CMS COLLEGE KOTTAYAM (AUTONOMOUS)

Affiliated to the Mahatma Gandhi University, Kottayam, Kerala

BACHELOR OF COMPUTER APPLICATION

(BCA)

Starts on 2nd December 2019

Value Added Course for BCA 2nd Year Students

PYTHON PROGRAMMING

BCA Semester IV

ADD ON COURSE: Python for IOT

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No.	Intended Programme Specific Outcomes Upon completion of Bachelor of Computer Applications Programme, the graduates will be able to:	GPO No.
PSO-1	**A**pply knowledge of mathematics, management, logic and allied engineering subjects as applicable to Computer Science and Engineering	1
PSO-2	**U**nderstand how to identify, formulate and design solutions in the areas of Computer Science and Engineering	1
PSO-3	**D**emonstrate the abilities to design and develop algorithms and implement them as programs, with analysis and interpretation of data	1
PSO-4	**D**evelop skills in software development so as to enable the graduates to take up employment/self-employment in local, Indian & global software market	1
PSO-5	**A**ddress the challenges of complex and computation intensive problems	1,2
PSO-6	**L**earn theoretical foundations of different branches of Computer Science so that students can pursue for higher studies	1
PSO-7	**A**dopt any modern engineering tool or software for analyzing and solving various computer engineering problems	1,2
PSO-8	**H**ave the knowledge of contemporary issues and able to apply various software engineering approaches for project management	1,2,3
PSO-9	**U**nderstand the impact of professional engineering solutions in environmental contexts and the need for sustainable development.	1,2,3
PSO-10	**T**ackle the real life problems using the internationally accepted latest technologies	1,3
PSO-11	**C**ommunicate effectively on complex programming activities with the IT community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	1,3,5
PSO-12	**E**nhance Employability by developing leadership, effective communication & time management skills and also by incorporating ethics & team work ability	3-6
PSO-LG	**O**rganize and deliver relevant applications of knowledge through effective written verbal, graphical/ virtual communication and interact productively with people from diverse background.	3

Course	Details
Code	
Title	**Python for IOT**
Degree	**BCA**
Branch(s)	**Computer Science**
Year/Semester	**Sixth semester**
Type	**Addon**
Credits	2

Advantages of Learning Python

Simplicity of Python compared to other programming platforms.

Availability of huge open source Libraries and Frameworks

Easy to develop applications for Data Science, Machine Learning and Web Development

SL. No.	*Course Objectives* *Upon completion of this course, the students will be able to*:
1	**Design** Python Programmers for real life problems.
2	**Develop** Prototypes quickly because it is so easy to work with.
3	**Design** GUI interface

CO No.	*Expected Course Outcomes* *Upon completion of this course, the students will be able to*:	Cognitive Level	PSO No.
1	Understand fundamental concepts of Python	R	1,2
2	Develop programmes using the Expressive Language approach of Python Programming	C	1,2
3	Develop programmes using Object Oriented programming principles using Python	C	1,2,4,9
4	Design GUI interface using GUI programming	C	1,2,4,9

Hours:2 hours /week   *Total Hours: 36 (Including Seminar and formative assessment)

Module	Course Description	Hrs	CO.No.
1.0	**Overview**	**12**	
1.1	Environment	1	1
1.2	Basic Syntax	1	1
1.3	Variable types	1	1
1.4	Basic Operators	1	1
1.5	NET Framework features	1	1
1.6	Installing Python	1	1
1.7	Very simple Programs	1	1

1.8	Scripts Loops	1	2
1.9	Conditional functions	1	2
1.10	Tuples	1	2
1.11	Lists	1	2
1.12	Dictionaries for loop	1	2
1.13	Classes	1	2
1.14	Importing modules	1	2
1.15	File I/O Error Handling	1	2
2.0	**Structures**	**12**	
2.1	If .. else	1	3
2.2	While loop	1	3
2.3	For loop	1	3
2.4	Loop control	1	3
2.5	Numbers, Strings,Lists	2	3
2.6	Tuples	2	3
2.7	Dictionary	2	3
2.8	Date and Time	1	3
3.0	**Advanced features**	**12**	
3.1	Function	1	3
3.2	Modules	1	3
3.3	Files I/O	1	3
3.4	Exceptions	2	3
3.5	Classes/Objects	2	3
3.6	Reg Expressions	1	3
3.7	GUI Programming	2	4

Reference Book

1. *Dr. John* M. *Zelle, Franklin, Beedle & Associates Inc.,* **Python Programming: An Introduction to Computer Science.**

2. Allen B. Downey, *Green Tea Press,* **Think Python**

Teaching and learning Methods

- Practical oriented teaching

- ICT enabled classes

- Activity oriented modules such as stage performance, talk show, seminars, classes by experts in the domain and speeches.

- Outdoor classes for effective applications of photography and videography.

- Familiarize online certification organizations

Evaluation Methods

- Performance may be evaluated based on Discussions, lab exercises, demonstration, quizzes, creative assignments, module exams and group task.

- All types of performances are mapped to the respective cognitive levels of course outcome.

- At the end of each module there will be a composite test consisting of theory,

practical and viva.

- A maximum 5 mark is given for meeting the criteria of each cognitive level, as shown below in Table 1. Note that levels below 'Apply' are not rewarded here.

Table: 1

Cognitive Level	End Module Tests (Max 5 marks)
Remember	
Understand	
Apply	5
Analyze	5
Evaluate	5
Create	5

- Continuous evaluation is based on
    1. Assignment/Seminar
    2. Individual task
    3. Group task.
- Each of the above has a **1** or **0** one cognitive point, whether one has accomplished the cognitive level or not. This is explained in the following table.

Table: 2

Cognitive Level	Assignment (0 or 1mark)	Individual Task (0 or 1mark)	Group task (0 or 1mark)
Remember			
Understand			
Apply	1	1	1
Analyze	1	1	1
Evaluate	1	1	1
Create	1	1	1
Total Cognitive Points	4	4	4

Table 3: Module Cognitive Level Indicator

	MODULE Name/Number				
Outcome	Assessment (0 or1 point)	Individual Task (0 or1 point)	Group task (0 or1 point)	End Module Test (Max. 5 points)	Module cognitive point (Max. 8 points)
Remember					
Understand					
Apply	1	1	1	5	8
Analyse	1	1	1	5	8
Evaluate	1	1	1	5	8
Create	1	1	1	5	8

Table 3: Consolidated   Cognitive Level Indicator

Cognitive Level	Module I (Max. 8 points)	Module II (Max. 8 points)	Module III (Max. 8 points)	Total Cognitive points (Max. 8 points)	Attendance (Max. 4 marks)	Total Marks (Max. 100)
Remember						
Understand					4	100
Apply	8	8	8	24		
Analyse	8	8	8	24		
Evaluate	8	8	8	24		
Create	8	8	8	24		

Grading is done similar other courses based on the Total Mark.

Teacher's Attendance Register of.......... School.............. for.......... 20.......

Serial No.	Designation	NAME	Days Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	In the month Previous from 20	Total	Kind	Duration	Order Sanctioning the Leave	Remarks
01		Adithya	Morning																																						
02		Adarsh S	Evening																																							
03		AJIN K 3131	Morning																																							
04		Akash Shaji Elias	Evening																																							
05		Alvin MATHEW	Morning																																							
06		Amal. Dev	Evening																																							
07		Anagha K	Morning																																							
08		Ananda - F choi	Evening																																							
09		ARJUN ASOKLAL	Morning																																							
10		ASHISH Manu Manu	Evening																																							
11		Aswin Ambady	Morning																																							
12		Ben Biju	Evening																																							
13		Delwin kamarilla Joseph	Morning																																							
14		Eben Abraham Jacob	Evening																																							
15		Gokulakrishnan G	Morning																																							
16		Jeslin P Varghese	Evening																																							
17		John John & Daniel	Morning																																							
18		Jonathan Thomas	Evening																																							
19			Morning																																							
20		N M Amal Ismail	Evening																																							
21		Nidish Nataraian	Morning																																							
22		Nikin yohannan	Evening																																							
23		P R Sivaprasad	Morning																																							
24		Ronin JacobPhilip	Evening																																							

1. No. of working days in the m. with
2. No. of working days till the end of last month from the reopening in.

Place.....................
Date......................

3. Total No. of working days during the educational year 20.......... till the end of this

Head Master/ Head Mistress/ Manager

Teacher's Attendance Register of ....

School .... for .... 20........

Serial No.	Designation	NAME	Day→ Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Casual Leave — In the month	Previous from 20	Total	Particulars of other Leave — Kind	Duration	Order Sanctioning the Leave	Remarks
25		Viga mary Raji	Morning / Evening																																					
26		Sam Sarbi?	Morning / Evening																																					
27		Saqji Sorry	Morning / Evening																																					
28		Sarise Thame!	Morning / Evening																																					
29		Sharon Shajan	Morning / Evening																																					
30		Sivapraya	Morning / Evening																																					
31		Suraj Salas	Morning / Evening																																					
32		Mohankumar	Morning / Evening							Absent																														
33		Vgnesh Vija?	Morning / Evening																																					
34		Yokhaei. M	Morning / Evening																																					

Morning / Evening (repeated column rows below)

1. No. of working days in the month
2. No. of working days till the end of last month from the beginning in ....
3. Total No. of working days during the educational year 20.................... 20........ till the end of this

Place .... Date .... 20........

H. Master / H. Mistress / Manager

[Seal: Dept. of Commerce, C M S College, KOTTAYAM]

Department of Computer Science

Value Added Course on Python Programming

Report

Introduction

'Value Added Course' is a measure of how much improvement students make compared to their peers in other colleges. Value Added Course reflects how much 'value' a department adds to its students, by comparing students' achievement levels before they begin their course to their performance when they finish. This report underlines how the **Value Added Course on Python Programming** empowered the students by adding value.

Python

Value Added Course on Python Programming is chosen because the popularity of the language is soaring and thereby the opportunities in Python programming are amplifying. Therefore the course is framed to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes.

Python is a general-purpose interpreted programming language used for web development, machine learning, and complex data analysis. Python is considered as a perfect language and it is easy to learn and understand. Moreover Python programming is recommended as a tool to learn the art of programming.

Syllabus of the Course

Syllabus of the curse is attached with this report. The syllabus is drafted to fulfill the objectives: i) Design Python Programs for real life problems. ii) Develop Prototypes quickly. iii) Design GUI interface.

Teaching and Learning Strategy

'Outcome-Based Education' (OBE) model is adopted for all teaching and learning sessions. Outcome-based education is a model of education which is in favor of making students demonstrate that they "know and are able to do" whatever the required outcomes are.

The prescribed syllabus is divided into **Three Modules** and each module is divided into different **sub-modules**. We call these sub modules as **Learning Objects (LO)**. Learning objects are small stand-alone 'chunks' of information designed to be easily studied, reused and repackaged to meet the needs. In other words a learning object is defined as "a collection of content items, practice items, and assessment items that are combined based on a single learning objective".

Since the term originates from "object-oriented" programming, BCA students are comfortable with this term Learning Object. *Moreover it is significant to note that, Python is a very good Object Oriented Programming Language.*

The prescribed syllabus is divided into three modules and different sub-modules. The pedagogy of the course is designed in such a way that learner attain the specific cognitive level which is mapped with a particular sub-module. As the course is meant for value addition, only the higher cognitive level namely Apply (Ap). Analyze (An). Evaluate (E) and Create (C) are expected.

Innovative methods

We have adopted the innovative teaching methods which are suitable for learning Python Programming and prototype developing. The methods are Peer Assisted Learning, Problem Based Learning. Team Based Learning, Small Group Discussions. Flipped Classroom Projects, and Computer Assisted Method of Teaching.

Student Groups

The students are divided into Seven Groups in order to manage the group based learning activity and it is found that this type of grouping is very effective. N M AJMAL ISMAIL, EBEN ABRAHAM JACOB, P R SIVAPRASAD, SAVIYO THOMAS. SAM SREEHARI T, JOHITH JOHN S DANIEL, and SHARON SHAJAN were the selected group leaders.

Infrastructure

To make the student feel the impact of value addition, all the classes are arranged in the Computer Software Lab. A computer with internet facility is assigned to each student. The lab is also provided with multimedia projection facility.

Conduct of the Classes

Inauguration

The Value Added Course has started on 2nd December 2019. The course has been inaugurated by Prof. Mathew C. Mathew, HOD of Computer Science in presence of all the Faculty and students. In his speech he emphasized the significance and benefits of Value Addition & Innovative Learning Methods. (*See Appendix Pic1*)

Module I

Appendix Photos

HOD inaugurating the Value Added Course

Sharon Group presenting the outcome of their group discussion

Felicitator responding to the Flip Classroom presentation of Sam Sreehari Group

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