NIELIT

राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान,कालीकट

National Institute of Electronics & Information Technology, Calicut

सत्यमेव जयते

Ministry of Electronics and Information Technology
Government of India

Course Prospectus

Advanced Diploma in BigData Analytics

17-Mar-2020 to 17-Jul-2020

An Autonomous Scientific Society of Ministry of Electronics & Information Technology, Govt. of India

ISO 9001-2015 Certified

National Institute of Electronics and Information Technology (NIELIT) is an autonomous body of Ministry of Electronics and Information Technology, Govt. of India. The Centre is a premier organisation for education, training, R&D and consultancy in IT and electronics.

The history of NIELIT dates back to 1974 when the Department of Electronics (DoE) now Ministry of Electronics and Information Technology (MCIT), Govt. of India and the University Grants Commission (UGC) set up the first CEDT within the premises of Indian Institute of Science (IISc.), Bangalore with assistance from Swiss Development Corporation.

The objective was to bridge the gap between the academic institutions and industries. A decade after the successful running of CEDT, Bangalore, the then Department of Electronics (DoE), initiated a programme to set up similar centres in other parts of the country with a wider objective to develop human resources at different levels and in different specialised areas of Electronics Design.

CEDT Calicut was established in 1989. Later in December 2002, it was renamed as DOEACC Centre Calicut. The Centre adopted its current name NIELIT since 2011.The present infrastructure is developed in 25 acre campus provided by Government of Kerala and houses advanced facilities. The beautiful buildings accomodates several state of the art laboratories in a lush green scenic ambience.

The unique Kerala style architecture of the buildings, its proximity to world class institutions like NIT & IIM, makes it one of the best NIELIT Centres in the countryThis Centre is engaged in the conduct of industry oriented quality education and training in the state-of-the-art areas through various formal and non-formal programs.The Centre is an implementing agency for various Government schemes related to human resource development in the field of Information, Electronics and Communications Technology (IECT) in the state of Kerala and Karnataka.The centre is also engaged in R & D activities and provides product development and industrial consultancy services.

The Centre has 5 excellent laboratories, fully equipped with the latest systems and development tools in the area of Embedded Systems, VLSI, Information Technology, Product Design and Process Control & Instrumentation. Large collections of reference books in the above areas are accessible to the trainees from the Centre's library in addition to IEEE Online Journal access & NKN connectivity. All the labs, library and office are connected through the central network and students can retrieve information from their terminals itself and through well connected Wi-Fi system. The fully furnished NIELIT Calicut hostel (ladies & mens) in the campus can accommodate around 250 students.

NIELIT Calicut has successfully executed many software development and electronics design projects for reputed organisations like TISCO, BPL, BPL Telecom, KEL, Kannur University, Kerala Feeds, KCMMF Ltd., MTAB, etc. NIELIT Calicut is also having authorised training centers in Kerala for conducting computer software and hardware courses.

Formal programs such as M.Tech in Embedded Systems and M.Tech Electronics Design Technology are affiliated to Dr. A P J Abdul Kalam Technical University, Kerala and approved by AICTE.

The Centre is recently recognised as a research centre by University of Calicut to undertake Ph.D. programs.

The Course

Name of the Group
IT Group

Name of the Course
Advanced Diploma in BigData Analytics

Course Code
SW200

Starting Date
17-Mar-2020

Duration
16 Weeks

Course Coordinator

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Preamble

In today's world there exists 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.

Expected Job Roles

Data Engineer / Data Analyst / Data Administrator

Course Structure

Sl. No	Modules	Duration(Hours)		
		Theory	Lab	Total
01	Linux tools and scripting	15	15	30
02	Java programming	15	15	30
03	Python programming	35	45	80
04	R programming	30	40	70
05	Apache Hadoop & subprojects	55	60	115
06	Apache Spark	15	20	35
07	Machine Learning	15	15	30
08	Project work	5	85	90
	Total	190	290	480
	Total Credits	23		

Know More...

I.   Course Fees

General Candidates: Course fee is Rs.40,000 + all taxes as applicable

SC/ST Candidates: Tuition Fees are waived for SC/ST students admitted under SCSP/TSP. However they are required to remit an amount of Rs. 4000/- as Advance caution/security deposit. This amount will be considered as caution/security deposit and will be refunded after successful completion of the course. If the student fails to complete the course successfully, this amount alongwith any other caution/security deposits by the student will be forfeited.

Modular wise Course Fee: Not Applicable for this course

II.   Registration Fee

An amount of Rs.1000/- (including all taxes as applicable) should be paid at the time of registering for the course. The amount is nonrefundable.

This fee shall be considered as part of course fee, if the student joins the course. If a student register and pay for more than one course and join for any one course, all such amount will be adjusted against the course fee payable.

If the student does not join for the registered course / any of the registered courses, fee paid shall be forfeited.

For SC/ST candidates, the registration fee is Rs.500/- and will be considered as part of caution/security deposit and will be refunded after successful completion of the course. If the candidate does not join or fails to complete the course the amount will be forfeited

However above the registration fee shall be refunded onfewspecial cases as given below

- Course postponed and new date is not convenient for the student
- Course cancelled in advance, well before the admission date

III. Course Fee Installment Structure

Students can pay the full fees of Rs. 40000 + all taxes in installments as given below

Fees	*Amount for General Candidates	Amount for SC/ST Candidates. (considered as caution / security deposit)	# Due Date (on or before)
Registration Fee	Rs.1000/-	Rs.500/-	During Registration
**Advance Fee	Rs.10000/-	Rs.3500/-	12-Mar-2020
1st Installment	Rs.36600/-	Nil	17-Mar-2020
Total Fee	Rs.47600/-	Rs.4000/ (refundable after successful completion of course)	-

* Above fees is inclusive CGST 9%, SGST 9% and KFC 1%, and revision, if any, by Government, shall be applicable at the time of payment.

Fine will be applicable to late fee payment.

** Advance fee - After publication of first selection list, the students in the first selection list have to pay the Advance Deposit within the due date to take the provisional admission. Students in the additional selection list should pay both Advance and First installment fee together on or before counseling day

IV. Eligibility:

ME/MTech/BE/BTech/MSc/BSc/3 year Diploma in (IT/ComputerScience/Electronics), MCA/BCA /Degree holders with PGDCA or DOEACC A or B level or equivalent to any of these with good programming knowledge.

V. Number of Seats

40 (Forty)

VI. Selection of candidates

Selection is based on the marks in the qualifying degree.

VII.   Test/Interview

Not Applicable

VIII.   Counseling/Admission

17th March 2020

IX.   Important Dates

Last date for submitting application   : 05-Mar-2020

Selection intimation through website : 06-Mar-2020 (After 5.00 PM)

Counseling/Admission   : 17-Mar-2020

X.   Course Timings

9.30 am to 5.00 pm

XI.   Placement:

Placement Assistance shall be provided.

XII.   Lab Facilities

The Lab is equipped with Intel Xeon Dual Processor based servers from HP, IBM, DELL, HCL, GPU- Intel Xeon Gold Processor 5120 with NVIDIA Quadro P5000 16GB, managed gigabit switches and more than 100 networked PCs with 1Gbps internet facility. A variety of software is available which include various flavors of Windows and Linux Operating Systems like Windows, RedHat Enterprise Linux/CentOS 6/7, RT Linux, OpenStack, CloudStack, OpenVAS/Nesses and various commercial and open source development tools, database and cloud servers, etc.

XIII.   Course Contents

Topics	Learning Outcome
1 Linux tools and scripting (30 Hours) 1.1 Linux shell and kernel 1.2 Basic commands 1.3 regular expression and filters 1.4 awk scripting 1.5 Shell scripting	The candidates will be able to do basic administration of Linux machines
2 Java programming (30 Hours) 2.1 Basic syntax and environment 2.2 Classes & Objects 2.3 Datatypes,operators,arrays,strings 2.4 Inheritance,Overriding 2.5 Polymorphism,Abstraction 2.6 Packages 2.7 Collection	This module prepares the participants to develop java applications for hadoop ecosystem

3 Python programming (80 Hours) 3.1 Python environment 3.2 Control and data structures 3.3 OOP,exceptions,modules 3.4 re,gui,mysql,xml 3.5 numpy,matplotlib 3.6 pandas 3.7 scipy,sklearn	This is one among the three core modules of this course and it makes the participants to develop applications using python in almost all areas like GUI, Database, Data analysis etc.
4 R programming (70 Hours) 4.1 R Programming Environment 4.2 Data visualization 4.3 Probability and Statistics 4.4 Probability distributions 4.5 Correlation and Regression 4.6 Hypothesis Testing 4.7 Using shiny	The R language is widely used among statisticians and data miners for developing statistical software and data analysis packages.

5 Apache Hadoop & Sub projects (115 Hours) 5.1 Bigdata, Hadoop Concepts 5.2 Configuring/administering Hadoop 5.3 Hdfs, Mapreduce,YARN architecture 5.4 Transferring data with Sqoop 5.5 Data ingestion using Flume 5.6 NoSQL databases, HBase 5.7 Querying using Hive 5.8 Using Pig 5.9 Hadoop with python and R	These modules steel the students to develop and run applications in Hadoop ecosystem. They will be able to administer Hadoop environment also.
6 Apache SPARK (35 Hours) 6.1 Configuring spark, pyspark 6.2 Spark architecture and RDDs 6.3 Structured APIs 6.4 Streaming 6.5 Graph computing	The candidates will be able to develop and run cluster apllications using spark.

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7 Machine Learning (30 Hours) 7.1 Machine Learning Concepts & Algorithms 7.2 Advanced numpy,scipy,sklearn 7.3 Using SPARK ml 7.4 Tensorflow basics	The candidates will be able to apply right algorithms and develop ML apllications using different platforms/tools.
8 Project / Internship (90 Hours)	The participants will be doing an industry relevant project

Click here for General Terms and Conditions –
Applicable to all courses

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