



# **SATHYABAMA**

**INSTITUTE OF SCIENCE AND TECHNOLOGY  
(DEEMED TO BE UNIVERSITY)**

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## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

|                    |                      |
|--------------------|----------------------|
| <b>Course Name</b> | <b>C PROGRAMMING</b> |
| <b>Course Code</b> | <b>VAC001</b>        |
| <b>Duration</b>    | <b>35 Hours</b>      |



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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
ORGANIZES  
VALUE-ADDED PROGRAM  
ON  
"C PROGRAMMING"  
FROM 24.07.2019 TO 20.09.2018  
PROGRAM COORDINATOR  
Dr. ULAGAMUTHALVI**

### **COURSE OBJECTIVE**

- ☐ To introduce the fundamental concepts of programming to the students and familiarize them with art of writing programs.

### **INTRODUCTION**

Introduction: Algorithms & flowcharts - Overview of C - Features of C - Structure of C program - Compilation & execution of C program - Identifiers, variables, expression, keywords, data types, constants, scope and life of variables, and local and global variables – Operators: arithmetic, logical, relational, conditional and bitwise operators.

### **CONTROLS STRUCTURES AND FUNCTIONS**

Control structures: Conditional statements – Looping statements – Functions: Library Functions - User Defined – Function Prototype - Function Definition – Types of Functions – Functions with and without Arguments- Functions with no return and with Return Values - Nested Functions - Recursion.



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## ARRAYS AND STRINGS

Arrays: Single and Multidimensional Arrays – Array Declaration and Initialization of Arrays – Array as Function Arguments.

Strings: Declaration – Initialization and String Handling Functions.

Structure and Union: Definition and Declaration – Nested Structures – Array of Structures – Structure as Function Argument – Function that Returns Structure – Union.

## STORAGE CLASS AND POINTERS

Pointers: The ' & ' and \* Operators – Pointers Expressions – Arrays Using Pointers – Structures Using Pointers – Functions Using Pointer – Function as Arguments – Command Line Arguments.

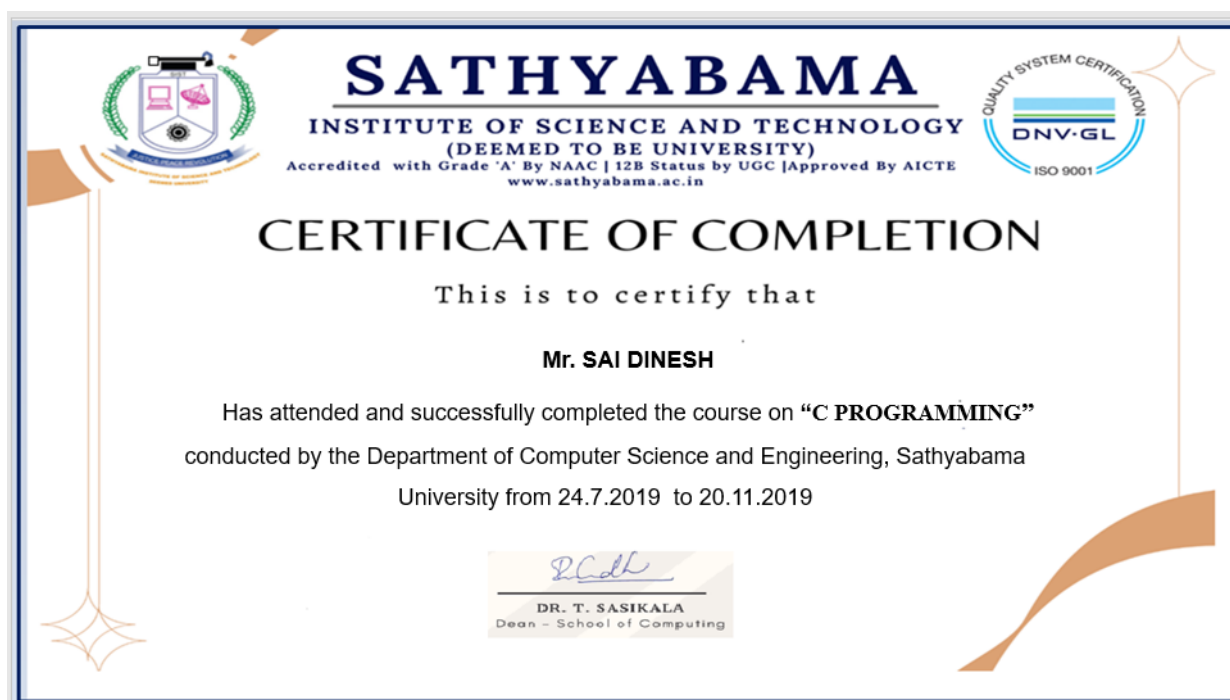
## MEMORY MANAGEMENT

DMA functions: malloc (), calloc(), sizeof(), free() and realloc(). Preprocessor directives.

**Max. 35 Hours**

## TEXT / REFERENCE BOOKS

1. Balaguruswami. E., 'Programming in C', TMH Publications, 1997.
2. Yashavant P. Kanetkar, 'LET US C', Fifth Edition.
3. Gottfried, 'Programming with C', Schaums Outline Series, TMH publications, 1997.
4. Mahapatra, 'Thinking in C', PHI publications, 2<sup>nd</sup> Edition.  
Stevens, 'Graphics programming in C', BPB publication, 2006





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|             |                  |
|-------------|------------------|
| Course Name | SOFTWARE TESTING |
| Course Code | VAL1001          |
| Duration    | 35 Hours         |



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
ORGANIZES  
VALUE-ADDED PROGRAM  
ON

"SOFTWARE TESTING"

FROM 24.07.2019 TO 20.09.2018

PROGRAM COORDINATOR

Dr. ALBERT MAYAN

#### **COURSE OBJECTIVES:**

- To study fundamental concepts in software testing.
- To discuss various software testing issues and solutions in software unit test, integration and system testing.
- To expose the advanced software testing topics, such as object-oriented software testing methods.
- Finding defects which may get created by the programmer while developing the software.

#### **COURSE OUTCOMES:**

At the end of this course student will:

- List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects.
- Distinguish characteristics of structural testing methods.
- Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible.
- Discuss about the functional and system testing methods.
- Demonstrate various issues for object-oriented testing.



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Introduction: Software testing – Role of software testing – Three step process to becoming a world class testing organization - A structural approach to testing – Test strategy – methods for developing test strategy







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## **COURSE CONTENT:**

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### **WEEK 1: (3 Hours)**

HTML 5 - Getting Started, Client-Side Scripting, Server-Side Scripting, Tools for Web Application Development, HTML Tags, Labels, Input, Dropdowns and Radio Buttons, Lists, Div and Span, Attributes, Tables, Buttons, Forms.

### **WEEK 2: (3 Hours)**

CSS 4 – Basics, Inline CSS, Internal CSS, External CSS, Selectors, Colours, Fonts, Alignment, Cascading, Animation.

### **WEEK 3: (3 Hours)**

Bootstrap 4.5 - Colors and Backgrounds, Input Controls, Spacings, Tables, Forms, Layout.

### **WEEK 4: (3 Hours)**

JavaScript – Variables, Operators, Conditional Statements and Loops, Arrays, Functions, Objects: Math, Date, Numbers, String.

### **WEEK 5: (3 Hours)**

jQuery – Selectors, Attr and Val, Text and Html, Events, Effects, Controls.

### **WEEK 6: (3 Hours)**

PHP – Basics, Variables, Operators, Conditional Statements, Arrays, Functions.

### **WEEK 7 & 8: (6 Hours)**

PHP – Sessions, Cookies, Classes, Forms, Validation, Filters, File Handling.

### **WEEK 9 & 10: (6 Hours)**

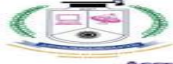
MySQL – Database, Tables, Queries, Procedures, Building a web application.



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SCHOOL OF COMPUTING

### CERTIFICATE OF COMPLETION

This is to certify that Mr./Ms. **ABIRAMI M (3714002)** of **Department of Electrical and Electronics** has successfully completed the Value Added Course (30 hours) on **WEB DEVELOPMENT** and has secured **85%** in theory and practical examination conducted during June 2020 - December 2020. We wish you all the best towards a bright future.

**Dr. T. Sasikala**  
Dean,  
School of Computing





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| Course Name | ARTIFICIAL INTELLIGENCE<br>FOR BEGINNERS |
| Course Code | VAL1002                                  |
| Duration    | 35 Hours                                 |



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
ORGANIZES  
VALUE-ADDED PROGRAM  
ON

"ARTIFICIAL INTELLIGENCE FOR BEGINNERS"

FROM 24.11.2020 TO 28.12.2020

PROGRAM COORDINATOR

Ms. Yogitha



### COURSE OBJECTIVES:

- To cite the difference between various sub domains of Artificial Intelligence.
- To relate Propositional Logic techniques to real world problem statements.
- To classify and correlate data using various Machine Learning techniques.
- To design statistical models for speech and text analysis.
- To summarize the working of Neural Network architectures.

### COURSE OUTCOMES:

Upon successful completion of this course students should be able to:

- Classify the data from given dataset using Support Vector Machine and Logistic Regression.
- Cluster the input dataset using k-means clustering algorithm.
- Construct basic model to convert speech data into text using Speech Recognition techniques.



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- Perform Text analysis and Sentimental analysis on any given input dataset.
- Design a working model of artificial neural network on a basic level.

## COURSE CONTENT:

### WEEK 1:

(3 Hours)

#### Introduction to Artificial Intelligence:

**AI: Building machines through human eyes**, Definition, Terminologies, Types:

Artificial Narrow Intelligence – Artificial General Intelligence – Artificial Super Intelligence. (h1)

**Branches of AI:** Symbolic Learning, Machine Learning, Statistical Learning, Deep Learning, Problem Types: Classification and Prediction, Types of Learning: Supervised, Unsupervised and Reinforcement Learning. (h2)

**Case Study:** Interactive discussion on impact of Artificial Intelligence in building a user- friendly environment. (h3)

### WEEK 2:

(3 Hours)

#### Symbolic Learning:

**Symbolic AI:** Good Old-Fashioned AI, Symbol, Relation between symbols,

Logic, Knowledge Base, Significance, Real time application based on Symbolic AI (h1)

**Symbolic Logic:** Categorical vs Modern Logic, Propositional Logic, Types of operators, Well Formed Formulas, Constructing Truth Tables for various types of statements. (h2)

**Case Study:** Discussion on insightful representation of Propositional Logic for real time applications. (h3)

### WEEK 3:

(3 Hours)

#### Machine Learning Part 1

**ML: Learn-Predict-Improve** Definition, Need, Types ML Algorithms: Linear Regression, Decision Trees and Support Vector Machine. (h1)

**Case Study:** Discussion and Hands on Classification problem using Support Vector Machine



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## WEEK 4: Machine Learning Part 2

**Clustering and Logistic Regression:** k-means clustering algorithm – steps involved to construct clusters, Logistic Regression: Definition, Logistic Regression curve and Sigmoid function. (h1)

**Case Study:** Discussion and Hands on Clustering problem using k-means clustering (clustering car based on its brand) and Classification problem using Logistic Regression (Classifying cancer tumours)

## WEEK 5: Statistical Learning Part 1

**Speech Recognition:** Introduction to chatbots, History of Speech Recognition through decades, Signal Processing, Feature extraction techniques from Audio signal, Speech to Text Conversion.

**Case Study:** Discussion and hands on implementation of basic speech to text model in python.

## WEEK 6: (3 Hours)

### Statistical Learning Part 2

**Natural Language Processing (NLP):** Definition, History, Components of NLP, Applications: from search engines to voice assistants, Examples, Working technique.

**Case Study:** Discussion and hands on implementation of text analysis and sentimental analysis using Natural Language Processing toolkit.

## WEEK 7 and 8: (6 Hours)

### Deep Learning Part 1

**Neural Networks:** Introduction, Biological insight, Working, Types of Neural Nets, Layers, Architecture, Back propagation algorithm, Activation functions, Performance Metrics, Applications.

**Case Study:** Discussion and hands on implementation of a simple neural network. (h5 & h6).

## WEEK 9 and 10: (6 Hours)

### Deep Learning Part 2

**Working with Convolutions:** Magic behind face recognition, Convolution operation, Basics of CNN, Parameters, Convolution layer, Max Pooling layer, fully connected layer, Types, Performance Metrics, Applications.



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**Case Study:** Discussion and hands on implementation of a simple convolutional neural network.

**VAL1002 - Artificial Intelligence for Beginners**

Dashboard / My courses / AI for Beginners

**General**

**COURSE OBJECTIVES:**

- To cite the difference between various sub domains of Artificial Intelligence.
- To relate Propositional Logic techniques to real world problem statements.
- To classify and correlate data using various Machine Learning techniques.
- To design statistical models for speech and text analysis.
- To summarize the working of Neural Network architectures.

**COURSE OUTCOMES:**

- Classify the data from given dataset using Support Vector Machine and Logistic Regression.
- Cluster the input dataset using k-means clustering algorithm.
- Construct basic model to convert speech data into text using Speech Recognition techniques.

**Announcements**

- Time Table ☒
- Syllabus ☒
- VAL1002 - AI for Beginners - Final Exam (Theory) - Upload Link ☒  
**Hidden from students**  
[Click the above link to get the question paper.](#)  
You must attend: 3 ten mark questions and 4 five mark questions.  
All the best.
- VAL1002 - AI for Beginners - Final Exam (Practical) - Question Link ☒  
**Hidden from students**  
[Click the above link to get the question.](#)  
Note down the question alone and then do the corresponding question in google colab/jupyter notebook and take the screenshot of the same to attach it in the answer sheet.  
All the best.
- VAL1002 - AI for Beginners - Final Exam (Practical) - Upload Link ☒  
**Hidden from students**  
[Click the above link to get the question.](#)



← → ↻ sathyabama.cognibot.in/course/view.php?id=986

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☆ Reading list

Yogitha R

**AI for Beginners**

- Participants
- Badges
- Competencies
- Grades
- General
- Week 1 - Introduction
- Week 2 - Symbolic Learning
- Week 3 - Machine Learning Part 1
- Week 4 - Machine Learning Part 2
- Week 5 - Statistical Learning Part 1

### Week 3 - Machine Learning Part 1

**ML: Learn-Predict-Improve** Definition, Need, Types ML Algorithms: Linear Regression, Decision Trees and Support Vector Machine.  
(h1)

**Case Study:** Discussion and Hands on Classification problem using Support Vector Machine (h2 & h3)

**Week 3 - Zoom link (h1)** ☒

Click on the link to access the week 2 h3 class recording.  
Video starts at 38:00. Skip first few minutes.  
Passcode: jnHax9J

**Week 3 - Linear Regression Python Code Drive Link** ☒

**Week 3 - Linear Regression Dataset** ☒

**Week 3 - Zoom Link (h2)** ☒

Click on the link to access the week 3 hour 2 class recording.  
Video starts at 18:00. Skip first few minutes.  
Passcode: s\*Si6pHM

**Week 3 - Decision Tree Python Code Drive Link** ☒

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☆ Reading list

Yogitha R

**AI for Beginners**

- Participants
- Badges
- Competencies
- Grades
- General
- Week 1 - Introduction
- Week 2 - Symbolic Learning
- Week 3 - Machine Learning Part 1
- Week 4 - Machine Learning Part 2
- Week 5 - Statistical Learning Part 1

Click on the link to access the week 3 hour 2 class recording.  
Video starts at 11:00. Skip first few minutes.  
Passcode: 6955W\*aI

**Week 3 - Support Vector Machine Python Code Drive Link** ☒

**Week 3 - Machine Learning Part 1 (LR, DT, SVM) PPT** ☒

**Week 3 - Assignment on Linear Regression and Decision Tree** ☒

You'll have to upload two screenshots.

**Screenshot1:**

1. Download any .csv (excel) dataset from google.
2. Use machine learning toolkit and apply linear regression on the corresponding data.
3. Take a screenshot of the output (screenshot must contain both code and output) and upload the image file (only one image file which has the output).

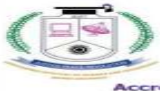
**Note: The dataset which you download should have only two attributes (two columns).**

**Screenshot2:**

1. Take the code from drive link.
2. With reference to the code, apply ML function to implement decision tree to the given data in the code (You can use the same data given in the code).
3. Take a screenshot of the output (screenshot must contain both code and output) and upload the image file (only one image file which has the output).

**Note: Upload two images only, kindly do not upload the whole code.**

## Certificate

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**CERTIFICATE OF COMPLETION**

This is to certify that **Mr. Samanthapudi** of **Department of Computer Science and Engineering** has successfully completed the Value Added Course (30 hours) on **Artificial Intelligence for Beginners** and has secured 90% in theory and practical examination conducted during June 2020 - December 2020. We wish you all the best towards abright future.



**Dr. T. Sasikala**  
Dean,  
School of Computing

VALUE ADDED COURSE



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|             |                    |
|-------------|--------------------|
| Course Name | PYTHON PROGRAMMING |
| Course Code | VAL1003            |
| Duration    | 35 Hours           |



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
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ON



### "PYTHON PROGRAMMING"

FROM 24.11.2020 TO 28.12.2020

PROGRAM COORDINATOR  
DR.ASHA

#### COURSE OBJECTIVES:

- To learn the basic concepts of Python and be familiar with python coding structures such as operators, loops and data types.
- To implement python functions, regular expressions and be competent enough to handle exceptions and file operations.
- To learn python GUI libraries, layout manager and work with various GUI widgets
- To build database applications using python.
- To create an entire Python project.

#### COURSE OUTCOMES:

**Upon successful completion of this course students should be able to:**

- Demonstrate programs using Python operators, loops and data types.
- Construct Functions, regular expressions to build programs for file handling, exception handling.



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Develop Python GUI Applications.

- Deploy Python Database Applications.
- Create Mini Project using Python.

## **COURSE CONTENT:**

### **WEEK 1: (3 Hours)**

Introduction - Overview - Installation - Basic Syntax – Input & Output - Operators.

### **WEEK 2: (3 Hours)**

Decision Making - Loops – Exit – Break – Continue – Pass- Data types - String, List, Sets, Tuple, Dictionary.

### **WEEK 3: (3 Hours)**

Functions- Default Arguments- Recursion- Modules

### **WEEK 4: (3 Hours)**

Packages -Arrays – Iterators- Regular Expressions.

### **WEEK 5: (3 Hours)**

Python Classes - Class Variables and Methods - Creating and managing objects- Constructors and Destructors – Inheritance – Types.

### **WEEK 6: (3 Hours)**

File Handling – Modes- Read & Write - Exception Handling – Try Except- Built-in & User-defined Exceptions.

### **WEEK 7: (3 Hours)**

GUI Programming - Tkinter - Widgets - Layout Management - Events and Bindings.

### **WEEK 8: (3 Hours)**

Numpy- Operations on Arrays – Slicing- Split- Reshaping – Broadcasting – Filter.

### **WEEK 9: (3 Hours)**

Matplotlib - Machine Learning –Five number Summary – Data Distribution - Preprocessing



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**WEEK 10:**

**(3 Hours)**

Linear Regression- Database Programming - Connection - Create Database -  
Querying.



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This is to certify that Mr./Ms. **Gopi Venkata Sudheer** of **Department of Computer Science and Engineering** has successfully completed the Value Added Course (30 hours) on **Python Programming** and has secured **97%** in theory and practical examination conducted during June 2020 - December 2020. We wish you all the best towards abright future.

**Dr. T. Sasikala**  
Dean,  
School of Computing





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| Course Name | MOBILE APPLICATION DEVELOPMENT |
| Course Code | VAL1004                        |
| Duration    | 35 Hours                       |



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
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### **“MOBILE APPLICATION DEVELOPMENT”**

FROM 24.11.2020 TO 28.12.2020

PROGRAM COORDINATOR  
**Ms. Aishwarya**



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|          |                                |         |
|----------|--------------------------------|---------|
| VAL 1004 | MOBILE APPLICATION DEVELOPMENT | Course  |
|          |                                | 8 Weeks |

### COURSE OBJECTIVES:

- Students can create a LIVE course with in-depth knowledge and practical experience in the field of Mobile Application Development.
- As Mobile App Developers have huge requirement in large and small business areas, by learning it students can support many widely used applications for commercial and business purpose.

### COURSE OUTCOMES:

Upon successful completion of this course students should be able to:

- Learn and understand the technology and business trends impacting mobile applications.
- Understand the components of Android.
- Design and develop user Interfaces for the Android platform.
- Exploring mobile application using Flutter platform.
- Deploy mobile applications using MIT app.

### COURSE CONTENT:

WEEK 1: (3 Hours)

Introduction to Android Studio - Installation of Android Studio, Learn XML for user Interface, developing our first app.

WEEK 2: (3 Hours)



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**Android Application Development-** Deploying our App to a phone, Android application Development Environment, User Interface Components -View and layouts.Real time applications of layout

**WEEK 3:** (3 Hours)

**Hands on Basics of App Development (PART 1)**–Hello world app, creating virtual device, running app on emulator, Exploring Android manifest and gradle file, running app on device.

**WEEK 4:** (3 Hours)

**Hands on Basics of App Development (PART 2)**–Hello toast project, adding and editing views in layout editor, adding buttons, creating and changing layout variants, working with textview elements

**WEEK 5:** (3 Hours)

**Exploring Flutter Framework** – Introduction, Setting up environment – Building first flutter app – Flutter Reactive framework and development tools – Wonder thing about widgets - Cut up hello rectangle application – Building own widgets and Layout.

**WEEK 6:** (3 Hours)

**MIT App Inventor** – Introduction and create magic app – Buttons – Bill generator app – Data Picker – Gallery app without coding – List picker and create mini wiki app – Simple app using notifier – Web viewer Component.

**WEEK 7 & 8:** (3 Hours)

**Hands on Interactive App Development (PART 1)** – Beautifying the interface of a food delivery application, Calculator application to compute bills at restaurant along with cost, quantity, service charge and tax, Create voice translator app using MIT app.

**WEEK 9 & 10:** (3 Hours)

**Hands on Interactive App Development (PART 2)** - Interactive registration application that gets data from the user, Android application to send mail without email/gmail interaction, Age Calculator app using MIT app.



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This is to certify that Mr. **Balamurugan** of **Department of Information Technology** has successfully completed the Value Added Course (30 hours) on **Mobile Application and Development** and has secured 100% in theory and practical examination conducted during June 2020 - December 2020. We wish you all the best towards a bright future.

**Dr. T. Sasikala**  
Dean,  
School of Computing

