

संगणक शास्त्र प्रशाळा, कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठातर्फे
आयोजित प्रमाणपत्र अभ्यासक्रमात सहभागी होणेबाबत...

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ परिक्षेत्रातील सर्व इच्छुक विद्यार्थी / व्यक्ती यांच्यासाठी जानेवारी व फेब्रुवारी या कालावधीत कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, संगणक शास्त्र प्रशाळा येथे खालील प्रमाणपत्र अभ्यासक्रमांचे आयोजन करण्यात येणार आहे.

१) R programming - शनिवार, रविवार (चार आठवडे)

अभ्यासक्रमाचा एकूण कालावधी : आठ दिवस (५० तास) शुल्क: रु. ५५०० मात्र

२) Hadoop for Big Data Analytics - शनिवार, रविवार (चार आठवडे)

अभ्यासक्रमाचा एकूण कालावधी : आठ दिवस (५० तास) शुल्क: रु.५५०० मात्र

३) Cyber security certificate course: शनिवार, रविवार (चार आठवडे)

अभ्यासक्रमाचा एकूण कालावधी : आठ दिवस (४५ तास) शुल्क: रु.६००० मात्र

४) Digital Ethical Hacking certificate course:शनिवार, रविवार(चार आठवडे)

अभ्यासक्रमाचा एकूण कालावधी : आठ दिवस (४५ तास) शुल्क: रु.७००० मात्र

वरील चारही अभ्यासक्रमांचा कालावधी खालीलप्रमाणे:

Sr. No.	Day	Date
1	Saturday	25/01/2020
2	Sunday	26/01/2020
3	Saturday	01/02/2020
4	Sunday	02/02/2020
5	Saturday	08/02/2020
6	Sunday	09/02/2020
7	Saturday	15/02/2020
8	Sunday	16/02/2020

५) Python Web Framework - शनिवार, रविवार (दोन आठवडे)

अभ्यासक्रमाचा एकूण कालावधी : चार दिवस (३२ तास) शुल्क: रु.२००० मात्र

वरील अभ्यासक्रमाचा कालावधी खालीलप्रमाणे:

Sr. No.	Day	Date
1	Saturday	25/01/2020
2	Sunday	26/01/2020
3	Saturday	01/02/2020
4	Sunday	02/02/2020

संगणक जगतामध्ये अतिशय आवश्यक असे हे अभ्यासक्रम असून IT Industry साठी लागणारी कौशल्य वृद्धिंगत होण्यासाठी हे अभ्यासक्रम उपयुक्त आहे. या अभ्यासक्रमामुळे आपल्याला विविध क्षेत्रात करिअर संधी उपलब्ध होऊ शकतील.

सर्व अभ्यासक्रमाबद्दल सविस्तर माहिती खाली दिलेली आहे.

विशेष सूचना:

- १) पूर्वी नोंदणी केलेल्यांनाही परत नोंदणी करणे आवश्यक आहे.
- २) online नोंदणी झाल्यावर कोर्स फीच्या किमान ५०% रक्कम जोपर्यंत संगणक शास्त्र प्रशाळेत रोखीने प्रत्यक्ष जमा होत नाही तोवर नोंदणी नक्की झाली असे समजले जाणार नाही.
- ३) सर्व अभ्यासक्रमांना मर्यादित जागा असून शुल्कासहित प्रथम नोंदणी करणाऱ्यांना प्रथम प्राधान्य असेल.

सर्व इच्छुक विद्यार्थी / व्यक्तींनी अधिक माहितीसाठी संपर्क करावा.

संगणक शास्त्र प्रशाळा, क. ब. चौ. उत्तर महाराष्ट्र विद्यापीठ, जळगाव. (०२५७-२२५७४५३)

प्रा. कविता तु. पाटील (संपर्क क्र. ९९७०९१३७८९) इमेल: meetpatilkavita@gmail.com

सर्व इच्छुक व्यक्तींनी खाली दिलेल्या लिंक वर नाव नोंदणी करावी.

लिंक: <https://forms.gle/BJzptTR5oUV3Rz3h9>

नोंदणीची अंतिम तारीख-२०/०१/२०२० पर्यंत.

R Programming

1. Introduction to R
 - a. Advantages of R.
 - b. Installing R and RStudio
2. Basics of R
 - a. Variables in R.
 - b. Reserved words in R.
 - c. Constants and built-in constants in R.
3. Operators in R
 - a. Assignment operator.
 - b. Arithmetic operators.
 - c. Relational operators.
 - d. Logical operators.
4. Basic data types in R
 - a. Basic data types in R.
5. Data structures in R
 - a. Introduction to data structures in R.
 - b. Vector.
 - c. Creating vector using colon operator.
 - d. Creating a vector using seq().
 - e. Naming a vector.
 - f. Operating on vectors.
 - g. Combining two vectors: Value coercion
 - h. Accessing vector elements.
 - i. Selecting multiple vector elements.
 - j. Selecting vector elements by names.
 - k. Selecting vector elements by logical values.
 - l. Lists.
 - m. Naming a list.
 - n. Accessing list elements.
 - o. Factors.
 - p. Creating factors.
 - q. Changing the order of levels.
 - r. Matrix.
 - s. Naming a Matrix.
 - t. Accessing matrix elements.
 - u. Calculating the average temperature.
 - v. Modifying the matrix elements.
 - w. Transposing a matrix.
 - x. Adding column and row to the matrix.
 - y. Arithmetic operations on matrix.

- z. Array.
 - aa. Naming the column and row in an array.
 - bb. Accessing array elements.
 - cc. Data frames.
 - dd. Looking at your data.
 - ee. Getting the structure of data.
 - ff. Getting the summary of data.
 - gg. Creating a data frame.
 - hh. Rename the columns of a data frame.
 - ii. Accessing the elements of a data frame.
 - jj. Row bind and column bind on a data frame.
 - kk. Extracting data from a data frame.
- 6 Control structures and loops in R
- a. Control structures and loops overview.
 - b. Working with if else and ifelse.
 - c. Working with switch.
 - d. Loops- for, while, repeat and break.
- 7 Functions in R
- a. Working with functions.
 - b. Built-in functions.
 - c. User-defined functions.
 - d. Creating a function.
 - e. Calling a function.
 - f. Dynamic typing.
 - g. Generalizing a function.
- 8 Working with data in R
- a. Preparing the R workspace.
 - b. Taking data from user and printing to R.
 - c. Reading data from csv, text and excel files.
 - d. Reading data from xml and json.
 - e. Writing a data frame to a file.
 - f. Saving and restoring the projects and the working environment.
- 9 EDA
- 10 Data sub setting
- 11 Data visualization using ggplot2
- 12 Project

Apache Hadoop

- ❖ Introduction to various programming languages like C,C++,Python and Java
- ❖ Big data processing, Hadoop, Cloud computing with Amazon Web Services introduction.
- ❖ Hadoop on OS,Setting up Hadoop,Versions,Configuring and running Hadoop.
- ❖ Configuring base directory & formatting filesystem,using Hadoop,Monitoring Hadoop,HDFS web UI.
- ❖ Key/value pairs,The Hadoop Java API for MapReduce,Writing MapReduce programs
- ❖ WordCount the easy way,WordCount with a combiner
- ❖ Hadoop-specific data types,Writable wrapper classes,Input/output
- ❖ Using languages other than Java with Hadoop,WordCount using Streaming,Analyzing a large dataset,summarizing UFO & Shape data.
- ❖ Using Streaming scripts outside Hadoop,Java shape and location analysis,Distributed Cache,abbreviations
- ❖ Simple, advanced, and in-between Joins,reduce-side joins using MultipleInputs
- ❖ Graph algorithms,representing the graph,creating the source code
- ❖ Failure,killing a DataNode process,replication factor in action,intentionally causing missing blocks,killing a TaskTracker ,JobTracker
- ❖ Killing the NameNode process
- ❖ Causing task failure,handling dirty data by using skip mode
- ❖ EMR, Hadoop configuration properties, browsing default properties,Setting up a cluster,default rack configuration, rack awareness script
- ❖ Cluster access control demonstrating default security, Managing NameNode,additional fsimage location
- ❖ swapping to a new NameNode host, Managing HDFS,MapReduce management, changing job priorities and killing a job, Scaling
- ❖ Overview of Pig Latin, Setting up, installing Pig.
- ❖ Writing pig latin script to read and dump unstructured data.
- ❖ Creating scheme for unstructured data to generate structured data.
- ❖ Writing pig lating script to sort and filter data.

- ❖ Overview of Hive, Setting up Hive, installing Hive, Using Hive, creating a table for UFO data, inserting UFO data
- ❖ Validating the data, Hive tables, Hive and SQL views Handling dirty data in Hive
- ❖ Common data paths, Setting up MySQL, installing & configuring MySQL, Getting data into Hadoop
- ❖ introducing Sqoop, Sqoop and Hadoop versions, Sqoop and HDFS, Sqoop's architecture, Importing data, Datatype issues, Sqoop and Hive partitions, Field and line terminators
- ❖ Getting data out of Hadoop, importing data from Hadoop into MySQL, importing Hive data into MySQL.
- ❖ Getting web server data into Hadoop, Introducing Apache Flume
- ❖ Using Flume to capture network data, Writing network data to log files, Logs versus files
- ❖ writing network traffic onto HDFS, adding timestamps, multi-level Flume networks
- ❖ writing to multiple sinks, Data lifecycle, Staging data, Scheduling
- ❖ Upcoming Hadoop changes, Alternative distributions, Apache projects, , programming abstractions

PYTHON – WEB FRAMEWORK COURSE PROPOSAL

COURSE TITLE: Python Web Framework – Flask & Django

COURSE DURATION: 04 Days – (6 to 7 hrs per day)

NUMBER OF PARTICIPANTS EXPECTED: Minimum 30 Students

PREREQUISITE:

- For College – Lab with Internet Connection, other basic installation prerequisite will inform prior to course start date.
- For Students – Basic Knowledge of any programming language.

COURSE CONTENT:

Python Fundamentals with Framework Concepts

- Python introduction and its industrial importance
- Data Types with examples
- Modularity using functions
- Data Structures :- List, Tuples and Dictionary

- Selection Structure & Iterative Statement (if and for loop)
- Sorting Data using Collection Types
- Functions, Modules & Packages
- Object Oriented Programming – OOPs Concepts

Advanced Python - Introduction to Web Application Concepts

- Getting Started with MVC / MVT Architecture -
 - Learning Advanced Concepts - Model – View – Controller / Model – View – Template
 - User & Session Management, Role & Permissions

- Virtual Environment to Install & Create Framework Structure

Front – End - (View)

- URL Routing, URL Building
- Template Engine
- HTTP Methods
- Layout Designing using Front-end Framework
- Mapping HTML/CSS/JavaScript with Python

Back – End – (Controller)

- Controller Logic
- Function Designing with URL
- Routing
- Import Packages and Modules
- Integrate Controller with View using template engine

FULL-STACK DEVELOPMENT

Database – (Model)

- Understanding the Database Structure
- ORM (Object Relation Mapping) Concepts
- Integrate the Database with Controller & View



- **Web Application Development using Flask (Web Framework) –**
 - Installation – Setup Environment
 - Decorator Concept – URL Routing
 - Virtual Environment Creation

- **Creating Flask Application**
 - Directory Structure in Flask
 - URL Routing – Create URL Variable
 - Creating Controller

- Render Template using Jinja2 template engine
- Use the Python Fundamental Concepts in Controller to mapped with View
- **Web Form – Login Page Application**
 - HTTP Method, URL Building, Request Object, Routing
- **Flask SQLAlchemy Example - ORM Concepts**
 - Database Settings – Model Creation
- **Flask Extensions to create Web Applications**
 - Admin Interface – Flask – Admin

Complex Web Applications Development using Django Framework

- Features and Installation of Django
 - About the 3 Core Files: models.py, urls.py, views.py
- Templates and Form Fundamentals

Understand the mechanism and create the Web Applications.

Case Studies on Industry Based Projects in Python

BENEFITS AND HIGHLIGHTS:-

- Curriculum has focused more on hands-on sessions that gives Participants an insight of Industry level Development.
- Learn & Interact from Experienced Industry Experts.
- Presentations, Live Demos, Interactive Question & Answer sessions and Study Material Kit.
- This Course content created from Students point of view - Students will be able to learn the process to develop the Complex Web Applications like ERP(Integrated) System and E-Commerce Applications (i.e FlipKart & Amazon) in any programming language using MVC Concept, which has more Job Opportunities in the Industry.



List of topics - Cyber security certificate course

1) Certificate in Cyber Security-

1. Introduction to Cyber Security, 2. Latest Technological Trends, 3. Basics of Networking, 4. Virtualization and installation of OS on virtual Box, 4. Passwords, 5. Web browser security, 6. Firewall And UTM, 7. Physical Security Closed circuit television cameras (CCTV), 8. Mobile Security, 9. Email Security, 10. Malware, 11. Cryptography, 12. Wireless Security, 13. Ethical Hacking, 14. Google Hacking, 15. Virtualization and Cloud Computing, 16. Cloud Computing, 17. Cyber Crime and Cyber Laws, 18. Cyber laws (Information Technology Act 2000 & 2008), 19. ISO 27001, 20. IP based communication: (VOIP), 20. Protection of information Assets, Planning and implementation of BC/DR, 21. Make reports based on test results and make enhancements to existing security solutions, 22. Manage your work to meet requirements, 23. Work effectively with colleagues, 24. Maintain a healthy, safe and secure. 25. working environment.

SR NO	Modules
1	Introduction to Cyber Security
2	Latest Technological Trends
3	Basics of Networking
4	Virtualization and installation of OS on virtual Box.
5	Passwords
6	Web browser security
7	Firewall And UTM
8	Physical Security Closed circuit television cameras (CCTV)
9	Mobile Security
10	Email Security
11	Malware
12	Cryptography
13	Wireless Security
14	Ethical Hacking
15	Google Hacking
16	Virtualization and Cloud Computing
17	Cloud Computing
18	Cyber Crime and Cyber Laws
19	Cyber laws (Information Technology Act 2000 & 2008)
20	ISO 27001
21	IP based communication: (VOIP)
22	Protection of information Assets, Planning and implementation of BC/DR
23	Make reports based on test results and make enhancements to existing security solutions
24	Manage your work to meet requirements
25	Work effectively with colleagues
26	Maintain a healthy, safe and secure working environment



List of topics - Digital Ethical Hacking certificate course

1) Certificate in Digital Ethical Hacking-

1. Introduction to Hacking, 2. Information Gathering / Vulnerability Scanning, 3. Malwares (Virus, Worm, Trojan...), 4. System Hacking, 5. Sniffing, 6. Site and Web server Hacking, 7. SQL Injection and Cross Site Scripting, 8. Buffer Overflow, 9. Multi-Platform (cross-platform) System Hacking 10. Mobile Pentesting ,11. Network DOS and DDOS, 12. Cryptography, Penetration Testing IDS / IPS and Firewall

Sr No	Formal structure of the Course
1	Introduction to Hacking
2	Information Gathering / Vulnerability Scanning
3	Malwares (Virus, Worm, Trojan...)
4	System Hacking
5	Sniffing
6	Site and Web server Hacking
7	SQL Injection and Cross Site Scripting
8	Buffer Overflow
9	Multi-Platform (cross-platform) System Hacking and
10	Mobile Pen testing
11	Network DOS and DDOS
12	Cryptography
13	Penetration Testing IDS / IPS and Firewall
14	Make reports based on test results and make enhancements to existing security solutions
15	Manage your work to meet requirements
16	Work effectively with colleagues
17	Maintain a healthy, safe and secure working environment