </ul> <p><b>3.2. Web Analytics</b></p> <ul style="list-style-type: none"> <li>• Understanding Analytics</li> <li>• Understanding Goals and Setting Targets</li> <li>• Using Parameters to understand mode of campaign</li> </ul>	Online Tesst will be conducted (Marks 10)
4	<ul style="list-style-type: none"> <li>• Students will develop the skill of using Digital Marketing in sales and growth of businesses</li> </ul>	<p><b>4.1. Adsense/Adwords &amp; Blogging</b></p> <ul style="list-style-type: none"> <li>• Understanding and Setting Adwords</li> <li>• Understanding of Blogs and Backlinking</li> </ul> <p><b>4.2. Mobile Marketing</b></p> <ul style="list-style-type: none"> <li>• Using Push Notification</li> <li>• Push Notification on Browsers</li> </ul> <p><b>4.3. Managerial Skills</b></p> <ul style="list-style-type: none"> <li>• Agency Introduction.</li> <li>• Client Briefing.</li> <li>• The Art of Pitching.</li> <li>• Client Oriented Strategy</li> </ul>	Final Practical Exam will be conducted. (Marks 25)

**EVALUATION:**

- 1) On Modules of 25 marks
- 2) Final examination of 25 marks
- 3) Total marks = Internal 25 + External 25 = 50

**REFERENCE BOOKS:**

- 1) Dodson, I. (April 2016). The Art of Digital Marketing.
- 2) Jessie Stricchiola, S. S. (August 2015). The Art of SEO (3rd ed.). O'Reilly Media.
- 3) Scott, D. M. (May 2018). The New Rules of Marketing and PR.



**COURSE: INTERNET OF THINGS (IoT)**  
**CREDIT: 4**                      **DURATION : 30 HOURS**

**Objectives:**

Students will be explored to the interconnection and integration of the physical world and the cyberspace. They are also able to design & develop IOT Devices.

**Outcomes :**

The students will be able to learn the following :

1. To assess the vision and introduction of IoT.
2. To Understand IoT Market perspective.
3. To Implement Data and Knowledge Management and use of Devices in IoT Technology.
4. To Understand State of the Art - IoT Architecture.

Code No.	Course	TC	Th C	Tu C	Int	Ext	Total
-	Internet Of Things	4	2	2	50	50	100

Module No.	Objective	Content	Evaluation
1	To introduce IOT to the students	<ul style="list-style-type: none"> <li>• What is IOT ?</li> <li>• Different applications of IOT in real life</li> <li>• The Technologies used for IOT</li> </ul>	Certificate based on examination and project developed.
2	To make students aware about System Architecture and Design	<ul style="list-style-type: none"> <li>• Various Kinds of sensors</li> <li>• Working of NodeMCU</li> <li>• Sending data and receiving data from the web page</li> <li>• Working of WiFi module</li> </ul>	
3	To give hands on training to the students	<ul style="list-style-type: none"> <li>• Integration of sensors and pushing data onto the webpage</li> <li>• Reading real time data from the sensors and updating it on the web page</li> </ul>	
4	To provide knowledge about notifications and triggers	<ul style="list-style-type: none"> <li>• Real time SMS triggers</li> <li>• Web based notifications</li> </ul>	
5	To explain UI creation for compatibility with Sensors	<ul style="list-style-type: none"> <li>• Designing a mobile friendly UI with an amazing UX</li> <li>• Database connectivity and APIs</li> </ul>	
4	To give them practical knowledge of the courses by project Implementation	<ul style="list-style-type: none"> <li>• Solving a real life problem with integrating various sensors and making a proof of concept.</li> </ul>	



**COURSE: WEB DEVELOPMENT****Credit : 2****DURATION : 30 HOURS****OBJECTIVES:**

Students will learn to:

- Set up a domain and hosting account
- Set up a MySQL database on their server
- Install WordPress on the MySQL database
- Plan their website by choosing color schemes, fonts, layouts, and more
- Search for themes in WordPress
- Select, install, and activate a theme
- Add posts to their website
- Create website pages
- Add images, photo galleries, and more
- Create tags for SEO and categories to organize their posts
- Use WordPress as a content management system (CMS)
- Use widgets and plugins
- Create an ecommerce site
- Integrate WordPress with social media
- Customize a WordPress site using PHP, CSS, and HTML

**OUTCOMES:**

After completing the student will have:

- The ability to install and configure WordPress on a hosting account
- An understanding of the main content types of WordPress and their differences
- The ability to configure WordPress to your preferences
- An understanding of how to tweak your theme settings and alter the look of your site
- The ability to install new themes and plugins in to your WordPress site
- An understanding of how to make your site more secure

Code No.	Course	TC	Th C	Pr C	Int	Ext	Total
-	Web Development Lab	2	-	2	25	25	50

Module No	Objective	Content	Evaluation
1	<ul style="list-style-type: none"> <li>• Students will understand the different decision-making structures</li> <li>• Students will learn to distinguish between different loop control structures</li> </ul>	<ul style="list-style-type: none"> <li>• Overview of course</li> <li>• Introduction to WordPress, including history, application tour and community</li> <li>• Installing WordPress</li> <li>• WordPress file and database structure</li> <li>• Life of a WordPress request</li> <li>• The main query</li> <li>• The loop</li> <li>• The hooks system (i.e., actions and filters) in WordPress</li> </ul>	

2	<ul style="list-style-type: none"> <li>• Students will understand the concept of various operators in C</li> <li>• Students will study the different types of built in operators &amp; functions of C</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to WordPress plugins</li> <li>• Basic WordPress APIs</li> <li>• Plugin case studies</li> <li>• Intro to themes</li> <li>• Modifying themes via a child theme</li> <li>• Theme case studies</li> </ul>	
3	<ul style="list-style-type: none"> <li>• Students will learn to execute different programs using pre-processor directives</li> <li>• Students will understand the implementation of storage types</li> </ul>	<ul style="list-style-type: none"> <li>• Custom post types and custom taxonomies</li> <li>• The WPDB class</li> <li>• Best practices and code standards</li> <li>• Plugin security</li> <li>• Plugin compatibility</li> <li>• Extensibility</li> <li>• Performance</li> <li>• Debug tools</li> <li>• Advanced APIs</li> <li>• Settings API</li> <li>• The Theme Customizer</li> <li>• HTTP API</li> <li>• Solving more complicated problems</li> </ul>	
4	<ul style="list-style-type: none"> <li>• Students will make a study of 1-D, 2-D Arrays in C</li> <li>• Students will learn to code and execute programs on arrays</li> </ul>	<ul style="list-style-type: none"> <li>• Seamless WordPress integrations</li> <li>• Localization</li> <li>• Preparing a plugin for public release</li> <li>• Attribution</li> <li>• Documentation</li> <li>• Distributing on WordPress.org</li> <li>• In class work time</li> </ul>	Project

**EVALUATION:**

Certificate of completion based on Project developed.

**REFERENCE BOOKS**

1. Agrawal, H. (2016). *The Ultimate WordPress Guide by ShoutMeLoud: Start a Successful WordPress Blog in 30 Minutes or less*. Harsh Agrawal.
2. Patrick, B. (2013). *How To Create A Website - Easy Instructions for Building A Website With Wordpress*. Grassroot Books .
3. Ratnayake, R. N. (2017). *Wordpress Web Application Development -: Building robust web apps easily and efficiently*. Packt Publishing.
4. Williams, D. A. (2018). *Wordpress for Beginners 2018: A Visual Step-by-step Guide to Mastering Wordpress* (1st Edition ed.). Amazon Digital Services.





# **COURSE: Artificial Intelligence with Machine Learning**

**Credits: 4**

**Duration : 60 Hours**

## **Objectives:**

- To Understand data that need to be given as input to the ML model development.
- They will learn to use the ML algorithm from theory and practical hands-on perspective.
- They will learn to take decision and do feature engineering on the data that will be given by the client.

## **Learning Outcomes:**

- After completion of the above the students will get an idea to implement the right approach and the right ML model for different use-cases from prediction, classification and clustering perspectives.
- Also, they will have grip on data analysis from hands-on aspects given them advantage to start on multiple roles in industry that can vary from data analyst, business analyst, data engineering etc.

<b>Code No.</b>	<b>Course</b>	<b>TC</b>	<b>Th C</b>	<b>Pr C</b>	<b>Int</b>	<b>Ext</b>	<b>Total</b>
-	<b>Artificial Intelligence with Machine Learning</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>25</b>	<b>25</b>	<b>50</b>

<b>Module No.</b>	<b>Objective</b>	<b>Content</b>	<b>Evaluation</b>
<b>1</b>	Students will be able to know the importance of Data	Introduction to Data? Different kinds of data, Data Sources, Different types of data sources, <b>Data Science lifecycle</b> , Data Collection, Data Extraction, Data Analysis & Modeling. <b>Setup Github Account, loading data from different source files formats (csv, excel) and summarizing data with statistics.</b>	Class Test (Marks 15)
<b>2</b>	Students will be able to learn implementation of EDA and Data Pre-Processing	<b>EDA &amp; Data Pre-processing &amp; data Transformation:</b> Why pre-process and explore data?, Outlier Detection, Treatment to outliers, Detecting missing values, Handling missing values, data cleaning, Standardizing & Normalizing data, Encoding categorical	

		data. <b>Practical to implement Exploratory Data Analysis (EDA)&amp; Data Pre-processing (Outlier Detection, Handling Missing Data, Encoding Categorical Data)</b>	
3	Students will be able to learn implementation of Linear Regression Models	<b>Linear Regression Models:</b> Least Squares method, Multivariate Linear Regression, Assessing performance of Regression- Error measures, <b>Practical to implement Linear Regression (Single/Multiple)</b>	
4	Students will be able to learn implementation of Logistic Regression	<b>Logistic Regression Models:</b> Binary Classification- Assessing Classification performance, Multiclass Classification. <b>Practical to implement Logistic Regression</b>	
5	Students will be able to learn implementation of Decision Tree Algorithm	<b>Tree Based Models:</b> Decision Trees, Regression trees, Clustering Trees <b>Practical to implement Decision Tree Algorithm</b>	Assignment (10 Marks)
6	Students will be able to learn implementation of Support Vector Algorithm	Understanding Support vector machine algorithm with all approaches. <b>Practical to implement Support Vector Machine (SVM) Algorithm</b>	
7	Students will be able to learn implementation of KNN Algorithm	<b>Distance Based Models:</b> Nearest Neighbours Classification K-NN, <b>Practical to implement KNN Algorithm</b>	
8	Students will be able to learn implementation of K-Means Clustering Algorithm and Hierarchical Clustering	<b>Unsupervised Approaches:</b> Distance based clustering K-means Algorithm, Hierarchical clustering. <b>Practical to implement K-means Clustering Algorithm &amp; Hierarchical Clustering</b>	

<b>9</b>	Students will be able to learn implementation of Time Series Forecasting	Understanding Time Series Analysis & Forecasting <b>Practical to implement Time Series Forecasting.</b>
<b>10</b>	Students will be able to learn implementation of Bagging or Boosting ensemble Algorithm	Learning Ensemble ML Approaches, basic & advance approaches. <b>Practical to implement Bagging or Boosting ensemble Algorithm</b>

**EVALUATION:**

<b>Evaluation</b>	<b>Details</b>	<b>Marks</b>
<b>Internal</b>	<b>On Ten Modules</b> Class Test – 10 Marks Assignments – 15 Marks	<b>25 Marks</b>
<b>External</b>	<b>Final Exam</b>	<b>25 Marks</b>
	<b>Total Marks</b>	<b>50 Marks</b>

**REFERENCE BOOKS:**

- 1) Dr. Dheeraj Mehrotra (2019). Basics of Artificial Intelligence and Machine Learning, Notion Press.
- 2) Nagy Zsolt (2019), Artificial Intelligence and Machine Learning Fundamentals, Packt Publishing Limited.

