National Institute of Electronics and Information Technology,
NIELIT J&K (Srinagar)

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National Institute of Electronics and Information Technology,
NIELIT J&K (Srinagar)

Course Prospectus

Machine Learning using Python

Name of the Course:	**Machine Learning using Python**
Course Code:	**SOMAL170820**
Starting Date:	**17th August 2020**
Duration:	**4 Weeks**
Course Coordinator:	**Syed Nisar Bukhari**
Course Instructor:	**Syed Nisar Bukhari**
Last date of Registration:	**14th August 2020**

Preamble

The purpose of machine learning is to discover patterns in your data and then make predictions based on often complex patterns to answer business questions, detect and analyze trends and help solve problems. Machine learning in business and other fields is effectively a method of data analysis that works by automating the process of building data models. While Artificial Intelligence (AI) is the umbrella term given for machines emulating human abilities, machine learning is a specific branch of AI where machines are trained to learn how to process and make use of data; another description often used is machine intelligence.

Objectives of the Course

This course is designed to impart detailed knowledge and hands-on sessions on Machine Learning using Python. The objective of machine learning is not only for effective data collection, but to make use of the ever increasing amounts being gathered by manipulating and analyzing it without heavy human input. Machine intelligence enables complex and larger data to be processed and analyzed along with the desired results being achieved such as

determining customer trends, detecting fraud, spotting buying trends and other primary objectives. The main objectives of the course are:

- To introduce students to the basic concepts and techniques of Machine Learning.
- To develop skills of using recent machine learning software for solving practical problems.
- To gain experience of doing independent study and research

Outcomes of the Course

On completion of the course students will be expected to:

- Have a good understanding of the fundamental issues and challenges of machine learning, model selection, model complexity etc.
- Have an understanding of the strengths and weaknesses of many popular machine learning approaches.
- Appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.
- Be able to design and implement various machine learning algorithms in a range of real-world applications.
- Recognize the characteristics of machine learning that makes it useful to real-world problems.
- Characterize machine learning algorithms as supervised, semi-supervised, and unsupervised.
- Effectively use machine learning toolboxes.

Course Fee of Rs 1000/- including GST (Non-refundable)

However he above training fee shall be refunded in few special cases as given below

- If the course is postponed and new date is not convenient for the student
- If the course is cancelled

Payment Schedule: The fee is to be paid in one installment as given below

Installment No.	Last date of payment	Amount in (Rs)
1	14th August 2020	1000/-

- Online transaction: Beneficiary Name: Director NIELIT Srinagar, Saving Account

No: 0239040100000947, Bank &Branch: J&K Bank (Rangreth), IFSC Code: JAKA0RANGRE.

- Pay through Unified Payment Interface (UPI) payment methods eg. Google Pay, Paytm, BHIM, Phone Pe etc.
- DD drawn from a nationalized bank in favor of — Director NIELIT payable at Srinagar.

Note: The Institute will not be responsible for any mistakes done by either the bank concerned or by the depositor while remitting the amount into our account.

Last date of Registration: 14thAugust 2020

Registration Link: Click Here or Visit Official Website of NIELIT Srinagar

Selection of candidates: Selection is based on the first come basis (subject to fulfilling the eligibility criteria)

Admission Procedure:

All interested candidates are required to fill the Registration form with the fees (Registration and Course fees) before 14th, August 2020 with all the necessary following documents.

- One passport size photograph
- Candidates may also submit the certificate of their highest qualification
- Bank Transaction Receipt

Note: Working days are from Monday to Friday.

Discontinuing the course: No fees under any circumstances shall be refunded in case of a student discontinuing the course. No certificate shall be issued if discontinued.

Course Timings: 1 hour online from Monday to Friday

Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

Location: NIELIT Srinagar is located at SIDCO Electronics Complex Old Airport Road Rangreth Srinagar 191132

Address: NIELIT Srinagar
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Tel: 0194-2300502, 2300501,2300805
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email: dir-srinagar@nielit.gov.in

ANNEXRUE

Detailed Syllabus of the Course

Prerequisite: Basic Knowledge of programming

- Introduction to Machine Learning
- About the Environment-Anaconda -its installation and overview, Jupyter notebook, Scikit Learn, Tensorflow
- Python: Introduction to Python programming
    - Basics of Python: Variables, types, conditional statements, loops etc
    - Strings, Lists, Dictionaries, Tuples
    - OOPs in Python, Exception Handling.
    - Numpy, Pandas, Dataframe, Matplotlib
- Machine Learning: Overview and few case study examples
    - Supervised Machine Learning
        - **Classification**
            - Introduction
            - Handling, cleaning, and preparing data.
            - Binary and Multi class classification
            - Logistic Regression
            - Linear Classification
            - K Nearest Neighbor
            - Support Vector Machines
            - Naive Bayes Classifier
            - Decision Trees
            - Random Forests
            - Neural Networks
        - **Regression**
            - Introduction
            - Simple Linear Regression
            - Multiple Linear Regression
            - Polynomial Regression
            - Evaluate Performance of a linear regression model
            - Overfitting and under fitting
    - Un Supervised Machine Learning
        - **Clustering**
            - Introduction
            - K means Clustering
    - Project work

National Institute of Electronics and Information Technology, NIELIT J&K (Srinagar)

Course Prospectus

Industrial Training in Network Security

Name of the Course:	**Industrial Training in Network Security**
Course Code:	**SOSEC170820**
Starting Date:	**17th August 2020**
Duration:	**4 Weeks**
Course Coordinator:	**Ashaq Hussain Dar**
Course Instructor:	**Akeel Malik**
Last date of Registration:	**14th August 2020**

Preamble:

Network Security validates knowledge of security infrastructure, threats, and vulnerabilities to networks and threat mitigation. Required skills include installation, troubleshooting and monitoring of network devices to maintain the integrity, confidentiality, and availability of data and devices

As cybercrime continues to increase (see the latest cybercrime report) and threaten businesses across the world, you probably know that your organization needs firewall security; in fact, you may even already have a firewall management program in place. But what exactly is firewall security, and what does firewall management entail?

The word firewall originally referred literally to a wall, which was constructed to halt the spread of a fire. In the world of computer firewall protection, a firewall refers to a network device which blocks certain kinds of network traffic, forming a barrier between a trusted and an untrusted network. It is analogous to a physical firewall in the sense that firewall security attempts to block the spread of computer attacks.

Packet filtering firewall

This type of firewall has a list of firewall security rules which can block traffic based on IP protocol, IP address and/or port number. Under this firewall management program, all web traffic will be allowed, including web-based attacks. In this situation, you need to have intrusion prevention, in addition to firewall security, in order to differentiate between good web traffic (simple web requests from people browsing your website) and bad web traffic (people attacking your website).

A packet filtering firewall has no way to tell the difference. An additional problem with packet filtering firewalls which are not stateful is that the firewall can't tell the difference between a legitimate return

packet and a packet which pretends to be from an established connection, which means your firewall management system configuration, will have to allow both kinds of packets into the network.

Stateful firewall

This is similar to a packet filtering firewall, but it is more intelligent about keeping track of active connections, so you can define firewall management rules such as "only allow packets into the network that are part of an already established outbound connection." You have solved the established connection issue described above, but you still can't tell the difference between "good" and "bad" web traffic. You need intrusion prevention to detect and block web attacks.

Deep packet inspection firewall

An application firewall actually examines the data in the packet, and can therefore look at application layer attacks. This kind of firewall security is similar to intrusion prevention technology, and, therefore, may be able to provide some of the same functionality.

There are three caveats, however: first, for some vendors, the definition of "deep" extends to some particular depth in the packet and does not necessarily examine the entire packet. This can result in missing some kinds of attacks. Second, depending on the hardware, a firewall may not have adequate processing power to handle the deep packet inspection for your network. Be sure to ask questions about how much bandwidth it can handle while performing such inspection. And finally, embedded firewall management technology may not have the flexibility to handle all attacks.

Application-aware firewall

Similar to deep packet inspection, except that the firewall understands certain protocols and can parse them, so that signatures or rules can specifically address certain fields in the protocol. The flexibility of this approach to computer firewall protection is great and permits the signatures or rules to be both specific and comprehensive. There are no specific drawbacks to this approach to firewall security as generally it will yield improvements over a standard "deep packet inspection" approach. However, some actual attacks may be overlooked (false negatives) because the firewall security parsing routines are not robust enough to handle variations in real-world traffic.

Objective of the Course:

This course is designed to impart knowledge about detailed knowledge of Computer Networks Security, **various protocols and technologies** used in Communication, Managing and configuring Cisco IOS and Firewall and various Security technologies.

Outcome of the Course: After successful completion of this Course, students can able to:

- Able to Design and Implement simple LAN and WAN Network Securities.
- Configure Routers IOS FW&Firewall from Basic to Moderate Network Security.
- Troubleshoot Various Networking Security Issues.

Course Fee of Rs 1000/- including GST (Non-refundable)

However he above training fee shall be refunded in few special cases as given below

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- If the course is cancelled

Payment Schedule: The fee is to be paid in one installment as given below

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1	14th August 2020	1000/-

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Last date of Registration: 14thAugust 2020

Registration Link: Click Here or Visit Official Website of NIELIT Srinagar

Selection of candidates: Selection is based on the first come basis (subject to fulfilling the eligibility criteria)

Admission Procedure:

All interested candidates are required to fill the Registration form with the fees (Registration and Course fees) before 14th August 2020 with all the necessary following documents.

- One passport size photograph
- Candidates may also submit the certificate of their highest qualification
- Bank Transaction Receipt

Note: Working days are from Monday to Friday.

Discontinuing the course: No fees under any circumstances shall be refunded in case of a student discontinuing the course. No certificate shall be issued if discontinued.

Course Timings: 1 hour online from Monday to Friday

Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

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Annexure

Detailed Syllabus of the Course

Prerequisite: (Basic Knowledge of Networking and routing protocols and there implementation)

- **Secure Cisco routers**
  - ✓ Secure administrative access to Cisco routers by setting strong encrypted passwords, exec timeout, login failure rate and using IOS login enhancements
  - ✓ Secure administrative access to Cisco routers by configuring multiple privilege levels
  - ✓ Secure administrative access to Cisco routers by configuring role based CLI
  - ✓ Secure the Cisco IOS image and configuration file

- **AAA authentication**
  - ✓ Explain the functions and importance of AAA
  - ✓ Describe the features of TACACS+ and RADIUS AAA protocols
  - ✓ Configure AAA authentication
  - ✓ Configure AAA authorization
  - ✓ Configure AAA accounting

- **Mitigate threats to Cisco routers and networks using ACLs**
  - ✓ Standard
  - ✓ Extended
  - ✓ Named
  - ✓ Time Based
- Explain the functionality of standard, extended, and named IP Access Control List used by routers to filter packets
- Configure and verify IP ACLs to mitigate given threats (filter IP traffic destined for Telnet, SNMP, and DDoS attacks) in a network using CLI
- Configure IP ACLs to prevent IP address spoofing using CLI

- Discuss the caveats to be considered when building ACLs
- Implement secure network management and reporting

- **Mitigate Common Layer 2 attacks**
  - ✓ Describe how to prevent layer 2 attacks by configuring basic Catalyst switch security features
  - ✓ Port Security
  - ✓ Mac Binding
  - ✓ Mac Sticky

- **Describe the operational strengths and weaknesses of the different firewall technologies**
  - ✓ Explain statefull firewall operations and the function of the state table
  - ✓ Implement Zone Based Firewall
  - ✓ Implement site-to-site VPNs on Cisco Routers
  - ✓ Describe the building blocks of IPSec and the security functions it provides
  - ✓ Configure and verify an IPSec site-to-site VPN with pre-shared key authentication
  - ✓ Configuring AAA Server, TACACS+ and RADIUS Server

National Institute of Electronics and Information Technology, NIELIT J&K (Srinagar)

Course Prospectus

Industrial Training in Networking

Name of the Course:	**Industrial Training in Networking**
Course Code:	**SONET170820**
Starting Date:	**17th August 2020**
Duration:	**6 Weeks**
Course Coordinator:	**Ashaq Hussain Dar**
Course Instructor:	**Akeel Malik**
Last date of Registration:	**14th August 2020**

Preamble:

Routing and switching are the basic functions of network communication. Routing and Switching are different functions of network communications. The main differences between Routing and Switching are as below.

The function of Switching is to switch data packets between devices on the same network (or same LAN - Local Area Network). The function of Routing is to Route packets between different networks (between different LANs - Local Area Networks).

wide area network (WAN) is a telecommunications network that extends over a large geographical area for the primary purpose of computer networking. Wide area networks are often established with leased telecommunication circuits.

Business, as well as education and government entities use wide area networks to relay data to staff, students, clients, buyers and suppliers from various locations across the world. In essence, this mode of telecommunication allows a business to effectively carry out its daily function regardless of location. The Internet may be considered a WAN.

Similar types of networks are personal area networks (PANs), local area networks (LANs), campus area networks (CANs), or metropolitan area networks (MANs) which are usually limited to a room, building, campus or specific metropolitan area, respectively.

Networks are all around us and you are using one right now to access this course.

Imagine for a moment, how different your life would be without access to Facebook, Snapchat, Google, YouTube, Whatsapp or any of the other websites on the Internet? How would you live with no Internet?

The Internet is extremely important in modern life today and all websites and Internet communication relies on networking. This reliance is only predicted to continue with the growth of the Internet of Things (IoT) in the next few years.

Without routers, switches, network cabling and protocols like BGP there would be no Internet!

This course will teach you how networks actually work and how you are able to connect to websites like Facebook, Google, and YouTube.

Companies throughout the world (from the smallest to the largest) rely on networks designed, installed and maintained by networking engineers. Join this in demand industry!

Start your journey today learning about networking.

Access our online simulations so you can practice on simulated Cisco routers and switches. You will get to type commands such as enable, configure terminal, router ospf and many others and learn how to configure devices.

In this course, you will learn about topics such as IP addressing, IP subnetting, Routing, Switches, VLANs, Spanning Tree, Network Address Translation and a whole lot more

Objective of the Course:

This course is designed to impart knowledge about detailed knowledge of Computer Networks, various protocols used in Communication, Managing and configuring Cisco Switches and Routers and various WAN technologies.

Outcome of the Course: After successful completion of this Course, students can able to:

- Able to Design simple LAN and WAN Networks.
- Configure Routers & Switches Basic to Moderate Networks.
- Troubleshoot Various Networking Issues.

Course Fee of Rs 1500/- including GST (Non-refundable)

However he above training fee shall be refunded in few special cases as given below

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Payment Schedule: The fee is to be paid in one installment as given below

Installment No.	Last date of payment	Amount in (Rs)
1	14th August 2020	1500/-

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Admission Procedure:

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Course Timings: 1 hour online from Monday to Friday

Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

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Annexure

Detailed Syllabus of the Course

1.0 Network Fundamentals

Compare and contrast OSI and TCP/IPmodels

- Compare and contrast TCP and UDPprotocols
- Compare and contrast collapsed core and three-tierarchitectures
- Compare and contrast networktopologies
  - ✓ Star
  - ✓ Mesh
  - ✓ Hybrid
- Select the appropriate cabling type based on implementationrequirements
- Configure, verify, and troubleshoot IPv4 addressing andsubnetting
- Compare and contrast IPv4 addresstypes
  - ✓ Unicast
  - ✓ Broadcast
  - ✓ Multicast
- Describe the need for private IPv4addressing
- Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WANenvironment
- Configure, verify, and troubleshoot IPv6addressing

- Compare and contrast IPv6 addresstypes
  - ✓ Global unicast
  - ✓ Unique local
  - ✓ Linklocal

2.0 LAN SwitchingTechnologies

- ✓ Describe and verify switchingconcepts
- ✓ MAC learning andaging
- ✓ MAC addresstable

- Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches
  - ✓ Access ports (data andvoice)
  - ✓ Default VLAN

- Configure, verify, and troubleshoot interswitchconnectivity
  - ✓ Trunk ports
  - ✓ Add and remove VLANs on atrunk
  - ✓ DTP, VTP (v1&v2), and802.1Q

- Configure, verify, and troubleshoot STPprotocols

  STP mode (PVST+ andRPVST+)

  STP root bridge selection

3.0 RoutingTechnologies

- Describe the routingconcepts
  - ✓ Packet handling along the path through anetwork
  - ✓ Forwarding decision based on routelookup
  - ✓ Frame rewrite

- Interpret the components of a routingtable
  - ✓ Prefix
  - ✓ Networkmask
  - ✓ Next hop
  - ✓ Routing protocolcode
  - ✓ Administrative distance
  - ✓ Metric
  - ✓ Gateway of lastresort

- Configure, verify, and troubleshoot inter-VLANrouting
  - ✓ Router on astick

- Compare and contrast static routing and dynamicrouting

- Compare and contrast distance vector and link state routingprotocols

- Compare and contrast interior and exterior routingprotocols

- Configure, verify, and troubleshoot IPv4 and IPv6 staticrouting
  Defaultroute
  Network route

- Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual- link, and LSAs)
- Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)

- Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)

- Configure, verify, and troubleshoot EIGRP for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)

- Troubleshoot basic Layer 3 end-to-end connectivity issues

4.0 WAN Technologies

- Configure and verify DHCP on a router (excluding staticreservations)
  - ✓ Server
  - ✓ Relay
  - ✓ Client
  - ✓ TFTP, DNS, and gatewayoptions

- Troubleshoot client- and router-based DHCP connectivityissues

- Configure, verify, and troubleshoot inside source NAT
  - ✓ Static
  - ✓ Pool
  - ✓ PAT

5.0 Infrastructure Security

- Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering
  - ✓ Standard
  - ✓ Extended
  - ✓ Named

- Configure, verify, and troubleshoot basic device hardening
    - ✓ Local authentication
    - ✓ Secure password
    - ✓ Access to device
    - ✓ Source address
    - ✓ Telnet/SSH
    - ✓ Login banner
- Set up, Configuring Voice over IP Network
- Configuring VoIP Phones in a network

National Institute of Electronics and Information Technology, J&K (Srinagar)

Course Prospects

Big Data Analytics

Name of the Course:	**Big Data Analytics**
Course Code:	**SODAN170820**
Starting Date:	**17th August 2020**
Duration:	**4 Weeks**
Course Coordinator:	**Ajaz Ahmad Kumar**
Course Instructor:	**Ajaz Ahmad Kumar**
Last date of Registration:	**14th August 2020**

Preamble:

In today's world there is data available in abundance from variety of sources like web server logs, social media, and large databases and from diverse domains like Ecommerce, Medical, Scientific etc. Big data analytics is the process of examining these data to uncover hidden patterns, unknown correlations and other useful information that can be used to make better decisions. Business people, Doctors, Scientists etc. can use this to improve their services.

The main challenge to the analysis of big data comes because of the 4 V's– volume, velocity, variety and veracity. For effective analytics, we need to deal with high volume of data of different variety which is being generated in high velocity. The data what is available from such sources is highly unstructured which calls for analytics on the same.

Objective of the Course: The objective is to make the participants capable of identifying and applying appropriate techniques and tools to solve problems in managing huge quantity of data.

Outcome of the Course: After undergoing this course the participants will become data engineers who can perform analytics operations on data using various tools. They can develop, maintain and evaluate Big Data and machine learning solutions for organizations.

Eligibility:

ME/M.Tech/BE/B.Tech/ M.Sc/ B.Sc / 3 year Diploma in (IT/Computer Science/Electronics), MCA/BCA /Degree holders with PGDCA or DOEACC A or B level or equivalent to any of these with good programming knowledge.

Course Fee: **Rs 1000/-**

Course Fee of Rs 1000/- including GST (Non-refundable)

However he above training fee shall be refunded in few special cases as given below

- If the course is postponed and new date is not convenient for the student
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Payment Schedule: The fee is to be paid in one installment as given below

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1	14th August 2020	1000/-

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Discontinuing the course: No fees under any circumstances shall be refunded in case of a student discontinuing the course. No certificate shall be issued if discontinued.

Course Timings: 1 hour online from Monday to Friday

Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

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Annexure

Detailed Syllabus of the Courses

S No	Brief Course Contents	Hours
1	Virtual Machine (VMWare/VirtualBox) Installation Unix/Linux OS (Version:18.04,14.04)	2
2	Unix Shell commands, Shell Programming, Shell Scripting	2
3	PostgreSQL (Version: 11.1, 10.6) The World's Most Advanced Open Source Relational Database	2
4	MySQL(Version: 8.0, 5.7) Open Source Relational Database Management System (RDBMS)	2
5	Bigdata & Hadoop Introduction Components of Hadoop Ecosystem: HDFS, MapReduce,YARN	2
6	Hadoop Installation (Single Node)	2
7	HDFS File System Commands (Web UI)	2
8	Core Java Programming, Eclipse Luna Configuration (JEE Developer)	2
9	MapReduce Programming (Mapper+Reducer) Model designed to process high volume of distributed data.	2
10	Introduction to Apache PIG (Data Flow Language) A high-level language for analyzing large datasets and provide parallel computing on Hadoop clusters with simple adhoc data analysis.	2
11	Introduction to Apache HIVE (HQL) Providing data query and analysis in various databases and file	2

	systems that integrate with Hadoop	
12	Introduction to Apache Hbase (NoSQL Database) Provide random, realtime read/write access to Big Data	2
13	Introduction to Apache FLUME Is a distributed, reliable, abd available service for efficiently collecting, aggregating, and moving large amounts of log data.	2
14	Introduction to Apache SQOOP Tool designed for bulk data transfer b/w Relational databases and Hadoop	2
15	Introduction to Apache ZooKeeper Centralized service for maintain configuration information, providing distributed synchronization and group services.	2

National Institute of Electronics and Information Technology, NIELIT J&K (Srinagar)

Course Prospectus

Blockchain Technology and Applications

Name of the Course:	**Blockchain Technology and Applications**
Course Code:	**SOBLO170820**
Starting Date:	**17th August 2020**
Duration:	**4 Weeks**
Course Coordinator:	**Ashaq Hussain Dar**
Course Instructors:	**Ashaq Hussain Dar, Farya Khalid, Fayaz Ahmad Fayaz, Rouf Shah**
Last date of Registration:	**14th August 2020**

Preamble:

Blockchain is a critical part of the bitcoin peer-to-peer payment system. The bitcoin system works using a blockchain ledger to record transactions. Bitcoin is a global cryptocurrency that can be used as a medium of exchange. However, while many parties have started to accept bitcoin as a currency, it is still controversial and poses risks in terms of security and stability.

The blockchain ledger helps to provide transparency for transactions. Although many bitcoin transactions are in some ways anonymous, the blockchain ledger can link individuals and companies to bitcoin purchases and ownership by allowing individual parties, called miners, to process payments and verify transactions. Rather than a central company presiding over the use of bitcoin, these blockchain originators serve central roles in the management and administration of this alternative currency system.

If this technology is so complex, why call it "blockchain?" At its most basic level, blockchain is literally just a chain of blocks, but not in the traditional sense of those words. When we say the words "block" and "chain" in this context, we are actually talking about digital information (the "block") stored in a public database (the "chain").

Objective of the Course:

This course is designed to impart knowledge about detailed knowledge of Computer Networks Security, **various protocols and technologies** used in Communication, Managing and configuring Cisco IOS and Firewall and various Security technologies.

Outcome of the Course: After successful completion of this Course, students can able to:

- Define Blockchain Technology, in your own words
- Understand how Blockchain could potentially impact your business and industry.
- Explain Blockchain Technology to your clients, friends, and business colleagues
- Set a strategy to prepare your business or your clients for the emerging Decentralized Economy
- Join a community of economists, business leaders, entrepreneurs, and technologists that are shaping this technology as we speak.
- Identify which aspects of Blockchain Technology seem most important and relevant to you
- Walk away with a strong foundation in where blockchain is going, what it does, and how to prepare for it

Course Fee of Rs 1000/- including GST (Non-refundable)

However he above training fee shall be refunded in few special cases as given below

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Installment No.	Last date of payment	Amount in (Rs)
1	14th August 2020	1000/-

- Online transaction: Beneficiary Name: Director NIELIT Srinagar, Saving Account No: **0239040100000947, Bank &Branch: J&K Bank(Rangreth), IFSC Code:JAKA0RANGRE.**
- Pay through Unified Payment Interface (UPI) payment methods eg: Google Pay, Paytm, BHIM, Phone Pe
- DD drawn from a nationalized bank in favour of — Director NIELIT payable at Srinagar.

Note: The Institute will not be responsible for any mistakes done by either the bank concerned or by the depositor while remitting the amount into our account.

Last date of Registration: 14thAugust 2020

Registration Link: Click Here or Visit Official Website of NIELIT Srinagar

Selection of candidates: Selection is based on the first come basis (subject to fulfilling the eligibility criteria)

Admission Procedure:

All interested candidates are required to fill the Registration form with the fees (Registration and Course fees) before 14th August 2020 with all the necessary following documents.

- One passport size photograph
- Candidates may also submit the certificate of their highest qualification
- Bank Transaction Receipt

Note: Working days are from Monday to Friday.

Discontinuing the course: No fees under any circumstances shall be refunded in case of a student discontinuing the course. No certificate shall be issued if discontinued.

Course Timings: 1 hour online from Monday to Friday

Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

Location: NIELIT Srinagar is located at SIDCO Electronics Complex Old Airport Road

Rangreth Srinagar 191132

Address: NIELIT Srinagar
SIDCO Electronics Complex
Old Airport Road Rangreth Srinagar 191132
Tel: 0194-2300502, 2300501, 2300805
Fax: 0194-2300949
e-mail: dir-srinagar@nielit.gov.in

Annexure

Detailed Syllabus of the Course

Module 1 : Fundamentals of Blockchain

- ✓ Introduction to Blockchain
- ✓ Characteristics of Blockchain
- ✓ Comparison with Traditional System
- ✓ Introduction to Structure of Blockchain
- ✓ How Does the Blockchain Work?
- ✓ Difference between Blockchain and a Database
- ✓ Blockchain vs Bitcoin
- ✓ What is Hash
- ✓ Blockchain Terminologies (Distributed Ledger, Distributed P2P Network, Blocks, Mining, Hashing, Merkel Tree, Smart Contracts, Proof of Work(PoW) etc.)

- ✓ Structure of a Block
- ✓ How Mining Works: The Nonce
- ✓ How Mining Works: The Cryptographic Puzzle
- ✓ Byzantine Fault tolerance and The 51% attack
- ✓ Consensus Protocol Defense Against Attackers
- ✓ Consensus Protocol: Proof of Work (PoW)
- ✓ Blockchain - Into the Future

Module 2 : Cryptography and Cryptocurrency

- ✓ Cryptography and Types (Asymmetric, Symmetric, PKI, Cryptographic Hashes, Digital Signatures)
- ✓ Understanding SHA-256
- ✓ Nonce Range
- ✓ Signatures
- ✓ Private and Public Keys
- ✓ Signatures and key demos

Module 3 : Ethereum

- ✓ What is Ethereum
- ✓ Gas in Ethereum
- ✓ Ether
- ✓ Decentralized Applications(Dapps)
- ✓ Ethereum Virtual Machine
- ✓ Meta Mask and Execute Contracts Using Meta Mask.
- ✓ Decentralized Autonomous Organisations(DAOs)
- ✓ Creating accounts and authorization
- ✓ Ethereum tools and SDK ecosystem

Module 4 : Smart Contracts

- ✓ What is Smart Contract
- ✓ Basic constructs of a Smart contract
- ✓ Solidity Programming
- ✓ Arrays
- ✓ Emun
- ✓ Structs
- ✓ Function Declaration
- ✓ Inheritance
- ✓ Events
- ✓ Developing and deploying Smart Contract

Module 5: Use Cases of Blockchain

- ✓ Use of BlockChain in e-Governance
- ✓ Agriculture Systems
- ✓ Medical Information Systems

National Institute of Electronics and Information Technology,
NIELIT J&K (Srinagar)

COURSE PROSPECTUS

Python Programming

Name of the Course:	**Python Programming**
Course Code:	**SOPYT170820**
Starting Date:	**17th August 2020**
Duration:	**2 Weeks**
Course Coordinator:	**Ummer Iqbal Khan**
Course Instructors:	**Ummer Iqbal Khan**
Last date of Registration:	**14th August 2020**

Preamble:

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

Python offers much more error checking than C, and, being a very-high-level language, it has high-level data types built in, such as List, Tuples and Dictionaries. Because of its more general data types, Python is applicable to a much larger problem domain than Awk or even Perl, yet many things are possible in Python.

Python allows you to split your program into modules that can be reused in other Python programs. It comes with a large collection of standard modules like file I/O, system calls, sockets, and even interfaces to graphical user interface toolkits like Tk. Python has been used in a lot of places like in creating games, for statistical data and visualization, speech and face recognition.

Python is an interpreted language, which can save our time during program development because no compilation and linking is necessary. The interpreter can be used interactively, which makes it easy to experiment with features of the language, to write throw-away programs, or to test functions during program development.

Python emerged as a leading programming language used in the Booming areas like Artificial Intelligence (AI), Internet of Things (IoT) and Data analytics. Currently available academic curriculum is not much enough to fulfill the requirement of Skills needed to program in Python language. Because of lack of hands-on experience among professionals, there is a huge demand in providing skill-based training in Python language which will bridge the skill-gap of the engineering graduates.

Objective of the Course:

To develop and skill the engineering graduates in acquiring Problem Solving abilities in Python Programming Language and make the students to become master in writing Python scripts.

Outcome of the Course: After successful completion of this Course, students can able to:

1. Able to write simple Python programs for Real-time problems.
2. Develop problem solving capability using python scripts.
3. Get exposed to Advanced Python Programming in creating GUI based applications.
4. Gained Hands on experience to design object-oriented programs with python classes.

Course Structure:

S. No	Topics	Duration (in weeks) via online mode
1	Introduction to Python Language and Anaconda	**2 weeks**
2	Basic Syntax	
3	Data types	
4	Operators	
5	Flow Control in Python	
6	Functions, Modules	
7	File I/O	
8	Graphs and Image Processing	

Other Details:

Course Fees: Rs. 500/- (Including GST) (Non-Refundable)

However the above Training fee shall be refunded on few special cases as given below:

1. If course postponed and new date is not convenient for the student.
2. If course cancelled.

Payment schedule: The Fee is to paid in one installment as given below.

Installment No.	Last Date for Payment	Amount (in Rs.)
1.	14th August 2020	Rs.500/-

Prerequisite/ Eligibility: Knowledge in basic Mathematics

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Mode of Training: Online

Certification: After Successful completion of the course, Certificate will be issued.

Annexure

Detailed Syllabus of the Course

1. Introduction to Python Language and Pycharm IDE:

- ✓ About Python Language
- ✓ Companies using Python
- ✓ Features of Python
- ✓ Getting Started with Anaconda IDE

2. Basic Syntax:

- ✓ First Python Program
- ✓ Identifiers
- ✓ Reserved Words
- ✓ Lines and Indentation
- ✓ Multi-Line Statements
- ✓ Quotation &Comments
- ✓ Command Line Arguments

3. Data types:

- ✓ Variables
- ✓ Numbers
- ✓ String
- ✓ Lists
- ✓ Dictionaries
- ✓ Tuple
- ✓ Set

4.Operators:

- ✓ Operator & its Types
  - Arithmetic Operators
  - Comparison (Relational)Operators
  - Assignment Operators
  - Logical Operators
  - Bitwise Operators
  - Membership Operators
  - Identity Operators

5. Flow Control in Python:

- ✓ Decision Making statements &Types
  - IF Statement
  - IF... ELSE…Statements

- If…elif Statement

✓ Loop statements &Types
- while loop statements
- for loop statements
- break statement
- continue statement

6.Functions, Modules:

- ✓ Function definition and call
- ✓ Function Scope
- ✓ Arguments
- ✓ Pass by Reference
- ✓ Anonymous Functions
- ✓ The import Statement
- ✓ The from...import Statement
- ✓ Executing Modules as Scripts
- ✓ Locating Modules

7. File I/O:

- ✓ Printing to the Screen
- ✓ Reading Keyboard Input
- ✓ Opening and Closing Files
- ✓ Reading and Writing Files
- ✓ Renaming and Deleting Files

8. Graphs and Image Processing:

- ✓ Basic Plots
- ✓ Embellishing plots
- ✓ Types of Plot
- ✓ Basic Image Processing