K.S.Rangasamy College of Arts and Science (Autonomous)

Tiruchengode – 637 215

Department of Computer Applications

List of New Courses introduced

- Problem Solving Techniques
- Office Package
- Designing Tools
- Web Designing
- Web Designing using HTML, CSS and Java Script
- Add-on Course I& II
- Linux Programming
- Web Application Development
- Web Service using Python
- Big Data Analytics
- Mobile Technology
- Internet of Things
- R Programming
- Mobile Application Development

Encl.:

1. Copy of Scheme of Examination
2. Syllabus copy of new courses
3. Mapping of New courses along with outcomes

HoD – Computer Applications

Dr. T. S. VENKATESWARAN,
M.Sc.,M.Phil.,M.B.A.,M.Phil.,Ph.D.,
Head, Department of BCA,
K. S. Rangasamy College of Arts and
Science (Autonomous)
Tiruchengode -.637 215.

CoE

Mr. M. PRASAD, M.Sc, MBA,
Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
Tiruchengode - 637 215. Tamilnadu. India.

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SCHEME OF EXAMINATION

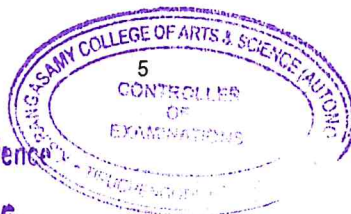| Course Code	Course	Hrs. of Instruction	Exam Duration (Hrs.)	Max Marks			Credits
				CA	CE	Total	
First Semester							
Part I							
18UTALB101/ 18UHILB101/ 18UFRLB101	Tamil-I/ Hindi-I/ French-I	5	3	25	75	100	3
Part II							
18UENLB101	General English I	5	3	25	75	100	3
Part III							
18UCAM101	Core I : Problem Solving Techniques	4	3	25	75	100	4
18UCAM102	Core II: Programming in C	4	3	25	75	100	4
18UMACAA101	Allied I: Mathematics for Computer Applications	4	3	25	75	100	4
18UCAMP101	Core Practical I: Office Package	3	3	40	60	100	2
18UCAMP102	Core Practical II: Programming in C	3	3	40	60	100	2
Part IV							
18UVE101	Value Education I: Yoga	2	3	25	75	100	2
		30				800	24
Second Semester							
Part I							
18UTALB201/ 18UHILB201/ 18UFRLB201	Tamil-II/ Hindi-II/ French-II	5	3	25	75	100	3
Part II							
18UENLB201	General English II	5	3	25	75	100	3
Part III							
18UCAM201	Core III: Object Oriented Programming with C++	4	3	25	75	100	4
18UCAM202	Core IV: Computer Organization and Architecture	4	3	25	75	100	4
18UMACAA201	Allied II: Scientific Computing Methods	4	3	25	75	100	4

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Controller of Examinations
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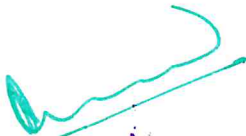Tiruchengode - 637 215, Tamilnadu, India.

18UCAMP201	Core Practical III: Scientific Computing using C++	3	3	40	60	100	2
18UCAMP202	Core Practical IV: Designing Tools	3	3	40	60	100	2
Part IV							
18UVE201	Value Education II: Environmental Studies	2	3	25	75	100	2
		30				800	24

Third Semester

Part III							
18UCAM301	Core V: Programming in Java	4	3	25	75	100	4
18UCAM302	Core VI: Data Structures	5	3	25	75	100	4
18UCAM303	Core VII: Web Designing	4	3	25	75	100	4
18UCCCAA301	Allied III: Principles of Accountancy	4	3	25	75	100	4
18UCAMP301	Core Practical V: Programming in Java	3	3	40	60	100	2
18UCCCAAP301	Allied Practical I: Accounting Package	3	3	40	60	100	2
Part IV							
18UCASBP301	SBC Practical I: Web Designing Using HTML , CSS	2	3	40	60	100	2
18UCSNM301	NMEC I	2	3	25	75	100	2
Non Credit							
18ULS301	Career Competency Skills I	1	-	-	-	-	-
18UCAAC301 / 18UCAAC302	Add-on Course I	2	3	-	100	100	-
		30				900	24

Fourth Semester

Part III							
18UCAM401	Core VIII: Relational Database Management System	4	3	25	75	100	4
18UCAM402	Core IX: Operating System Concepts	5	3	25	75	100	4

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18UCAEL401/ 18UCAEL402/ 18UCAEL403	Elective I	4	3	25	75	100	3
18UCCCAA401	Allied IV: Cost and Management Accounting	4	3	25	75	100	4
18UCAMP401	Core Practical VI: RDBMS Package	3	3	40	60	100	2
18UCAMP402	Core Practical VII: Linux Programming	3	3	40	60	100	2
Part IV							
18UCASBP401	SBC Practical II: Data Structure using C	2	3	40	60	100	2
18UCSNM401	NMEC II	2	3	25	75	100	2
Non Credit							
18ULS401	Career Competency Skills II	1	-	-	-	-	-
18UCAAC401 / 18UCAAC402	Add-on Course II	2	3	-	100	100	-
		30				900	23

Fifth Semester

Part III							
18UCAM501	Core X: Web Application Development	5	3	25	75	100	4
18UCAM502	Core XI: Computer Networks	5	3	25	75	100	4
18UCAM503	Core XII: Cloud Computing	5	3	25	75	100	4
18UCAEL501/ 18UCAEL502/ 18UCAEL503/	Elective II	4	3	25	75	100	3
18UCAMP501	Core Practical VIII: Web Application Development	3	3	40	60	100	2
18UCAMP502	Core Practical IX: Computer Networks Lab	3	3	40	60	100	2
Part IV							

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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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18UCASBCP501	SBC Practical III: Web Services Using Python	2	3	40	60	100	2
Part V							
18UCAE501	Extension Activity	-	-	-	-	-	2
Non Credit							
18ULS501	Career Competency Skills III	1	-	-	-	-	-
18UCAPR601	Project & viva-voce	2					
		30				700	23

Sixth Semester

Part III							
18UCAM601	Core XIII: Big Data Analytics	5	3	25	75	100	4
18UCAM602	Core XIV: Mobile Technology (**fifth unit as self study**)	5	3	25	75	100	4
18UCAM603	Core XV: E-Commerce	4	3	25	75	100	3
18UCAM604	Core XVI: Internet of Things	5	3	25	75	100	3
18UCAMP601	Core Practical X:R Programming	4	3	40	60	100	2
18UCAPR601	Project & Viva-Voce	4	3	40	60	100	4
Part IV							
18UCASBCP602	SBC Practical IV: Mobile Application Development	2	3	40	60	100	2
Non Credit							
18ULS601	Career Competency Skills IV	1	-	-	-	-	-
		30				700	22
					Grand Total	4800	140

- Students have to undergo an Advanced Learner Course during the Second year of their course of study.

- Project hours can be divided into two such as 1. Problem presentation in the Class room 2. Problem implementation in the Lab

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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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ELECTIVE I

(Student shall select any one of the following subject as Elective in **fourth** semester)

S.No	Subject Code	Subject
1.	18UCAEL401	Principles of information security
2.	18UCAEL402	Client Server technology
3.	18UCAEL403	Software Engineering

ELECTIVE II

(Student shall select any one of the following subject as Elective in **Fifth** semester)

S.No	Subject Code	Subject
1.	18UCAEL501	Social and Business Etiquette
2.	18UCAEL502	Artificial Intelligence
3.	18UCAEL503	Social Media Data Analytics

NON MAJOR ELECTIVE COURSE

(The department offers the following two subjects as Non Major Elective Course for other than the computer science students for third and fourth semesters)

S.No	Semester	Subject Code	Subject
1	III	18UCSN301	Internet Technology
2	IV	18UCSN401	HTML and Web Designing

ADD-ON COURSE

S.No	Semester	Subject Code	Subject
1	III	18UCAAC301	Digital Business
2	III	18UCAAC302	Ethics for Digital Era
3	IV	18UCAAC401	Digital Hygiene
4	IV	18UCAAC402	Fundamentals of Multimedia

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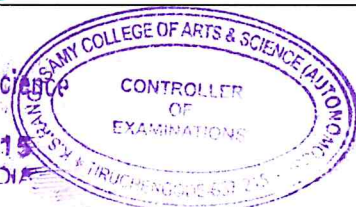
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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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PROJECT DESCRIPTION

- The project work shall be carried out by group of students in the V semester and has to complete the work at the end of VI Semester.

- Upon completion of the project work/dissertation the candidate will be required to appear for a viva-voce conducted by an external examiner.

- The Student has to attend 3 reviews before completing his/her Project.

- All 3 reviews will be reviewed by External Resource Person.

- A candidate failing to secure the prescribed passing minimum in the dissertation shall be required to re-submit the dissertation with the necessary modifications.

- The assessment of students' performance in a semester is calculated by Continuous Internal Assessment (CA.) for 40 marks and External Assessment for 60 marks.

ADVANCED LEARNERS COURSE

(Student shall study the following Advanced Learner Course during their third semester and complete the course at the end of fourth semester)

S.No	Subject Code	Name of the Course
1	18UCAAL401	Software Testing

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18UCAM101	CORE I: PROBLEM SOLVING TECHNIQUES	SEMESTER – I

COURSE OBJECTIVES:

The Course aims

- Proficiently transform designs of problem solutions into a standard programming language.
- To express the solutions to computer oriented problems using pseudo code
- The functions of computer systems and interaction between hardware & software

Credits : 4			Total Hours: 50	
UNIT	**CONTENTS**		**Hrs**	**CO**
I	**Introduction to Computer Problem-Solving:** Introduction – The Problem-solving Aspect – Top-down Design – Implementation of Algorithms – Program Verification – The Efficiency of Algorithms – The Analysis of Algorithms. **Fundamental Algorithms:** Introduction – Exchanging the Values of Two Variables – Counting – Summation of a Set of Numbers - Factorial Computation – Generation of Fibonacci Series.		10	CO1
II	**Factoring Methods:** Introduction – Finding the Square Root of a Number - The Smallest Divisor of an Integer – The Greatest Common Divisor of Two Integers-Generating Prime Numbers - Generation of Pseudo-random Numbers - Computing the nth Fibonacci Number.		10	CO2
III	**Array Techniques:** Introduction – Array Order Reversal – Array Counting or Histogramming - Finding the Maximum Number in a Set- Removal of Duplicates from an Ordered Array - Partitioning an Array - Finding the kth Smallest Element.		10	CO3
IV	**Data and Information:** Introduction – Types of Data - Simple Model of a Computer – Data Processing Using a Computer. **Data Storage:** Storage Cell – Physical Devices Used as Storage Cells – Random Access Memory – Read Only Memory – Secondary Storage – Compact Disk Read Only Memory (CDROM).		10	CO4
V	**Central Processing Unit:** Introduction – Structure of a Central Processing Unit – Specifications of a CPU. **Output Devices:** Introduction – Video Display Devices – Touch Screen Display – Printers. **Computer Software:** Introduction – Programming Languages – Classification of Programming Languages – Classification of Programming Languages Based on Applications.		10	CO5

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TEXT BOOK(S):	
1	*Dromey R.G.*, 2011, **How to solve it by Computer**, [Ninth Impression]. PHI, New Delhi. **(Unit I to III)**
2	*Rajaraman. V*, 2016, **Introduction of Information Technology,** [Second Edition]. PHI, New Delhi. **(Unit IV and V)**

REFERENCE BOOKS:	
1	Handout: Problem Solving and C Programming, 2007, Version: PSC/Handout/0307/2.1, Cognizant.
2	*Nagpal, D. P.* 2010, **Computer Fundamentals**. [First Edition, Revised]. S. Chand & Company Ltd, New Delhi.
3	*Alexis Leon and Mathews Leon.*2009, **Fundamentals of Information Technology**. [Second Edition]. Leon TECH World, New Delhi.

WEB REFERENCES:	
1	https://www.programiz.com
2	https://www.geeksforgeeks.org
3	https://www.campuskarma.in

COURSE OUTCOMES (CO):

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

CO1	Solve problems through computer programming
CO2	Familiarity of Factoring methods
CO3	Understand Array Techniques
CO4	Grasp the knowledge about Data and its storage
CO5	Empathize the working principles of CPU and output devices

MAPPING

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	L	M	M
CO2	H	M	L	M	L
CO3	H	H	M	M	M
CO4	M	H	H	M	M
CO5	M	M	H	M	M

H-High; M-Medium; L-Low

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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
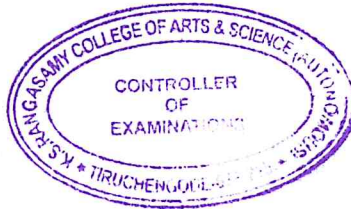Tiruchengode - 637 215. Tamilnadu. India.

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18UCAMP101	CORE PRACTICAL I: OFFICE PACKAGE	SEMESTER – I

COURSE OBJECTIVES:

The Course aims

- Exploration of knowledge in office automation tools.

Credits: 2			Total Hours: 30	
S.No.	PROGRAMS		Hrs	CO
	MS-WORD			
1.	Prepare a word document and do the following: Bold, Underline, Font size, Font style, Line spacing, Spell check, Alignments, Header & Footer, Page numbering and Find & Replace.		3	CO1
2.	Create and design Admission/Enquiry forms (Shapes, Textboxes, Colors , Tables)		3	CO2
3.	Design an invoice and account sales by using Drawing tools.		3	CO2
4.	Prepare an invitation for the college function using mail merge option.		3	CO3
	MS-EXCEL			
5.	Prepare a grade sheet of a student using formula, sorting and filtering, Conditional Formatting, Merge & Center.		3	CO3
6.	Create a pay slip using functions		3	CO3
7.	Prepare charts to show a company's sales performance report.		3	CO4
8.	Prepare Income and Expenses Statement and apply the options in Data Menu wherever necessary.		3	CO4
	MS – POWERPOINT			
9.	Creating and formatting slides presentations (template & blank slide)		3	CO4
10.	Prepare presentations using visual content		3	CO5
11.	Create a PowerPoint presentation using graphics and animation.		3	CO5

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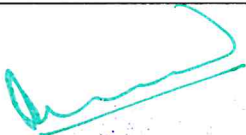
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| 12. | Prepare a PowerPoint presentation using wizard. | 3 | CO5 |

WEB REFERENCES:

1.	https://www.tutorialspoint.com
2.	https://www.investintech.com
3	https://gcflearnfree.org

COURSE OUTCOMES (CO):

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

CO1	Create personal, academic, and business documents in a professional way
CO2	Enhance word processing skills using the required tools
CO3	Understand the basic concepts of spreadsheets and usage of formulae
CO4	Create and manipulate simple slide shows with outline and notes
CO5	Create brilliant presentations

Mr. M. PRASAD, M.Sc., M.B.A., M.Phil.,
Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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18UCAMP202	CORE PRACTICAL IV: DESIGNING TOOLS	SEMESTER – II

COURSE OBJECTIVES:

The Course aims

- To teach the basics of designing and image editing tools

Credits: 2			Total Hours: 30	
S.No.	**PROGRAMS**		**Hrs**	**CO**
	PHOTOSHOP			
1	Create your visiting card		3	CO1
2	Design a passport size photo		3	CO2
3	Convert color photo into black and white photo		3	CO2
4	Create background changes, enhance and reduce the given image size		3	CO3
5	Create cover page for any text book		3	CO3
6	Create titles for any forthcoming film		3	CO3
	CORELDRAW			
7	Design a logo for an organization		3	CO4
8	Create brochure for your college		3	CO4
9	Create a paper advertisement for commercial agency		3	CO4
10	Create a book wrapper design		3	CO5
11	Design a two-page invitation		3	CO5
12	Design a poster for department event		3	CO5

WEB REFERENCES:

1.	www.tamilpctraining.blogspot.com
2.	www.tutorials.editorvalavan.com
3	www.rgntamil.weebly.com

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Mr. M. PRASAD, M.Sc., M.B.A., M.Phil.,
Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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COURSE OUTCOMES (CO):

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

CO1	Design layouts for web pages, paper adverts, brochure and package designing
CO2	Color corrections for photos
CO3	Event and Exhibition stall designs for an advertisement
CO4	Design a poster for technical paper presentation
CO5	Create a digital scrap book

Mr. M PRASAD, M.Sc., M.B.A., M.Phil.,
Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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18UCAM303	CORE VII: WEB DESIGNING	SEMESTER – III

COURSE OBJECTIVES:

The Course aims

- The basics for designing web pages using HTML
- Applying Styles for a Webpage using CSS
- Adding Client side scripting (JavaScript)

Credits :4			Total Hours: 50	
UNIT	**CONTENTS**		**Hrs**	**CO**
I	**Untangling the Web**: Introducing Web Technologies. **The Structure of a Page**: Understanding the Basic Document Structure – Attribute Groups - Basic Text Formatting – Presentational Elements – Lists – Understanding Block and Inline Elements – Grouping Elements with <div> and <span>.		10	CO1
II	**Links and Navigation**: Basic Links – Understanding Directories and Directory Structures – What are you Linking To? – Creating Links with the <a> Element. **Colors, Images, and Objects**: Adding Images to Your Site – Using Images as Links. **Tables**: Introducing Tables – Basic Table Elements and Attributes – Advanced Tables.		10	CO2
III	**Forms**: Introducing Forms – Creating a Form with the <form> Element – Form Controls – Creating Labels for Controls and the <label> Element – Structuring your Forms with <fieldset> and <legend> Elements – Focus – Disabled and Read-Only Controls – Sending Form Data to the Server. **Frames**: Introducing the Frameset – The <frameset> Element – The <frame> Element – The <noframes> Element.		10	CO3
IV	**Cascading Style Sheets**: Introducing CSS – Where You Can Add CSS Rules – CSS Properties – Controlling Fonts – Text Formatting – Text Pseudo-Classes – Selectors – Lengths – Percentages – Coming to Grips with the Box Model. **More Cascading Style Sheets**: Links – Backgrounds.		10	CO4
V	**Learning JavaScript**: What Is Programming About? – How to Add a Script to Your Pages – The Document Object Model – Starting to Program with JavaScript – Variables – Operators – Functions – Conditional Statements – Looping – Events – Built-in Objects – Writing JavaScript. **Creating a JavaScript Library**: Form Validation.		10	CO5

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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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TEXT BOOK(S):	
1	Jon Duckett, "**Beginning Web Programming with HTML, XTHML, CSS & JavaScript**", [Edition: 2005], Wiley – Dreamtech India Pvt Ltd.

REFERENCE BOOKS:	
1	Robert W.Sebesta, 2008, **Programming the World Wide Web**, [Sixth Edition], Pearson, India.
2	Wendy Willard, 2001, **HTML: A Beginner's Guide**, [First Edition], Tata McGraw Hill, Newyork.

WEB REFERENCES:	
1	https://www.w3schools.com/html/
2	https://www.tutorialspoint.com/html/
3	https://www.w3.org/Style/CSS/

COURSE OUTCOMES (CO):

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

CO1	Understand the basic structure and elements in a HTML Page
CO2	Understand Navigation, Color Concepts and creation of Tables
CO3	Understand the creation of Forms and Frames.
CO4	Apply CSS to add style to HTML Page
CO5	Write Client-side scripting code

MAPPING:

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	H	M
CO2	H	M	L	H	M
CO3	H	L	M	H	M
CO4	H	L	M	H	M
CO5	H	M	M	H	H

H-High; M-Medium; L-Low

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Mr. M. PRASAD, M.Sc., M.B.A., M.Ph..,
Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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18UCASBP301	SBC PRACTICAL I: WEB DESIGNING USING HTML, CSS AND JAVA SCRIPT	SEMESTER – III

COURSE OBJECTIVES:

The Course aims

- The creation of Web pages.
- The formatting options available in CSS
- The Client-side Scripting Language (JavaScript)

Credits: 2			Total Hours: 30	
S.No.	**PROGRAMS**		**Hrs**	**CO**
	HTML & CSS			
1	Creating a page that exercises typography (paragraphs, headings) and page layout tags (div, span).		3	CO1
2	Creating a page to demonstrate the tags and attributes of a HTML table.		3	CO2
3	Creating a page to demonstrate Ordered List, Unordered List and Definition List.		3	CO2
4	Creating Bookmarks in HTML using hyperlinks.		3	CO3
5	Designing a web of hyperlinked documents using hyperlinks (min 3 pages).		3	CO3
6	Creating hyperlinks on images using Image maps.		3	CO3
7	Creating an Internal Stylesheet to adjust the layout options (setting margins, border and padding spaces) of different elements.		3	CO4
8	Creating an External Stylesheet to format the element colors and backgrounds.		3	CO4
	JAVASCRIPT			
9	Creating a HTML page with few input controls and validate the data using javascript.		3	CO4
10	Creating a HTML page to demonstrate event handlers (onclick / onchange /onblur) and html		3	CO5

	content modification using javascript.		
11	Creating a HTML page to demonstrate Javascript string and math functions.	3	CO5
12	Creating a HTML page to create and manage Javascript Objects.	3	CO5

WEB REFERENCES:

1.	https://www.w3schools.com/html/
2.	https://www.w3schools.com/css/
3	https://www.w3schools.com/js/

COURSE OUTCOMES (CO):

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

CO1	Create Static Web Pages
CO2	Link Webpages to form a Website
CO3	Format pages with CSS
CO4	Adjust the layout of webpage
CO5	Create dynamic pages with Client-side Scripting (Javascript)

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Controller of Examinations
KS Rangasamy College of Arts & Science (Autonomous)
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18UCAAC301	ADD-ON COURSE I : DIGITAL BUSINESS	SEMESTER – III

COURSE OBJECTIVES:

The Course aims

- To understand latest digital marketing techniques and e-commerce.
- Experiences for mobile and desktop devices.

Total Hours: 30

UNIT	CONTENTS	Hrs	CO
I	**Introduction to digital business and e-commerce:** Introduction - The impact of electronic communications on traditional businesses - What is the difference between digital business and e-commerce?	6	CO1
II	**Managing digital business infrastructure:** Introduction - Digital business infrastructure components - A short introduction to Internet technology - Management issues in creating a new customer-facing digital service.	6	CO2
III	**Digital business strategy:** Introduction - What is digital business strategy? - Strategic analysis - Strategic objectives.	6	CO3
IV	**Digital marketing:** What is digital marketing? - Digital marketing planning - Situation analysis – Strategy - Focus on Online branding.	6	CO4
V	**Digital business service implementation and optimization:** Introduction - Alternatives for acquiring digital business systems - Testing – Changeover - Content management and maintenance.	6	CO5

TEXT BOOK(S):	
1	*Dave Chaffey,* "**Digital Business and E-Commerce Management Strategy, Implementation and Practice**", Sixth Edition, Pearson Education Limited, 2015.

REFERENCE BOOKS:	
1	*Prasad.R,* "**Digital Marketing: Approaches & Applications**", ICFAI Press, 2002.
2	*Samantha shurety,* "**e-business with Net. Commerce**", IBM, 2000.

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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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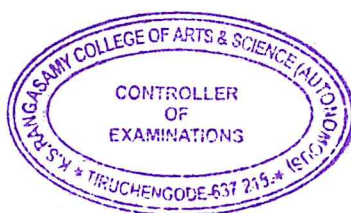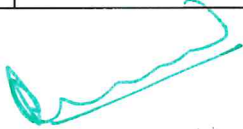Namakkal-Dt. Tamil Nadu. INDIA

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COURSE OUTCOMES (CO):

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

CO1	Scope of digital business, e-commerce, social media, mobile apps and the use of the Internet in Business.
CO2	To Manage hardware, software and telecommunication to achieve digital business.
CO3	To develop digital business strategy.
CO4	To develop digital marketing plan.
CO5	To manage and monitor digital business systems.

MAPPING:

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	H	M	H
CO2	L	H	H	M	H
CO3	L	M	M	M	H
CO4	L	L	M	M	H
CO5	L	M	M	M	H

H-High; M-Medium; L-Low
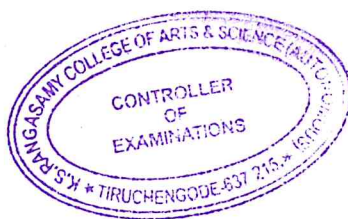
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Controller of Examinations
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18UCAAC302	ADD-ON COURSE I: ETHICS FOR A DIGITIAL ERA	SEMESTER – III

COURSE OBJECTIVES:

The Course aims

- Provides a strong analysis of the ethical issues that have emerged as the digital revolution progresses
- Understand the journalistic practices that impacts on the truth and reliability of communicating information

TOTAL HOURS: 30

UNIT	CONTENTS	Hrs	CO
I	**From Analog to Digital News:** A New Paradigm for News - Legacy News Organizations Move from Analog to Digital.	6	CO1
II	**From Analog to Digital News:** Intellectual Property and Information Sharing - Citizen Responsibility in the Digital Era	6	CO2
III	**Thinking Through Ethical Issues in Digital Journalism:** DOIT, A Process for Normative Analysis - Issues in Convergent Journalism.	6	CO3
IV	**Thinking Through Ethical Issues in Digital Journalism:** Privacy and Disclosure - Deception in Sourcing and Presentation - Media Corruption.	6	CO4
V	**Using the Virtual World to Create a Better Physical World:** Beyond Ethics: Communicating Wisely - Epilogue: Digital Diversity and Democracy.	6	CO5

TEXT BOOK(S):	
1	*Deni Elliott and Edward H. Spence,* 2017, **"Ethics for a Digital Era"**, Willey Blackwell.

REFERENCE BOOKS:	
1	*Charles Ess,* 2014, **"Digital Media Ethics"**, [Second Edition], Polity Press.

COURSE OUTCOMES (CO):

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

CO1	Understand ethical requirement to communicate.
CO2	Know about the aggregation, plagiarism and digital journalism.
CO3	Know the development of journalism and digital communication.
CO4	Analyze Privacy and Disclosure modes of Journalism.
CO5	Differentiate between Information, Communication and Wisdom.

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MAPPING:

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	H	H
CO2	L	L	M	H	H
CO3	L	L	M	M	H
CO4	M	M	H	M	H
CO5	M	M	H	L	H

H-High; M-Medium; L-Low

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18UCAAC401	ADD-ON COURSE II: DIGITAL HYGIENE	SEMESTER – IV

COURSE OBJECTIVES:

The course aims

- the issues in the software and data in PC and Internet
- the privacy of users and their data
- measures to protect ourselves from the cyber threats

Total Hours: 30

UNIT	CONTENTS	Hrs	CO
I	**A scary story for grown ups – The inhabitants of cyberspace's hostile side – Good digital hygiene: the essentials**: Malicious software – Anti-virus and Firewalls – Use a vault – Bad ideas – Disposing of your devices – Backups – Passwords, Personal Identification Numbers (PIN) – Choosing software for your devices – Downloads – Sharing your devices – Locking your devices when not in use – Securing online transactions and "https".	6	CO1
II	**Your footprints in cyberspace:** Who is watching your online activities? – Your browser disclosures – Your cookies – Your disclosures – What others may be saying about you – Your IDs and privacy in cyberspace – Being selective about who is in your network – Social media and Internet memory.	6	CO2
III	**Hygiene and the cyber-minefield:** Spam and scams – Phishing and spear-phishing – Attachments – Click here to follow the link – Unencrypted "free" WiFi (or WLAN) – Encrypting your domestic WiFi – Bluetooth – Log out of everything you do online.	6	CO3
IV	**Beyond the essentials:** Inventory of your devices – Crapware, craplets and Scareware – Inventory of all your accounts – Lost your smartphone or your computer? – Tracking software for electronic devices – Remotely wipe the contents of your lost device - Encryption and digital signatures	6	CO4
V	**Beyond the essentials:** Geo-tagging – Legislation you should know about – Jailbreaking or rooting your devices. **Good hygiene in the future: Coming your way:** the Internet Of Things – Digital hygiene in 2003.	6	CO5

TEXT BOOK(S):

1	*Dr.Eduardo Gelbstein.* 2015. **Good Digital Hygiene.** [First Edition].

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Bookboon.com Release (EBook-ISBN:978-87-403-0577-7)

REFERENCE BOOKS:

1	*Peter Gottschalk.* 2014, **Policing Cyber Crime.** [First Edition]. Bookboon.com Release (EBook-ISBN:978-87-7681-679-7)
2	*Geoffrey Sampson.* 2018, **Law for Computing Students.** [Second Edition]. Bookboon.com Release (EBook-ISBN:978-87-403-1972-9)
3	*Jonathan Weir, WeiQi Yan.* 2018, **Fundamentals of Media Security.** [First Edition]. Bookboon.com Release (EBook-ISBN: 978-87-7681-706-0)

WEB REFERENCES

1	https://www.staysmartonline.gov.au/sites/g/files/net301
2	https://digitalguardian.com/blog/what-cyber-security
3	https://www.cisco.com/c/en/us/products/security/what-is-cybersecurity.html

COURSE OUTCOMES (CO):

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

CO1	The student could understand the essentials of Good Digital Hygiene
CO2	Understand the Problems related to User's Privacy in Device / Website
CO3	Understand the problems faced in Web / Online
CO4	Understand the protective measures
CO5	Understand the issues associated with Geo-tagging and Future Technologies

MAPPING:

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	L	H
CO2	M	H	H	M	H
CO3	M	H	H	L	H
CO4	M	H	H	L	H
CO5	M	M	H	L	H

H-High; M-Medium; L-Low

18UCAAC402	ADD-ON COURSE II : FUNDAMENTALS OF MULTIMEDIA	SEMESTER – IV

COURSE OBJECTIVES:

The course aims

- Basics of multimedia
- Working with Text, Image, Audio and Video
- Making and Delivering Multimedia content

Total Hours: 30

UNIT	CONTENTS	Hrs	CO
I	**What is Multimedia?** Where to Use Multimedia - Delivering Multimedia. **Text:** About Fonts and Faces - Using Text in Multimedia.	6	CO1
II	**Text:** Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext. **Images:** Making Still Images - Color- Image File Formats.	6	CO2
III	**Sound:** Digital Audio - MIDI Audio - MIDI vs. Digital Audio- Multimedia System Sounds - Audio File Formats- Adding Sound to Your Multimedia project. **Animation:** The Power of Motion - Principles of Animation - Animation by Computer - Making Animations That Work.	6	CO3
IV	**Video:** Using Video - How Video Works and Is Displayed - Digital Video Containers - Obtaining Video Clips - Shooting and Editing Video. **Making Multimedia:** The Stages of a Multimedia Project - What You Need: The Intangibles - What You Need: Hardware - What You Need: Software	6	CO4
V	**Making Multimedia:** What You Need: Authoring Systems. **Multimedia Skills. The Internet and Multimedia:** Internetworking - Multimedia on the Web. **Delivering:** Testing -	6	CO5

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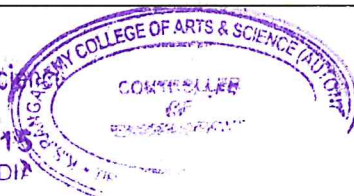
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Controller of Examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
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Preparing for Delivery – Delivering on CD-ROM- Delivering on DVD- Wrapping It Up – Delivering on the World Wide Web.	

TEXT BOOK(S):

1 Tay Vaughan 2011 **Multimedia: Making it work** Eighth Edition. McGraw Hill.

REFERENCE BOOKS:

1	Ramesh Yerraballi. **Multimedia Systems Concepts Standards and Practice.**
2	Zie- Nian Li and Mark S.Drew. **Fundamentals of Multimedia,** Pearson Education.
3	**Daid A.Lauer & Stephen Pentak. Design Basics, Multimedia Edition (with ArtExperience CD-ROM), [Sixth Edition].** Cengage Learning.

WEB REFERENCES:

1	https://www.vskills.in/certification/tutorial/html/multimedia-basics/
2	https://en.wikibooks.org/wiki/Introduction_to_Computer_Information_Systems/Multimedia
3	https://www.teufelaudio.com/multimedia-basics.html

COURSE OUTCOMES (CO)

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

CO1	Understand the basics of Multimedia
CO2	Understand the concepts associated with Text and Images
CO3	Understand the concepts associated with Sound and Animation
CO4	Understand the concepts associated with Video and requirements for creating Multimedia Applications
CO5	Create and Deliver Multimedia Applications through various sources

MAPPING:

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	M	L	M
CO2	L	M	M	L	M
CO3	H	M	H	M	M
CO4	H	M	H	H	H
CO5	H	M	H	H	H

H-High; M-Medium; L-Low

18UCAMP402	CORE PRACTICAL VII: LINUX PROGRAMMING	SEMESTER – IV

OBJECTIVES:
The course aims
- The basic commands and Shell Script in Linux

Credits: 2		Total Hours: 30	
S.No.	**PROGRAMS**	**Hrs**	**CO**
1	Execute the File and Directory Commands.	3	CO1
2	Execute the Process and Communication Oriented Commands.	3	CO2
3	Execute Pipes and Filter Commands.	3	CO2
4	Write shell script to add two numbers using command line arguments.	3	CO3
5	Write a script to find the biggest number from given three number using command line arguments.	3	CO3
6	Write a script to get current date, time, username, and current directory.	3	CO3
7	Write a script to print given number in reverse order.	3	CO4
8	Write a shell script to print the multiplication table of the given argument using for- loop.	3	CO4
9	Write a script to determine whether given file exist or not, using command line arguments.	3	CO4
10	Write an AWK script that uses all of its features.	3	CO5
11	Write a shell script to display list of current logged in users.	3	CO5
12	Write a shell script to remove the files which has file size as zero bytes.	3	CO5

WEB REFERENCES:

1.	https://www.javatpoint.com/linux-tutorial

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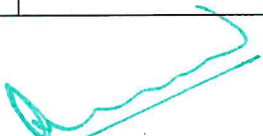Namakkal-Dt. Tamil Nadu. INDIA

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2.	https://www.tecmint.com/
3	http://linuxreviews.org/beginner/

COURSE OUTCOMES (CO):

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

CO1	Get exposure of LINUX basic commands
CO2	Implement Pipes and Filter commands
CO3	Understand command line argument concepts
CO4	Execute the Shell script concepts
CO5	Implement File concepts using Shell Program

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18UCAM501	CORE X: WEB APPLICATION DEVELOPMENT	SEMESTER-V

COURSE OBJECTIVES:

The Course aims

- The development of Web Applications using C#.NET and ASP.NET
- The enhancement of developing Database applications using ADO.NET

Credits: 4			Total Hours: 50	
UNIT	**CONTENTS**	**Hrs**	**CO**	
I	**Introduction to ASP.NET 3.5**: HTML Forms to Nowhere – Try This: HTML Data Entry with No Exit – ASP.NET 3.5 as an Alternative to CGI – From Client Side to Server Side – .NET Organization. **ASP.NET 3.5 Tools and Development Environment:** Creating a Simple ASP.NET Application – ASPX and C# Files. **C# and ASP.NET 3.5:** C# 3.0 and ASP.NET 3.5 – Basic C# Structures – Operators and Punctuators – Conditional Statements.	10	CO1	
II	**Doing More with C# and ASP.NET**: Events and Handling Them – Creating and using Classes – Using Interfaces. **Standard Web Controls**: Data Entry – Data Display – Triggers, Links and Images. **Control Events and Event Handlers:** Automatic Events – Event and Event Handling – Button Command Events.	10	CO2	
III	**Validation Controls**: Where to Validate – Required Field Validator – Range Validator – Regular Expression Validator – Compare Validator – Custom Validator – Summarizing Validation Errors. **Rich Data Controls:** Calendar Web Control – AdRotator Web Server Control – Try This Basic AdRotator.	10	CO3	

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IV	**ADO.NET: Hello Database**: Creating a Database – Creating Web Sites for Database Use – Entering Data from a Web Site – Using Good Practices. **Data Binding**: What Is Data Binding? – Basic Binding – Repeater – DataList – DataGrid Made Easy - ListView.	10	**CO4**
V	**Files**: Writing Files – Reading Text Files – Viewing Directories and Files. **ASP.NET Ajax**: ASP.NET Ajax – Ajax Timer Control – Using Events with Ajax.	10	**CO5**

TEXT BOOK(S)

1	*William B.Sanders,* **"ASP.NET 3.5: A Beginner's Guide"**, 2011, [Tata McGraw-Hill Edition], Tata McGraw Hill Education Pvt. Ltd, New Delhi.

REFERENCE BOOKS

1	*Thomas A.Powell,* **"AJAX: The Complete Reference"**,2008, [Tata McGraw-Hill Edition], Tata McGraw-Hill Publishing Company Ltd.
2	*Robert Lair, Jason Lefebvre,* **"Pure ASP.NET"**, 2002, [First Edition], Techmedia, Sams Publishing
3	*Andrew Troelsen,* **"Pro C# 2008 and the .NET Platform"**, 2007, [Fourth Edition], Apress, Berkeley, CA, USA
4	*Douglas J.Reilly,* **"Designing Microsoft ASP.NET Applications"**, 2002, [Low-Cost Edition], Microsoft Press
5	*Vijay Mukhi, SonalMukhi, NehaKatecha,* **"ASP.NET with C#: The Basics"**, 2001, [First Edition], BPB Publications, New Delhi

WEB REFERENCES

1	https://www.javatpoint.com/asp-net-tutorial
2	https://www.microsoft.com/net/learn/in-browser-tutorial/
3	https://www.tutorialspoint.com/asp.net

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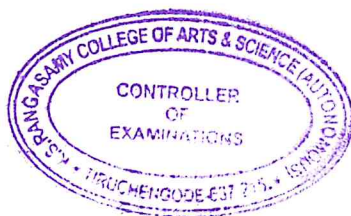| 4	https://www.w3schools.com/asp/default.asp
5	https://www.tutorialspoint.com/csharp/

COURSE OUTCOMES (CO):

On Successful completion of this course, the student can	
CO1	Understand the basics of C# and ASP.NET
CO2	Implement Event Handlers in C#
CO3	Use various validation and other controls
CO4	Implement Database related application
CO5	Handle Files &Directories and AJAX code

MAPPING:

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	L	L
CO2	H	H	L	M	M
CO3	H	H	L	H	M
CO4	H	H	L	H	M
CO5	H	H	M	H	H

H-High; M-Medium; L-Low

Mr. M. PRASAD M.Sc., M.B.A., M.Phil.,
Controller of examinations
K.S. Rangasamy College of Arts & Science (Autonomous)
Tiruchengode - 637 215, Tamilnadu, India.

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18UCAMP501	CORE PRACTICAL VIII: WEB APPLICATION DEVELOPMENT	SEMESTER-V

COURSE OBJECTIVES:

The course aims

- The creation of Windows and Console Application using C#.NET
- The development of Web Applications using C#.NET and ASP.NET
- The development of Database applications using ADO.NET

Credits: 2			Total Hours: 36	

S No	PROGRAMS	Hrs	CO
	C#.NET		
1	Creating a Windows/Console Application for handling at least two exceptions	3	CO1
2	Creating a Windows Application to read / write Text and Binary Files.	3	CO1
3	Creating a Windows Application to implement the Auto-Completion feature (for text box).	3	CO1
	ASP.NET		
4	Performing the following validationsina Web Page usingASP. NET (Compare Validator , Custom Validator, Range Validator)	3	CO2
5	Performing the following validationsina Web Page usingASP. NET (RegularExpression Validator, Required Field Validator, Validation summary)	3	CO2
6	Creating an application to demonstrate the use of Cookies in ASP.NET.	3	CO3
7	Creating an application to demonstrate the use of Sessions in ASP.NET (Login process).	3	CO3

8	Creating an application to demonstrate ADRotatorinASP.NET.	3	CO3
9	Creating an ASP.NET application to display the content of SQLServer database table in Datagrid.	3	CO4
10	Creating an ASP.NET application to Insert, Delete and Update records of SQLServer Database table.	3	CO4
11	Creating an ASP.NET application to demonstrate the search process.	3	CO4
12	Creating an ASP.NET application to create Reports from the available database with (multiple) tables.	3	CO5

COURSE OUTCOMES (CO):

On Successful Completion of this Course, the Student can	
CO1	Develop Windows/Console Applications
CO2	Understand the use of Validators
CO3	Understand the use of Cookies, Sessions and AdRotators
CO4	Create Database Applications using ADO.NET
CO5	Prepare reports from the data in Database

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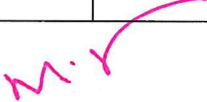Tiruchengode - 637 215. Tamilnadu. India.

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18UCASBCP501	SBC PRACTICAL III: WEB SERVICES USING PYTHON	SEMESTER – V

COURSE OBJECTIVES:

The Course aims

- Describe the core syntax and semantics of Python programming language.
- Infer the Object-oriented Programming concepts in Python.
- To get practical knowledge of a popular programming language Python

Credits: 2			Total Hours: 30	
S.No.	PROGRAMS		Hrs	CO
1	Develop programs to understand the control structures of python		3	CO1
2	Develop programs to learn different types of structures (list, dictionary, tuples) in python		3	CO2
3	Develop programs to learn concept of functions scoping, recursion and list mutability.		3	CO2
4	Develop programs to understand working of exception handling and assertions.		3	CO3
5	Develop programs for data structure algorithms using python –searching, sorting and hash tables.		3	CO3
6	Develop programs to learn regular expressions using python.		3	CO3
7	Develop chat room application using multithreading.		3	CO4
8	Learn to plot different types of graphs using PyPlot.		3	CO4
9	Implement classical ciphers using python.		3	CO4
10	Draw graphics using Turtle.		3	CO5
11	Develop programs to learn GUI programming using Tkinter.		3	CO5

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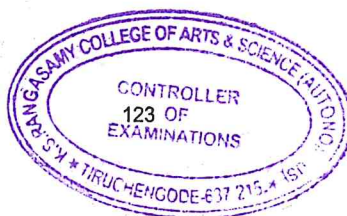
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12	Develop CRUD Application Using Web service.	3	CO5

COURSE OUTCOMES (CO):

On Successful Completion of this Course, the Student can	
CO1	Able to apply the principles python programming
CO2	Implement object oriented concepts,
CO3	Implement database and GUI applications.
CO4	Develop web applications using python programming.
CO5	Develop and use Web Services using python.

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18UCAM601	CORE XIII : BIG DATA ANALYTICS	SEMESTER-VI

COURSE OBJECTIVES:

The Course aims

- To focus the Fundamentals of Big Data Analytics..
- To transform the big data into real-world business processes using Hadoop tool.

Credits: 4			Total Hours: 50	

UNIT	CONTENTS	Hrs	CO
I	**Examining Big Data Types:** Defining Structured Data, Defining Unstructured Data, Putting Big Data Together. **Old Meets New: Distributed Computing-** A Brief History of Distributed Computing – Understanding the Basics of Distributed Computing.	10	CO1
II	**Digging into Big Data Technology Components:** Exploring the Big Data Stack – Layer 0 to Layer 4. **Virtualization and How it Supports Distributed Computing:** Understanding the Basics of Virtualization – Managing Virtualization with the Hypervisor. **Big Data Management: MapReduce Fundamentals.**	10	CO2
III	**Big Data Management:** Exploring the World of Hadoop -The Hadoop Foundation and Ecosystem – Appliances and Big Data Warehouses. **Analytics and Big Data:** Defining Big Data Analytics – Understanding Text Analytics and Big Data – Customized Approaches for Analysis of Big Data.	10	CO3
IV	**Big Data Implementation:** Integrating Data Sources – Dealing with Real-Time Data Streams and Complex	10	CO4

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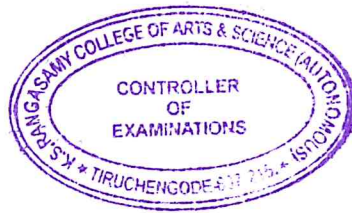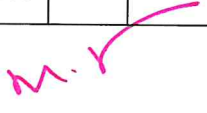Tiruchengode - 637 215. Tamilnadu. India.

	Event Processing – Operationalizing Big Data – Applying Big Data within Your Organization - Security and Governance for Big Data Environments.		
V	**Big Data Solutions in Real World**: The Importance of Big Data to Business. Analyzing Data in Motion: A Real-World View -Improving Business Processes with Big Data Analytics: A Real-World View. **The Part of Tens:** Ten Big Data Best Practices – Ten Great Big Data Resources.	10	CO5

TEXT BOOK(S):

1	*Judith Hurwitz, Alan Nugent, Dr. Fern Halper and Marcia Kaufman.* 2013. **Big Data for Dummies.** John Wiley& Sons, New Jersey.

REFERENCE BOOKS:

1	*Paul C. Zikopoulos, Chris Eaton, Dirk deRoos, Thomas Deutsch, George Lapis.*2012.**Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data.** McGraw-Hill.
2	*Lin and Chris Dyer,* 2010. **Data-Intensive Text Processing with MapReduce Jimmy.** Morgan & Claypool Synthesis.
3	*ÖzgürErgül,* 2013. **Guide to Programming and Algorithms Using R.** Springer-VerlagLondon.
4	Robert I. Kabacoff, 2011. **R in Action - Data analysis and graphics with R.** ManningShelter Island.

WEB REFERENCES:

1	https://www.tutorialspoint.com
2	https://www.tutorialspoint.com
3	https://intellipaat.com

COURSE OUTCOMES (CO):

	On Successful Completion of this Course, the Student can
CO1	To know about various types of Data, Big Data environment and Distributed computing Networks.
CO2	Understanding Big Data Stack Architecture and Map Reduce fundamentals.
CO3	To understand Hadoop environment and Different types of Analytics.
CO4	To Understand Data integration in Big Data Warehouses.
CO5	To study about Big Data Applications in different Areas.

MAPPING

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	L	L	L
CO2	M	H	M	H	H
CO3	H	H	M	H	H
CO4	H	H	M	M	H
CO5	H	H	M	H	H

H-High; M-Medium; L-Low

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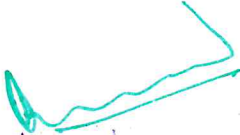| 18UCAM602	CORE XIV: MOBILE TECHNOLOGY	SEMESTER – VI

COURSE OBJECTIVES:

The Course aims

- The generations of mobile communications.
- The specifications and functionalities of various protocols/standards of mobile networks.
- The students with a detailed knowledge on Mobile application and Development.

Credits: 4			Total Hours: 50	
UNIT	CONTENTS		Hrs	CO
I	**Introduction:** Applications- A Simplified Reference Model. Wireless Transmission: Cellular Systems. **Medium Access Control:** Motivation for a Specialized MAC. Hidden and exposed terminals-Near and far terminals- SDMA-FDMA– TDMA: Fixed TDM-Classical Aloha – Slotted Aloha- Carrier Sense Multiple Access–Demand assigned Multiple Access - PRMA Packet Reservation Multiple Access-Reservation TDMA- Multiple Access with Collision Avoidance - Polling-Inhibit Sense Multiple Access. **CDMA:** Spread Aloha multiple access-Comparison of S/T/F/CDMA.		10	CO1
II	**Telecommunications Systems: GSM:** Radio Interface-Protocols-Localization and Calling-Handover-Security-New Data Services **DECT:** System Architecture- Protocol Architecture–**TETRA. Satellite Systems:** History–Applications– Basics.		10	CO2
III	**Introduction:** All about Android - The Consumer Perspective – The Developer Perspective - The Business		10	CO3

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	Perspective. **Installing the Software Tools**: Installing the Java Development Kit- Installing the Android SDK Starter Package - Installing the Eclipse Development - Configuring Eclipse - Fattening Up the Android SDK. **Creating an Android App**: Creating Your First App - Testing Apps on a Real Device - Examining a Basic Android App. **Conjuring and Embellishing an Android App**: Improving Your App. **Object-Oriented Programming in Java**: Static Fields and Methods - Interfaces and Callbacks - Inner Classes. **A brief Look at XML**: XML Isn't Ordinary Text - What's in a Namespace?		
IV	**Android Activities**: All about Activities - The Activity Lifecycle – Getting Results Back from an Activity. **Intents and Intent Filters: How to Make a Match** – The parts of an intent - The parts of an intent filter. **Activities and Stacks**: The activity stack.	8	CO4
V	**Services**: A Very Simple Service -Talking about the Weather: Binding to the service – Querying the service - Getting Real Weather Data. **Broadcast Receivers**: Receivers 101: Creating a receiver on the fly – Beyond the Fundamentals: Managing receivers - Using receiver intents – ordered broadcasts. **Content Providers**: Working with a Database - Creating and Using a Content Provider. **Lay Out Your Stuff**: Android Layouts - Linear Layout - Attributes (A Detour). **Menus, Lists, and Notifications**: Creating an options Menu - Creating a Context Menu - More Stuff about Lists. (Note : Fifth Unit For Self Study)	12	CO5
	TEXT BOOK(S):		

1	*Jochen H.Schiller,"* **Mobile Communications**", [Fifth Impression 2007].Pearson Education, India.(Unit I,II)
2	*Barry Burd,* "**Android Application Development** – All-in-one for Dummies", 2nd Edition,Wiley India, 2012.(Unit III,IV,V)

REFERENCE BOOKS:

1	*Jochen Schiller,* **Mobile Communications**, Pearson Education, Second Edition, 2011
2	Paul Deitel, Harvey Deitel, Alexander Wald, " **Android 6 for Programmers** – An App-driven Approach", 3rd edition, Pearson education, 2016.
3	Jerome (J. F) DiMarzio, "**Android – A Programmer"s Guide**", McGraw Hill Education, 8th reprint, 2015.

COURSE OUTCOMES (CO):

On Successful Completion of this Course, the Student can	
CO1	Be familiar with various generations of mobile communications.
CO2	Understand the concepts of cellular communications.
CO3	Understand the basics of wireless communication.
CO4	Gain the knowledge about mobile system specifications.
CO5	Understand multiple access techniques in mobile applications.

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MAPPING

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	L	L	L
CO2	M	H	M	H	H
CO3	H	H	M	H	H
CO4	H	H	M	M	H
CO5	H	H	M	H	H

H-High; M-Medium; L-Low

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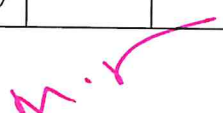Tiruchengode - 637 215. Tamilnadu. India.

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18UCAM604	CORE XVI: INTERNET OF THINGS	SEMESTER-VI

COURSE OBJECTIVES:

The Course aims

- To explain the emerging industrial structure and architecture design of IoT.
- To describe Interconnection of Security, Trust, Identity and Privacy in Cyberspace.
- To understand Aids in IoT revolution.

Credits: 3			Total Hours: 50	

UNIT	CONTENTS	Hrs	CO
I	**The Evolving Iot Landscape:** Why the Internet of Things?– **Origins and Iot Landscape :** Evolving to an Internet of Things -IoT in a Global Context: General technology and scientific trends - Trends in information and communications technologies. **Iot – A Business Perspective:** Introduction-Definitions-Value Chains Overview- Business Model Innovation in IoT. **An Architecture Perspective:** Building an Architecture-Requirements and Main Design Principles -An IoT Architecture Outline.	10	CO1
II	**Iot Technologies And Architectures: Technology Fundamentals:** Devices and Gateways-Local and Wide Area Networking-Machine Intelligence-Distributed Cloud and Edge Computing- Data Management.	10	CO2
III	**Security:** Introduction - Basic Principles- Threats to IoT Systems -Mitigating Threats to IoT Applications-Security	10	CO3

	in Architectures and Standards-Security for a Safe IoT - Privacy in IoT -Future Developments in Security. **Architecture And State-of-The-Art:** ITU-T -OMA -IoT-A and IIRA -RAMI 4.0 -W3C-OGC.		
IV	**Architecture And State-Of-The-Art:** GS1 Architecture and Technologies- Other Relevant State-of-the-Art. **Architecture Reference Model:** Introduction-Reference Model and Architecture-IoT Reference Model - IoT Reference Architecture- Functional View - Information View- Deployment and Operational View -Other Relevant Architectural Views- Other Reference Models and Architectures- Best Practices.	10	CO4
V	**Industrial Automation:** SOA-Based Device Integration-SOCRADES: Realizing the Enterprise Integrated Web of Things- IMC-AESOP: From the Web of Things to the Cloud of Things. **Smart Grid:** Introduction- Smart Metering- Smart House -Smart Grid City - **Commercial Building Automation:** Introduction-Case Study: Phase One – Commercial Building Automation Today - Case Study: Phase Two – Commercial Building Automation in the Future- **Smart Cities:** Introduction – What Is a Smart City?-Smart Cities – A Technical Perspective-IoT Data Supply Chains-IoT Data and Context Management in Smart Cities-ETSI ISC Context Information Management-Smart Cities – A Reference Architecture-Smart Cities – Smart Parking. **Logistics:** Introduction-Roles and Actors-Technology Overview-Example Scenario – Food Transport.	10	CO5

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	TEXT BOOK(S):
1	*Vlasios Tsiatsis , Stamatis Karnouskos , Jan Höller , David Boyle, Catherine Mulligan,*"Internet of Things Technologies and Applications for a New Age of Intelligence", Second Edition, Academic Press,2019.

	REFERENCE BOOKS:
1	*Olivier Hersent, Omar Elloumi and David Boswarthick,* "The Internet of Things: Applications to the Smart Grid and Building Automation", Wiley, 2012.
2	Olivier Hersent, David Boswarthick and Omar Elloumi, "The Internet of Things – Key applications and Protocols", Wiley, 2012.

	WEB REFERENCES:
1	http://www.internet-of-things-book.com
2	https://cloud.google.com/solutions/iot-overview.com
3	https://www.internetsociety.org/resources/doc/2015/iot-overview.com

COURSE OUTCOMES (CO):

On Successful Completion of this Course, the Student can	
CO1	Know the architecture design of IoT.
CO2	Understand domains of IoT and M2M Communication techniques.
CO3	Know about the System Management and Design Methodology of IOT.
CO4	Identify Systems Logical Design and Raspberry Pi with Python.
CO5	Explore IoT Technology in Real time Applications.

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Controller of Examinations
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MAPPING

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	M
CO2	L	H	H	M	H
CO3	M	H	H	M	L
CO4	L	M	L	M	L
CO5	L	M	M	H	H

H-High; M-Medium; L-Low

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18UCAMP601	CORE PRACTICAL X: R PROGRAMMING	SEMESTER-VI

COURSE OBJECTIVES:

The Course aims

- To acquire the knowledge in R Programming Language

Credits: 2 **Total Hours: 48**

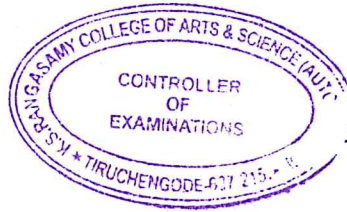| S.No.	PROGRAMS	Hrs	CO
1	Basic Commands in R / Functions in R.	4	CO1
2	Program to perform numerical operations (MAX, MIN, AVG, SUM, SQRT, ROUND).	4	CO2
3	Program to perform Statistical Operations (Mean, Median, Mode, Variance and Standard Deviation.	4	CO2
4	Program for Control flow Statements.	4	CO3
5	Program for Looping Statements.	4	CO3
6	Program using Vectors(1D), Matrices(2D), Arrays.	4	CO4
7	Program to perform Matrix addition, subtraction, multiplication using vector concept.	4	CO4
8	Program using Factors function.	4	CO4
9	Program for Data Input (Keyboard) / Import (Text File, Excel)	4	CO5
10	Program for Working with Basic Graphs (Simple Bar, Mean Bar, Tweaking Bar, and Pie Chart).	4	CO5
11	Program for Creating, Recording, Renaming, Missing Values.	4	CO5
12	Working with Mathematical, Character and Other functions	4	CO5

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COURSE OUTCOMES (CO):

	On Successful Completion of this Course, the Student can
CO1	To know the mandatory commands and functions of console application development in R Environment.
CO2	To understand the notations used for statistical operations.
CO3	To know about Control Structures syntax in detail.
CO4	To know about role of memory management operators in Matrix and Array operations.
CO5	To make understanding in data Import and Export in various data types, Record Manipulation, Graphs and specialized functions.

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18UCASBCP602	SBC PRACTICAL IV: MOBILE APPLICATION DEVELOPMENT	SEMESTER-VI

COURSE OBJECTIVES:

The course aims

- To develop and implement basic mobile applications in Androidx`

Credits: 2		Total Hours: 36	

S.No	PROGRAMS	Hrs	CO
1	Create an application to display Hello World.	3	CO1
2	Create an Application to compute different Arithmetic Operations using Buttons.	3	CO2
3	Create an Application to Open Multiple Activities using Buttons.	3	CO2
4	Create an Application to Pickup order of different items using Checkbox.	3	CO3
5	Develop a simple Calculator application.	3	CO3
6	Create simple Home Screen Widget.	3	CO3
7	Create Chat Application.	3	CO4
8	Create simple Camera application.	3	CO4
9	Create Basic List View Demo.	3	CO4
10	Create a simple Web Browser.	3	CO5
11	Create a simple location finder application	3	CO5
12	Create a simple alarm clock.	3	CO5

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COURSE OUTCOMES (CO):

	On Successful completion of this course, the student can
CO1	Apply general programming knowledge to develop mobile applications
CO2	Design and develop user Interfaces for the Android platform
CO3	Write simple GUI based mobile applications
CO4	Learn to develop mobile applications using database concepts
CO5	Model new applications for hand held devices

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