



# R. J. COLLEGE of Arts, Science & Commerce (AUTONOMOUS)

(Hindi Vidya Prachar Samiti's RAMNIRANJAN JHUNJHUNWALA COLLEGE of Arts, Science & Commerce)

Opposite Ghatkopar Railway Station, Ghatkopar (West), Mumbai 400086, Maharashtra, INDIA.

Website: www.rjcollege.edu.in Email: rjcollege@rjcollege.edu.in Tel No: +91 22 25151763 Fax No: +91 22 25150957

College is recognized under Section 2(f) & 12(B) of the UGC Act, 1956

Affiliated to UNIVERSITY OF MUMBAI II NAAC Re-Accredited 'A' Grade (CGPA: 3.50)

## Value Added Course Department of Computer Science 2020-2021

Included Courses: R Programming, IOT & Arduino, Robotics, Computer Graphics

Course Code: RJSUGCS03

Year of offering: 2020

No. of times offered during the same year: 01

Duration of course : Monday, June 22<sup>nd</sup> 2020 – Friday, July 24<sup>th</sup> 2020

Time : 11:00 A.M. to 1:00 P.M.

Resource Person : Nilam Shelar, Mala Mishra, Saba Shaikh, Pooja Kushwaha.

Students Participated: TYBSC and SYBSC.

Number of students enrolled in the year: 226

Number of Students completing the course in the year: 38

Number of Teachers Involved: 04 (Nilam Shelar, Mala Mishra, Saba Shaikh, Pooja Kushwaha)

### Report

The Department of Computer Science has organized a Value Added Course for TYCS and SYCS Students on "R Programming, IOT & Arduino, Robotics, Computer Graphics". The Students were Guided about the different modules available in R Programming, IOT & Arduino, Robotics, Computer Graphics and what are the future scope available in it.

The Duration of value added course is 35 hours out of which 32 online sessions are conducted and 3 sessions assigned for evaluation purposes.

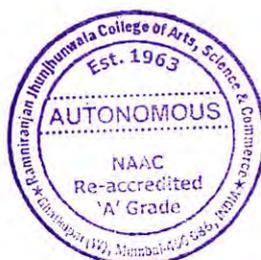
Total 226 Students Participated in the course out of which 38 students are eligible for the certificate.

### Objectives:

The Value Added Courses aim to provide additional learner centric graded skill oriented technical training, with the primary objective of improving the employability skills of students. The main objectives of the program are:

- 1) The objective of the R Programming module is to make students exercise the fundamentals of

  
In-Charge



  
Principal  
I/C PRINCIPAL  
RAMNIRANJAN JHUNJHUNWALA COLLEGE  
OF ARTS, SCIENCE & COMMERCE (AUTONOMOUS)  
Ghatkopar (W), Mumbai-400 086, Maharashtra, INDIA

2019: Star College Status by DBT

2008: Best College by University of Mumbai 2010: IMC RBNQ Award 'Performance Excellence' for the year 2009

2011: 'Best Teacher Award' by Government of Maharashtra 2013: DST-FIST 2014: DBT STAR College

2013 & 2014: 'Jagar Jaanivancha Award' by Govt. of Maharashtra 2016: ISO 14001:2015 2016: ISO 9001:2015 2017: ISO 27001:2013

2018: Autonomous Status by University Grants Commission (No. F. 22-1/2018(AC) - 28.05.2018) & by University of Mumbai (No.Aff./ICD/18-19/440 - 08.06.2018)



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statistical analysis in the R environment.

- 2) The objective of Arduino To provide knowledge of different Smart System applications and to familiarize students with Arduino as IDE, programming language & platform.
- 3) The objective of Robotics understanding of how to program robots and computers that control manufacturing automation.
- 4) The objective of Computer Graphics includes the basic concepts of computer graphics and It provides the necessary theoretical background and demonstrates the application of computer science to graphics.



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Opposite Ghatkopar Railway Station, Ghatkopar (W), Mumbai 4000 086.

DEPARTMENT OF COMPUTER SCIENCE

Organizes

VALUE ADDED COURSE

(Basics of R Programming, Arduino, Robotics & Computer Graphics)

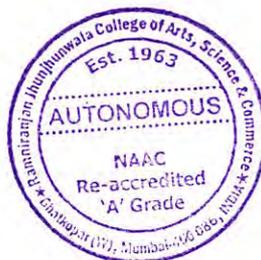


From Monday, June 22<sup>nd</sup> 2020  
- To Friday, July 24<sup>th</sup> 2020

Certificate:



  
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## Syllabus:

<b>Course:</b> <b>III</b>	<b>Emerging Technologies In Computer Science</b> <b>Course Code: RJSUGCS03</b>
<b>Objective:</b> To understand the different Programming Languages.  <b>Expected Learning Outcomes:</b> 1) To learn about R Programming and how to use R for effective data analysis. 2) To understand the basics of Arduino board and its components. 3) To understand the basics Robotics with AI and its components. 4) Interpret the mathematical foundation of the concepts of computer graphics describe the fundamentals of animations.	
<b>Unit-I</b>	<b>R Programming</b> Introduction to R, R Installation, RStudio IDE, R advantages and disadvantages, R Packages, List of R Packages, R Basic Syntax, R Data type, variable in R programming, R Keywords.
<b>Unit-II</b>	<b>IOT and Arduino</b> IoT and Basics of Arduino, Arduino Board, Installation of IDE and Power Supply, Arduino programming, Input output Devices, Interfacing IO modules
<b>Unit-III</b>	<b>Robotics</b> What is a Robot?, Types of Robot Control, What is Robotics?, Difference in Robot System and Other AI Program, Applications of Robotics, Robot Components, Robot Locomotion, Effectors and Actuators, Degree of freedom Locomotion, Manipulation, Sensors.
<b>Unit-IV</b>	<b>Computer Graphics</b> Overview of Computer Graphics, Computer graphics Applications and Software Description of some Graphics devices, Input Devices for operator, Interaction, Active and Passive Graphics Devices, Display Technologies, Cathode Ray Tube Basics, Colour CRT Raster Scan Basics, Raster and random scan display. Scan conversion-Digital Differential Analyzer(DDA) algorithm, Bradenham's Line drawing algorithm, Midpoint Circle drawing algorithm

  
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## Time Table:

Value Added Course Time Table		
Date	Time	Subject
22/06/2020	11 to 12 12 to 1	R Programming Arduio
24/06/2020	11 to 12 12 to 1	Robotics Computer Graphics
25/06/2020	11 to 12 12 to 1	R Programming Arduio
26/06/2020	11 to 12 12 to 1	Robotics Computer Graphics
30/06/2020	11 to 12 12 to 1	R Programming Arduio
1/7/2020	11 to 12 12 to 1	Robotics Computer Graphics
2/7/2020	11 to 12 12 to 1	R Programming Arduio
3/7/2020	11 to 12 12 to 1	Robotics Computer Graphics
7/7/2020	11 to 12 12 to 1	R Programming Arduio
8/7/2020	11 to 12 12 to 1	Robotics Computer Graphics
9/7/2020	11 to 12 12 to 1	R Programming Arduio
10/7/2020	11 to 12 12 to 1	Robotics Computer Graphics
14/07/2020	11 to 12 12 to 1	R Programming Arduio
15/07/2020	11 to 12 12 to 1	Robotics Computer Graphics
16/07/2020	11 to 12 12 to 1	R Programming Arduio
17/07/2020	11 to 12 12 to 1	Robotics Computer Graphics
22/07/2021	11 to 12	Assingment
23/07/2021	11 to 12	Assingment
24/07/2021	11 to 12	Quiz & Final Test

  
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AY 2020 Onwards

**Hindi Vidya Prachar Samiti's**  
**RAMNIRANJAN JHUNJHUNWALA COLLEGE (AUTONOMOUS)**  
(Also known as R. J. College of Arts, Science & Commerce as per UGC Notification)

Affiliated to UNIVERSITY OF MUMBAI II Recognized by UGC under 2f & 12B  
NAAC Accredited 'A GRADE' with CGPA 3.50

**Knowledge is all Ambrosia**

**CERTIFICATE  
COURSE IN**

**EMERGING  
TECHNOLOGIES  
IN COMPUTER  
SCIENCE**

A



T



S



M



C

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# ABOUT US

Hindi Vidya Prachar Samiti was incepted on the auspicious day of Shri Krishna Janmashtami, 15th August 1938. A brain child of a visionary Late Shri Nandkishore Singh Jairamji, samiti was established with the objectives of catering to the educational needs of the Hindi speaking community. Ramniranjan Jhunjhunwala College came into existence in 1963, enabling a larger section of the society to take advantage of the facilities provided for higher education.

From 1999-2000 the College has added a number of self-financing courses like B.M.S., B.B.I., B.Sc. in Computer Science, Information Technology, Biotechnology, M.Sc. in Computer Science, Biotechnology and Information Technology as well as add on courses, which further hone the special skills of the students.

The college has been reaccredited with 'A' Grade by NAAC in 2014 with a CGPA 3.50 and received the Best College Award (2007-2008) of the University of Mumbai. The College has been bestowed with IMC "Ramkrishna Bajaj Performance Excellence Trophy", 2010.

The Principal of the college was awarded "Best Teacher" by Government of Maharashtra in 2011.

Government of Maharashtra conferred the college with "JAAGAR JAANIVANCHA" (First in Mumbai Suburban- in 2013 and Second in Mumbai Suburban- in 2014) for safety of girls.

**C**ourse Code: **RJCSC03**

**D**uration: **30** hours

**C**redits : **02**

# COURSE OUTCOME

- To learn about R Programming and how to use R for effective data analysis.
- To understand the basics of arduino board and its components.
- To understand the basics Robotics with AI and its components.
- Interpret the mathematical foundation of the concepts of computer graphics describe the fundamentals of animations.





# COURSE OBJECTIVE

To understand the different Programming Languages.

COURSE CONTENT

Unit I	R Programming: Introduction to R, R Installation, RStudio IDE, Radvantage and disadvantage, R Packages, List of R Packages, R Basic Syntax, R Data type, variable in R programming, R Keywords.
Unit II	IOT and Arduino: Iot and Basics of Arduino, Arduino Board , Installation of IDE and Power Supply, Arduino programming, Input output Devices, Interfacing IO modules
Unit III	Robotics: What is a Robot?, Types of Robot Control, What is Robotics?, Difference in Robot System and Other AI Program, Applications of Robotics, Robot Components, Robot Locomotion, Effectors and Actuators, Degree of freedom Locomotion, Manipulation, Sensors.
Unit IV	Computer Graphics: Overview of Computer Graphics, Computer graphics Applications and Software Description of some Graphics devices, Input Devices for operator, Interaction, Active and Passive Graphics Devices, Display Technologies, Cathode Ray Tube Basics, Colour CRT Raster Scan Basics, Raster and random scan display. Scan conversion-Digital Differential Analyzer(DDA) algorithm, Bradenham's Line drawing algorithm, Midpoint Circle drawing algorithm

English

## MEDIUM OF INSTRUCTION

## EVALUATION

Continuous evaluation theory and practical's (Virtual)



PASSING 40

100 MARKS

## WHO SHOULD DO IT?

For SY/TY BSC Computer Science students



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## *Certificate of Completion*

This is to certify that

*Dayame Arithik Surendra Rajshree*

of Class TYBSC - CS Roll No. 4

has successfully completed the Value-Added Course in

"Emerging Programming Languages - R Introduction, IOT & Arduino, Robotics, Computer Graphics"

organized by Department of COMPUTER SCIENCE and conducted from 10 June, 2020 to 30 June, 2020.

**COURSE CODE**  
**RJCSC03**

Issue Date: 13 July, 2021



Dr. Himanshu Dawda  
In-charge Principal

CERTIFICATE ID: RJC-VAC-202021-00952

**STUDENT COMPLETED Emerging  
Technologies in Computer Science  
YEAR 20-21**

SR NO	NAME	ROLL NO	CLASS
1	Dheeraj Tiwari	73	TYCS
2	Diptirani Panda	42	TYCS
3	Pradnya Bhausaheb Gund	23	SYCS
5	Satyam singh	76	SYCS
6	Abhilasha tiwari	90	SYCS
7	Supriya tiwari	115	SYCS
8	Gaurangi Puradkar	64	SYCS
8	Ajaz Khan	22	TYCS
9	Vishal Shrivastav	64	TYCS
10	INAMDAR SIMRAN ALLABAKAS	16	TYCS
11	Manjyot Kaur Lidher	45	SYCS
12	Mrinmayee Shinde	72	SYCS
13	AFTAB	31	SYCS
14	Siddhesh Mane	46	SYCS
15	Rupesh Hule	15	TYCS
16	Harshad Sonawane	83	SYCS
17	Vishnu Nair	39	TYCS
18	Ganesh R Behera	5	SYCS
19	Mitesh Konkar	96	TYCS
20	SINGH BHAVESH JITENDRA	98	TYCS
21	Raunak agrahari	2	SYCS
22	Khan faizan Ahmed Waliullah	43	SYCS
23	Abhishek Kate	41	SYCS
24	Shubhamkar Bhattacharya	7	SYCS
25	Anjali tiwari	88	SYCS
26	Walke Yash Rajiv Dhanashri	79	TYCS
27	Prathamesh sawant	110	SYCS
28	Jayesh Shivaji Phadale	60	SYCS
29	Akanksha chaubey	8	SYCS
30	sagar thakur	85	SYCS
31	Shubham pathak	46	TYCS
32	YASH CHAVAM	10	SYCS
33	Sanjeev Tiwari	120	SYCS
34	HRITHIK SURENDRA DAYAME	97	TYCS
35	Vineet Singh	65	TYCS
36	Manish mohan	94	SYCS
37	SnehaPrajapati	48	TYCS
38	Varun Baburam Yadav	82	TYCS



  
**PRINCIPAL**  
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