

# Periyar University, Salem

NAAC – A- Grade – State University – NIRF Rank – 83 – ARIIA – Rank – 4

## Department of Computer Science

### Value Added Course

**COURSE: 20CSCVAC01**

**MS-Office (Excel)**

**[Credits: 4]**

#### Course Objectives:

This course should enable the students:

- **Give students an in-depth understanding of how the office tool is essential in business, education and society**
- **To understand the basics and advanced features of Excel spread program**
- **To improve the Data interpretation and analysis skills of the learner**
- **Learner get familiar in working of Statistical functions to analyze the data**

1. Create an excel sheet and perform the following operation

i) Creating and running a macro. ii) Assigning button to a defined macro. iii) Editing a macro.

2. Create a table and apply the various formatting properties and generate the chart for the table

3. Create a table and apply the various mathematical functions..

4. Prepare Excel worksheet with chart for Employee salary with the following information

(i) Name of People with their age (at least 10)

(ii) Number of years they have worked with salary per month

(iii) Show the HRA, MA, TA and Hard allowances

Calculate the total, average, maximum, minimum salary of employees and give the chart for salary

5. Create Excel worksheet for Wedding cost estimation with the following information

(i) Name of guest along with who invited them (Bride / Groom) (at least 10)

(ii) Guests may be divided into adult and children

(iii) Cost of the reception for adult Rs 650, children 60% of adult cost and 183% of GST

Calculate the total number of guests, number of adult and children and total reception cost. Show the graph for adult and children.

6. Prepare Excel table for Balance check book with the following information Ck# (Check book number), date, item description (at least 10 transactions), Debit and Credit

Calculate the balance using the formula  $\text{Balance} = \text{Credit} - \text{Debit}$

7. Prepare Excel worksheet table for Cost-Benefit analysis of stadium for 10 years with the following information

Year, Costs, Benefits, Total benefits, Discount factor, Present Value

Calculate the total benefits ( $\text{Total benefits} = \text{Benefits} - \text{Cost}$ ), discount factor ( $\text{discount factor} = 1/(1+0.1)^{\text{year}}$ ), Present value

( $\text{Present value} = \text{total benefits} * \text{discount factor}$ ).

8. Develop a spread program for the following case scenario

One day at a family dinner, your dad and your uncle got into a debate about which basketball team is better. Your dad is a loyal fan of the State University while your uncle graduated from the University of State, a big rival of the State University. Your great aunt chimed in that the University of Next- State's basketball team is the best.

Compare the performance of the basketball teams and you will bring in your analysis to the next family dinner.

9. Develop a spread program for the following case scenario

National Park Services (NPS) is a federal agency of the United States Government responsible for managing all U.S. National parks, many American national monuments, and many other conservation and historical properties. Information about visitation at units of the NPS is publicly available and may be downloaded at <https://irma.nps.gov/Stats/> You work for a company that specializes in guided tours of national parks across the United States. As an assistant to the Director of Marketing, you were asked to analyze some visit data at selected national parks. Your boss is specifically interested in the number of visitors as well as the trend of recreational visits over the years. The information will be used to develop marketing strategies, promotional packages, as well as advertising campaigns for the next five years.

10. Develop a spread program for the following case scenario

Headquartered in Memphis, TN, Grenadier Super Store (GSS) specializes in office supplies and furniture. The company's customers range from individual consumers and small businesses (retail), to corporate organizations (wholesale) located in the United States and Canada.

You are an intern working for the Canada division of GSS. Your supervisor has given you an Excel file containing Order data from 2009-2012 and he would like you to analyze Orders/Customers/Sales data using PivotTables and Pivot Charts.

## References

1. <https://www.excel-easy.com/data-analysis.html>
2. <https://excelwithbusiness.com/blog/15-excel-data-analysis-functions-need/>
3. <https://www.studyanalytics.in/data> analysis using excel

### Course outcomes:

On the successful completion of the course, students will be able to:

1. Understand the basics of MS-Excel and its functions concepts
2. Gain knowledge to apply the appropriate Excel functions in the real data
3. Understand the functionality of the analysis tool pack to analyze the data
4. Learner get familiar with the analysis functions of statistics

## Employability skills

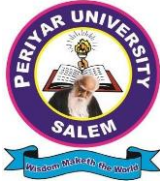
The add on course in MS-Excel helps the learner to understand and identify the usage of MS-Excel in business, education and society using statistical functions. The above learning skill helps the learner to get more employability in the data analysis environment

### Career scope:

- Data Analyst
- Data engineer
- Business analyst
- Business intelligence

🌟 **Course Duration : 30 Hours**

🌟 **No Course Fees**



# Periyar University, Salem

NAAC – A- Grade – State University – NIRF Rank – 83 – ARIIA – Rank – 4

## Department of Computer Science

### Value Added Course

---

COURSE: 20CSCVAC02

## R Programming

[ Credits: 4]

### Course Objective:

This course should enable the students:

- To be able to learn how to program in R and how to use R for effective data analysis.
- Familiar with programming in R, reading data into R, accessing R packages, writing R functions, debugging, profiling R code, and organizing and commenting R code.

### Implement the following concepts using R:

1. R data types-and objects,
2. Reading and writing data
3. Control structures
4. Functions
5. Dates and times
6. Loop functions
7. Vector and Matrix Operations
8. List and Data-Frame Operations
9. Data Import and export Operations
10. Data Exploration and Visualization Operations

### References

1. Larry Pace, "Beginning R: An Introduction to Statistical Programming, Apress, Second Edition, 2015
2. Richard Cotton, "Learning R: A Step-by-Step Function Guide to Data Analysis, O'Reilly, 2013

### Web References:

1. <https://www.w3resource.com/r-programming-exercises/>

## Course Outcomes:

The students should enable to:

1. Gain knowledge to identify appropriate R Programming language constructs to write basic programs for the given problem.
2. Identify and implement the right data representation formats and data structure based on the requirements of the problem.
3. Understand the functionality of R package and to implement the same for the problem solving.

## Employability Skill:

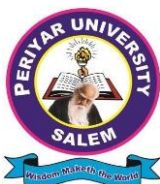
This Add-on course will help learners, especially Statistical, Mathematical & Computer science students improve their employment quotient and job qualifications in the marketplace.

## Career Scope:

- Data Analysts
- R Programmer
- R Researcher in leading research institutions
- Data Scientists

🌟 **Course Duration : 30 Hours**

🌟 **No Course Fees**



# Periyar University, Salem

NAAC – A- Grade – State University – NIRF Rank – 83 – ARIIA – Rank – 4

## Department of Computer Science

### Value Added Course

**COURSE: 20CSCVAC03**

**Bio Python**

**[Credits: 4]**

#### Course Objective:

This course should enable the students:

- To be able to introduce programming basics and design using Python Programming Language
- To understand in-depth biological data and information processing techniques using Bio Python.

#### Implement the following concepts using Python:

1. Basics of Python
2. Advanced Data Structure
3. Control Flow
4. Functions and modules
5. Files
6. Retrieve Sequence from FASTA and Genebank files
7. Split a Sequence File into a set of smaller files.
8. Sequence file formats conversion
9. Manipulations of sequence files
10. Visualization and analyze of Sequence data.

#### References

1. Dusty Philips, “Python 3 Object Oriented Programming”, PACKT Publishing, 2<sup>nd</sup> Edition, 2015.
2. Sebastian Bassi, Python for Bioinformatics, Second Edition, Chapman & Hall and CRC Press, 2009
3. Jeff Chang, Brad Chapman, Iddo Friedberg, Thomas Hamelryck, Michiel de Hoon, Peter Cock, Tiago Antao, Eric Talevich, Bartek Wilczynski, Biopython Tutorial and Cookbook, 2019 (<http://biopython.org/DIST/docs/tutorial/Tutorial.pdf>)

#### Web References:

1. <https://www.w3resource.com/python-exercises/class-exercises/>
2. <https://www.rithmschool.com/courses/python-fundamentals-part-2/python-object-oriented-programming-exercise>

#### Course Outcomes:

The students should enable to:

1. Gain knowledge to identify appropriate Python language constructs to write basic programs for the given problem.
2. Identify and implement the right data representation formats and data structure based on the requirements of the problem.

3. Understand the functionality of Bio Python package and to implement the same for the problem solving.

**Employability Skill:**

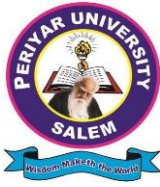
This Add-on course will help learners especially Life-Science students improve their employment quotient and job qualifications in the marketplace.

**Career Scope:**

1. Bioinformatics Analysts
2. Bioinformatics Programmer
3. Bioinformatics Researcher in leading research institutions
4. Data Scientists

 **Course Duration : 30 Hours**

 **Course Fees: Rs. 500/-**



## Periyar University, Salem

NAAC – A- Grade – State University – NIRF Rank – 83 – ARIIA – Rank – 4

### Department of Computer Science

#### Value Added Course

**COURSE: 20CSCVAC04    OBJECT ORIENTED PROGRAMMING USING C++    [Credits: 4]**

#### Course Objectives:

This course enables the students:

- To recognize the object-oriented programming concepts using C++ language
- To create and analyze algorithms for solving real world problems
- To code, document, test, and implement a well-structured, robust application using C++

Implement the following concepts using C++:

1. Class and Object
2. Inheritance
3. Polymorphism
4. Constructor
5. String Operations
6. Decision making and Loop types
7. Function Overloading
8. Pointer
9. File Input /Output
10. Exception Handling

#### Reference:

1. B. Stroutstrup , The C++ Programming Language, Pearson Education, 2000
2. R. Lafore, Object-oriented programming in C++, Pearson Education, 1997
3. S. Oualline, Practical C++ programming, O'Reilly Media, Inc., 2003
4. <https://www.w3resource.com/cpp-exercises/basic/index.php>

#### Course Outcomes:

The students will be able to:

- Understand the fundamental programming concepts and methodologies
- Develop applications for a range of problems using object-oriented programming techniques
- Apply the appropriate programming principles to the design and implementation of GUI- based applications

### **Employability Skill:**

This Add-on course will help the learners to improve their employment quotient and job qualifications in the marketplace.

### **Career Scope:**

- Software Programmer
- Systems Analyst
- Game Developer
- Augmented Reality/ Mixed Reality/ Virtual Reality Developer

🌟 **Course Duration : 30 Hours**

🌟 **No Course Fees**