



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi & Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107



SCHOOL OF ARTS AND SCIENCE

Department of Computational Studies

Bachelor of Computer Application

Minutes of 5th meeting of Board of Studies

Venue

Department of Computational Studies
First Floor , SAS Block

Date & Time

21-09-2022 & 02.00 pm to 4.00 pm



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

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Madagadipet, Puducherry - 605 107



School of Arts and Science Department of Computational Studies

Minutes of Board of Studies Meeting for BCA

The Fifth meeting of Board of Studies for the course BCA was held on 21-09-2022 at 02:00 pm to 4.00 pm through online in the Department of Computational Studies, School of Arts and Science, Sri Manakula Vinayagar Engineering College with the Head of the Department in the Chair.

The following members were present for the Fifth Meeting of Board of Studies.

Sl. No.	Name of the Member	Designation
Head of the Department (Chairman)		
1	Mr. S.VISU, MCA., M.Phil., Assistant Professor and Head, Department of Computational Studies, School of Arts and Science, Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry. 605 107. E-mail: visucs@smvec.ac.in Mobile: 9791966297	Chairman
External Expert Members		
2	Dr. N. VIJAYALAKSHMI, M.C.A., Ph.D. Associate Prof, Department of Computer Science, SRM Institute of Science and Technology (Autonomous) Specialization: IOT, Network Security. email: vijinatarajan23@gmail.com Mobile: 9941202829,	Pondicherry University Nominee
3	Dr. A. MARTIN, M.C.A., M.Phil., M.E., Ph.D. Asst. Prof, Department of Computer Science, School of Mathematics and Computer Science, Central University of Tamil Nadu, Thiruvarur. Specialization: Business Intelligence, Information Science and Engineering email:martin@cutn.ac.in Mobile: 8903756380,	Subject Expert (Academic Council Nominee)
4	Dr. S. BEHIN SAM, M.Sc., M.Tech., Ph.D. Associate Prof, Department of Computer Science, Dr. Ambedkar Arts and Science College Viyasarpadi, Chennai. Specialization:Data Mining, Artificial Intelligence. email:behinsam@gmail.com Mobile: 9176667525,	Subject Expert (Academic Council Nominee)

5	Mr. C. VIMAL RAJ Systems Architect, TCS, Chennai. Email:vimal06vishwa@gmail.com Mobile: 9952578333	Member (Industry representative)
Internal Members		
6	Dr. A. ANTHONY PAUL RAJ M.Sc., B.Ed., M.Phil., Ph.D. Assistant Professor, Specialization: Network Security & Data Science Years of Experience: 15 years Sri Manakula Vinayagar Engineering College E-mail: anthony paulrajsas@smvec.ac.in Mobile: 9942531512	Member
7	Mrs. S. DIVYA, M.C.A., Assistant Professor, Specialization: RDBMS Years of Experience: 6 years Sri Manakula Vinayagar Engineering College E-mail: divyacs.sas@smvec.ac.in Mobile: 9791456258	Member
8	Mr. N. VELAN, M.C.A., Assistant Professor, Specialization: Computer Network Years of Experience: 1 Year Sri Manakula Vinayagar Engineering College E-mail: velancs.sas@smvec.ac.in Mobile: 8344577751	Member
9	Mrs. A. SHAMSATH BEGUM, M.C.A., Assistant Professor, Specialization: Networking Years of Experience: 1 Year Sri Manakula Vinayagar Engineering College E-mail: shamsathbegum.sas@smvec.ac.in Mobile: 9500399774	Member
Co-opted Members		
10	Dr. M.A. ISHRATH JAHAN M.A., M.Phil., Ph.D., Associate Professor Head, Dept. of English, SMVEC	Member
11	Dr. J. MANIMEGALAI M.COM., Ph.D., Assistant Professor , Dept. of Commerce and Management, SMVEC	Member

Agenda of the Meeting

Item No.: BOS/2022/SAS/UG/CA/5.1	Welcome Address, Introduction about the Institution, Department and BoS Members.
Item No.: BOS/2022/SAS/UG/CA/5.2	Confirmation of minutes of the Fourth meeting of the Board of Studies. The Head of the Department appraised the Board regarding the Minutes of the Fourth Meeting of BoS.
Item No.: BOS/2022/SAS/UG/CA/5.3	To discuss and approve the improvisations in the Curriculum Structure of the Bachelor of Computer Application Programme from the AY 2021-22
Item No.: BOS/2022/SAS/UG/CA/5.4	To discuss the modifications in the Syllabi for the Third Year courses under R-2020 regulations for the BCA students admitted in the Year 2020-2021 and in the 2021-22
Item No.: BOS/2022/SAS/UG/CA/5.5	To consider any other item with the permission of the Chair.

Minutes of the Meeting**Item No.: BOS/2022/SAS/UG/CA/5.1**

Mr.S.Visu , Chairman, welcomed all the external and internal members. The meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item No.: BOS/2022/SAS/UG/CA/5.2

Chairman, BoS, appraised the minutes of fourth meeting of BoS and its implementation and then it is confirmed with the approval of BoS expertise.

Item No.: BOS/2022/SAS/UG/CA/5.3

- The Curriculum was discussed and recommended to Academic Council with the following improvisations.

Sl.No.	Regulation	Semester	Course Title with Course Code	Unit No.	Particulars
1	R 2020	V	NPTEL/SWAYAM – A20CAM501	The whole Course	<ul style="list-style-type: none"> The Board Members were suggested to adding online course in semester V.
2	R 2020	V & VI	Employability Enhancement Course – A20CPC505/ A20CPC606	The whole Course	<ul style="list-style-type: none"> The Employability Enhancement Course has withdrawn in Semester V & VI. We have a plan to concentrate the Placement Training instead of Employability Enhancement Course.

The above corrections have been made in the curriculum and the details are given in Annexure- I

Item No.: BOS/2022/SAS/UG/CA/5.4

Sl.No.	Regulation	Semester	Course Title with Course Code	Unit No.	Particulars
1	R 2020	V	Web Technology – A20CAT509	Unit II	<ul style="list-style-type: none"> The experts members have suggested add Servlet and JSP topics in unit II, according their suggestions we have made changes.
2	R 2020	V	Web Technology Lab– A20CAL508	Exercise 8 & 9	<ul style="list-style-type: none"> The experts members have suggested to add two more exercises under angularJS, according their suggestions we have made changes.
3	R 2020	VI	Block Chain Technology – A20CAT612	Unit V	<ul style="list-style-type: none"> The experts members have suggested to add two applications under Blockchain Technology, according their suggestions we have made changes.


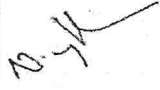
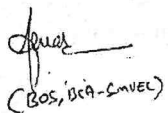

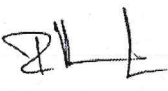



4	R 2020	VI	Internet of Things – A20CAT613	Unit IV	<ul style="list-style-type: none"> The experts members have suggested to add two more concepts under Arduino , according their suggestions we have made changes.
5	R 2020	VI	Python for Data Science – A20CAE610	Unit IV	<ul style="list-style-type: none"> The experts members have suggested to add three more topics under Advanced Python , according their suggestions we have made changes.




The above corrections have been made in the Syllabus and the details are given in Annexure- II.

Item No.: BOS/2022/SAS/UG/CA/5.5

Sl.No.	Regulation	Semester	Couse Title with Course Code	Unit No.	Particulars
1	R 2020	III,IV,V & VI	All Discipline Specific Electives Courses	The Complete Course	<ul style="list-style-type: none"> The Expert members appreciated for the way of preparing the courses of Discipline Specific Electives

The above list of Discipline Specific Elective Courses listed in Annexure III.

No.	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	Mr. S.VISU, MCA., M.Phil., Assistant Professor and Head, Department of Computational Studies, School of Arts and Science, Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry. 605 107. E-mail: visucs@smvec.ac.in Mobile: 9791966297	Chairman	
2	Dr. N. VIJAYALAKSHMI, M.C.A., Ph.D. Associate Prof, Department of Computer Science, SRM Institute of Science and Technology (Autonomous) Specialization: IOT, Network Security. email: vijinatarajan23@gmail.com Mobile: 9941202829,	University Nominee	
3	Dr. A. MARTIN, M.C.A., M.Phil., M.E., Ph.D. Asst. Prof, Department of Computer Science, School of Mathematics and Computer Science, Central University of Tamil Nadu, Thiruvarur. Specialization: Business Intelligence, Information Science and Engineering email:martin@cutn.ac.in Mobile: 8903756380,	Subject Expert (Academic Council Nominee)	 (BOS, ICA-SMVEC)
4	Dr. S. BEHIN SAM, M.Sc., M.Tech., Ph.D. Associate Prof, Department of Computer Science, Dr. Ambedkar Arts and Science College Viyasarpadi, Chennai. Specialization:Data Mining, Artificial Intelligence. email:behinsam@gmail.com Mobile: 9176667525,	Subject Expert (Academic Council Nominee)	
5	Mr. C. VIMAL RAJ Systems Architect, TCS, Chennai. Email:vimal06vishwa@gmail.com, Mobile: 9952578333	Industry Expert	
6	Dr. A. ANTHONY PAUL RAJ M.Sc.,B.Ed.,M.Phil.,Ph.D. Assistant Professor, Specialization: Network Security & Data Science Years of Experience: 15 years Sri Manakula Vinayagar Engineering College E-mail: anthonypaulrajsas@smvec.ac.in Mobile: 9942531512	Internal member	
7	Mrs. S. DIVYA, M.C.A., Assistant Professor, Specialization: RDBMS Years of Experience: 6 years Sri Manakula Vinayagar Engineering College E-mail: divyacs.sas@smvec.ac.in Mobile: 9791456258	Internal member	
8	Mr. N. VELAN, M.C.A., Assistant Professor, Specialization: Computer Network Years of Experience: 1 Year Sri Manakula Vinayagar Engineering College E-mail: velancs.sas@smvec.ac.in Mobile: 8344577751	Internal member	

9	Mrs. A. SHAMSATH BEGUM, M.C.A., Assistant Professor, Specialization: Networking Years of Experience: 1 Year Sri Manakula Vinayagar Engineering College E-mail: shamsathbegum.sas@smvec.ac.in Mobile: 9500399774	Internal member	
Co-opted Members			
10	Dr. M.A. ISHRATH JAHAN M.A., M.Phil., Ph.D., Associate Professor Head, Dept. of English, SMVEC	Internal member	
11	Dr. J. MANIMEGALAI M.COM., Ph.D., Assistant Professor , Dept. of Commerce and Management, SMVEC	Internal member	

The meeting was concluded at 4:00 PM with vote of thanks by **Mr. S.Visu**, Head of the Department, Department of Computational Studies.



Mr. S.Visu,

**HOD / Dept. of Computational Studies,
Chairman-BoS (BCA)**



Dean SAS

[Dr. S. Muthulakshmi]



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Annexure - I

SEMESTER – V										
S. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT509	Web Technology	DSC	4	0	0	4	25	75	100
2	A20CAT510	Software Engineering Concepts	DSC	4	0	0	4	25	75	100
4	A20CAT511	Artificial Intelligence and its Applications	DSC	3	0	0	4	25	75	100
5	A20CAE5XX	Discipline Specific Elective–III	DSE	3	0	0	3	25	75	100
Practical										
6	A20CAL508	Web Technology Lab	DSC	0	0	4	2	50	50	100
7	A20CAP501	Mini Project(Java/Python/Web)	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
8	A20CMS514	Entrepreneurial Skills	SEC	0	0	4	2	100	0	100
Online Certification Course										
9	A20CAM501	NPTEL / SWAYAM	OCC	0	0	0	2	100	0	100
							23	400	400	800

SEMESTER – VI										
S.No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT612	Block chain Technology	DSC	3	0	0	4	25	75	100
2	A20CAT613	Internet of Things	DSC	3	0	0	4	25	75	100
3	A20CAT614	.Net Framework	DSC	3	0	0	4	25	75	100
4	A20CAE6XX	Discipline Specific Elective –IV	DSE	3	0	0	3	25	75	100
Practical										
5	A20CAP602	Project Work& Viva-voce	DSC	0	0	10	5	40	60	100
Skill Enhancement Course										
6	A20CAS606	Research Methodology and Opportunities	SEC	0	0	4	2	100	0	100
							22	240	360	600



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Annexure - II

Course Objectives

- Understand basic concepts and terminology of Internet
- To help students to gain a basic understanding of style sheet
- To inculcate working knowledge of Java script
- To learn the angular js concepts.
- To connect to mysql data sources and managing them effectively.

Course Outcomes

After completion of the course, the students will be able to

- CO 1** – Identify various concepts of Internet
CO 2 – Critique css style sheet on their design pros and cons
CO 3 – Utilize rapid prototyping techniques to design and develop webpages.
CO 4 – Utilize java script with objects
CO 5 – Design and develop webpages and connect with mysql.

UNIT I INTERNET BASICS**(12 Hrs)**

Basic Concepts – History of Internet – Applications of internet – Internet Domains – IP Address – TCP/IP Protocol – The WWW – Introduction to HTML- Web server – Web client / browser - Tags – Graphics to HTML Doc – Lists – Tables – Linking Documents.

UNIT II STYLE SHEET**(12 Hrs)**

Style sheet - Style sheet basic - Add style to document - Creating Style sheet rules - Style sheet properties - Font - Text - Color and background color - Box - Display properties –Servlet – JSP.

UNIT III JAVASCRIPT**(12 Hrs)**

JavaScript- JavaScript in Web Pages – The Advantages of JavaScript –Writing JavaScript into HTML – Syntax – Operators and Expressions –Constructs and conditional checking – Functions – Placing text in a browser– Dialog Boxes – Form object’s methods – Built in objects – user defined objects.

UNIT IV ANGULARJS**(12 Hrs)**

Overview – MVC architecture – First application – Directives – Expressions – Controllers – Filters – Tables – Modules – Forms – Includes - AJAX

UNIT V MYSQL**(12 Hrs)**

Introduction – MySQL Databases – Table and Views – MySQL queries – MySQL Indexes – MySQL Clauses – MySQL Conditions – MySQL Joins – Aggregate functions – Database Connection

Text Books

1. “Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI”, Ivan Bayross, BPB Publication.
2. Jon Duket - Fundamentals of Web Development 1/e Paperback
3. Randy Connolly - JavaScript and JQuery: Interactive Front-End Web Development Paperback

Reference Books

1. XML Bible”, Elliotte Rusty Harold, 2nd Edition, Wrox Publication.
2. “Beginning Java Server Pages”, Vivek Chopra, Sing Li, Rupert Jones, Jon Eaves, John T. Bell, Wrox Publications.
3. “Practical ASP”, Ivan Bayross, BPB Publication.

Web References

1. <https://www.tutorialspoint.com/angularjs/index.htm>
2. https://www.tutorialspoint.com/spring_boot/index.htm
3. <https://www.tutorialspoint.com/mysql/index.htm>
4. <https://www.javatpoint.com/mysql-tutorial>

Course Objectives

- To facilitate students to understand HTML
- To help students to gain a basic understanding of java script and web development
- To inculcate working knowledge and validate the data

List of Programs

1. Write an HTML code to display your education details in a tabular format.
2. Write an HTML code to display your CV on a web page.
3. Write an HTML code to create your Institute website, Department Website and Tutorial website for specific subject.
4. Write an HTML code to illustrate the usage of the following:
 - Ordered List
 - Unordered List
 - Definition List
5. Write a script to create an array of 10 elements and display its contents.
6. Write a function in Java script that takes a string and looks at it character by character.
7. Create a simple calculator using form fields. Have two fields for number entry & one field for the result. Allow the user to be able to use plus, minus, multiply and divide.
8. Write an angularJS code to create page using CSS framework.
9. Write an angularJS code to responding to an event.
10. Write an angularJS code to demonstrate Upload File application.
11. Write a Java script to prompt for users name and display it on the screen.
12. Write an HTML program to design an entry form of student details and send it to store at database server like SQL, Oracle or MS Access.

Text Books

1. "Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI", Ivan Bayross, BPB Publication.
2. Jon Dukett - Fundamentals of Web Development 1/e Paperback
3. Randy Connolly - JavaScript and JQuery: Interactive Front-End Web Development Paperback

Reference Books

1. XML Bible", Elliotte Rusty Harold, 2nd Edition, Wrox Publication.
2. "Beginning Java Server Pages", Vivek Chopra, Sing Li, Rupert Jones, Jon Eaves,
 - a. John T. Bell, Wrox Publications.
3. "Practical ASP", Ivan Bayross, BPB Publication.

Web References

1. <https://www.tutorialspoint.com/angularjs/index.htm>
2. https://www.tutorialspoint.com/spring_boot/index.htm
3. <https://www.tutorialspoint.com/mysql/index.htm>
4. <https://www.javatpoint.com/mysql-tutorial>

Course Objective

- To define the fundamental ideas behind Block Chain.
- To know about Bitcoin Fundamentals.
- To understand about the Developing knowledge in Bitcoin.
- To understand the Ripple Block chain.
- To Understand Digi Byte Techniques.

Course Outcome

After completion of the course, the students should be able to

- CO1 - To get the knowledge in principles of Block Chain.
 CO2 - To get the knowledge in Bitcoin Fundamentals.
 CO3 - To get the knowledge in in Bitcoin.
 CO4 – To get the knowledge in Ripple Block chain.
 CO5 - To get the knowledge in Digi byte.

UNIT I INTRODUCTION**(12 Hrs)**

Introducing Block Chain – The structure of Block Chains – Block chain Applications – Block chain Lifecycle – Block chains in use.

UNIT II PICKING A BLOCK CHAIN**(12 Hrs)**

Where Block Chains Add Substance – Choosing a Solution – Dividing into Bitcoin Blockchain – Using Smart Contracts with Bitcoin.

UNIT III DEVELOPING YOUR KNOWLEDGE**(12 Hrs)**

Getting a Brief History of the Bitcoin Blockchain – Debunking Some Common Bitcoin Misconceptions- Mining for Bitcoins – Bitcoin The New Wild West.

UNIT IV RIPPLE BLOCKCHAIN**(12 Hrs)**

Getting a Brief History of the Ripple Blockchain – How Ripples differs from all other Blockchain – Unleashing the Full Power of Ripple.

UNIT V DIGI BYTE**(12 Hrs)**

The Fast Blockchain – Mining on Digibyte – Signing Documents on DigiByte’s Digu Sign – Earning Digibytes While Gaming- Money Transfer Application – Smart Contracts Application.

Text books

1. Tiana Laurence, “Blockchain Dummies”, A Wiley Brand.
2. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, “Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction”, Princeton University Press, Kindle Edition, 2016.
3. Imran Bashir, “Mastering Blockchain: Deeper insights into decentralization, cryptography”, Packet Publishing Ltd, Kindle Edition, 2017.
4. Douglas Robert Stinson and Maura Paterson, “Cryptography: Theory and Practice”, CRC press, 2018.

Reference books

1. Andreas M. Antonopoulos, “Mastering Bitcoin: Unlocking Digital Cryptocurrencies”, O’Reilly Media; 2nd Edition, 2017.
2. Dr. Gavin Wood, “ETHEREUM: A Secure Decentralized Transaction Ledger”, Yellow paper, 2014.
3. Neil Hoffman, “Cryptocurrency: The Insider’s Guide to Blockchain Technology, Bitcoin Mining, Investing and Trading Cryptocurrencies (Crypto Trading and Investing Secrets)”, Karma Publishing House, 1st Edition, 2017
4. Jonathan Katz, Yehuda Lindell, “Introduction to Modern Cryptography”, 1st Edition, Taylor & Francis, 2014.
5. Maura B. Paterson Douglas R. Stinson, “Cryptography: Theory and Practice”, 1st Edition, CRC Press, 2018.

Web resources

1. <http://chimera.labs.oreilly.com/books/1234000001802/ch08.html>
2. <https://bitcoin.org/bitcoin.pdf>
3. <https://www.geeksforgeeks.org/introduction-to-crypto-terminologies/>
4. <https://blockgeeks.com/guides/cryptocurrencies-cryptography/>
5. <https://cointelegraph.com/bitcoin-for-beginners/what-are-cryptocurrencies>.

Course Objectives

- To assess the vision and use of Devices in IoT Technology
- To Understand IoT Market perspective.
- To classify Real World IoT Design Constraints using Raspberry Pi.
- To learn about the introduction to Edge Computing
- To know about Physical Servers and Cloud Offerings

Course Outcomes

After completion of the course, students will be able to

CO1 – Interpret the vision of IoT from a global context along with the uses of IOT devices.

CO2 – Determine the Market perspective of IoT

CO3 – Design a portable IoT using Raspberry Pi.

CO4 – Describe the importance of edge computing

CO5 – Illustrate the applications in Industrial Automation and identify Real World Design Constraints.

UNIT I INTRODUCTION & ENABLING TECHNOLOGIES**(12 Hrs)**

Evolution of Internet of Things – IoT Architectures- IoT World Forum (IoTWF) – Enabling Technologies – Simplified IoT Architecture – Sensors- Actuators- Smart Objects and Connecting Smart Objects.

UNIT II IOT PROTOCOLS**(12 Hrs)**

IoT Access Technologies- Physical and MAC layers- topology – Network Layer- IP versions- Constrained Nodes and Constrained Networks – Application Transport Methods- Supervisory Control and Data Acquisition – Application Layer Protocols.

UNIT III IOT PLATFORMS DESIGN METHODOLOGY**(12 Hrs)**

IoT Physical Devices and Endpoints– Introduction to Raspberry PI-Interfaces (Serial, SPI, I2C) Programming – Python program with Raspberry- PI with focus of interfacing- External gadgets- Controlling output- Reading input from pins.

UNIT IV DATA ANALYTICS AND SUPPORTING SERVICES**(12 Hrs)**

Structured Vs Unstructured – Data No SQL Databases – Hadoop Ecosystem – Apache Kafka- Apache Spark – Python Web Application Framework – Django – AWS for IoT – Arduino UNO Board – Bluetooth Interface for Arduino.

UNIT V CASE STUDIES AND INDUSTRIAL APPLICATIONS**(12 Hrs)**

Cisco IoT system – IBM Watson IoT platform – Mart and Connected Cities- Layered architecture- Smart Lighting- Smart Parking - Architecture and Smart Traffic Control.

Text Books

1. Vijay Madiseti and ArshdeepBahga, "Internet of Things: A Hands-On Approach", VPT edition1, 2014.
2. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, —IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things, Cisco Press, 2017

Reference Books

1. Jonathan Follett, "Designing for Emerging - UX for Genomics, Robotics, and the Internet of Things Technologies", O'Reilly, 2014.
2. CharalamposDoukas, — "Building Internet of Things with the Arduino!, Create space", April 2012..
3. Donald Norris, —"The Internet of Things: Do-It-Yourself at Home Projects for Arduino, Raspberry Pi and BeagleBone Black!",Mc.Graw Hill,2015..

Web References

1. <https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot>
2. <https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/>
3. <https://www.geeksforgeeks.org/edge-computing/>
4. <https://www.i-scoop.eu/internet-of-things-guide/edge-computing-iot/>

Course Objectives

- To understand the concepts of programming.
- To learn about flow statements and loops.
- To learn about object oriented programming.
- To learn the concept of advance python.
- To know about data science.

Course Outcomes

After completion of the course, the students will be able to

- CO 1** - Understand the basic concepts of programming.
CO 2 - Understand the basic concepts of flow and loops.
CO 3 – implementations of object oriented programming.
CO 4 - Basics of advance python.
CO 5 - Basic concepts of data science.

UNIT I INTRODUCTION TO PROGRAMMING**(9 Hrs)**

History of computers – Understanding hardware – Writing first program – Variables and Data types – assigning variables – operators

UNIT II CONTROL FLOW & LOOPS**(9 Hrs)**

If, If-Else, Else if, Switch Statements - For, While, Do-While, For Each loops

UNIT III OBJECT ORIENTED PROGRAMMING**(9 Hrs)**

Introduction to Object Oriented Paradigm - Introduction to Objects, Classes, Instances - Inheritance, Abstraction, and Sets

UNIT IV ADVANCED PYTHON**(9 Hrs)**

File Input - User Input- List Comprehension - Packages – Python Class and Objects – Python Reg Expressions - Python Networking.

UNIT V DATA SCIENCE**(9 Hrs)**

Introduction to Data Science - Review Python Fundamentals - Understanding the data science discipline- Pandas - Data set reading - Filtering, Cleaning, Manipulating Data - Excel vs Python - Matplotlib Package- Understanding motivations between different graphs - Sci-Kit Learn package - Understand motivation and definition of machine learning.

Text Books

1. Cathy O'Neil and Rachel Schutt , "Doing Data Science", O'Reilly, 2015.
2. Davy Cielen, Arno D. B. Meysman, Mohamed Ali, "Introducing Data Science", manning publications, 2016 (Chapter 1 to 3 for Module I & Module V)
3. Martin C Brown, "Python The Complete Reference", McGraw-Hill Education, 4th Edition, 2018

Reference Books

1. Data Science and Big Data Analytics", EMC Education Service, Wiley. 2015 (Chapter1 & 2 for module II)
2. Timothy A. Budd, "Exploring Python", Mc-Graw Hill Education (India) Private Ltd., 2015.
3. Ben Stephenson, "The Python Workbook A Brief Introduction with Exercises and Solutions", Springer International Publishing, Switzerland 2014.

Web References

1. <https://pythonprogramming.net/introduction-learn-python-3-tutorials/>
2. <https://www.mastersindatascience.org/data-scientist-skills/hadoop/>
<https://towardsdatascience.com/big-data-analysis-spark-and-hadoop-a11ba591c057>



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Annexure - III

DISCIPLINE SPECIFIC ELECTIVE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSES										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Discipline Specific Elective (DSE - I) – offered in Third Semester										
1	A20CPE301	Introduction to Data Science using Hadoop	DSE	3	-	-	3	25	75	100
2	A20CAE302	Data Mining and Warehousing	DSE	3	-	-	3	25	75	100
3	A20CAE303	Computer Graphics And Multimedia	DSE	3	-	-	3	25	75	100
Discipline Specific Elective (DSE - II) – offered in Fourth Semester										
1	A20CAE404	MANET	DSE	3	-	-	3	25	75	100
2	A20CAE405	Data Science and Analytics	DSE	3	-	-	3	25	75	100
3	A20CAE406	Animations and Game Development	DSE	3	-	-	3	25	75	100
Discipline Specific Elective (DSE - III) – offered in Fifth Semester										
1	A20CAE507	E- Commerce	DSE	3	-	-	3	25	75	100
2	A20CAE508	Cloud Computing Fundamentals	DSE	3	-	-	3	25	75	100
3	A20CAE509	Cyber Security and Digital Forensics	DSE	3	-	-	3	25	75	100
Discipline Specific Elective (DSE - IV) – offered in Sixth Semester										
1	A20CAE610	Python for Data Science	DSE	3	-	-	3	25	75	100
2	A20CAE611	Wireless Sensor Networks	DSE	3	-	-	3	25	75	100
3	A20CAE612	Computer Hardware and Network Trouble Shooting	DSE	3	-	-	3	25	75	100