

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

123	B.Com BI	Higher Corporate Accounting	19UBI409	2019
124	B.Com BI	Recent Trends in Banking	19UBI4N4	2019
125	B.Com BI	Indirect Taxation	19UBI514	2019
126	B.Com BI	Entrepreneurship Development	19UBI5S2	2019
127	M.A Tamil	Ikkala illakiyam	19PTM101	2019
128	M.A Tamil	Kappiyangal	19PTM310	2019
129	M.A Tamil	Thonmai illakiyam	19PTM414	2019
130	M.Sc. Botany	Microbiology and plant pathology	19PBY103	2019
131	M.Sc. Botany	Economic Botany	19PBY1E2	2019
132	M.Sc. Botany	Cytology, Genetics and Plant Breeding	19PBY207	2019
133	M.Sc. Botany	IPR and Bioethics	19PBY2E4	2019
134	M.Sc. Botany	Mushroom Cultivation & Medicinal Plant Trading	19PBY2N1	2019
135	M.Sc. Botany	Research Methodology	19PBY311	2019
136	M.Sc. Botany	Herbal Technology	19PBY3E6	2019
137	M.Sc Computer Science	Information Security and Cryptography	19PCS208	2019
138	M.Sc Computer Science	Data Analytics using Python Programming	19PCS207	2019
139	M.Sc Computer Science	Angular JS	19PCS313	2019
140	M.Sc. Chemistry	Major Elective-I-Polymer Chemistry	19PCY3E3	2019
141	M.Sc. Chemistry	Major Elective II: Nano Technology and Supra Molecular Chemistry	19PCY3E4	2019
142	M.Sc. Chemistry	Major Elective III : Medicinal Chemistry/Food Science and Technology/ Dye Chemistry	19PCY4E7/ 19PCY4E8/ 19PCY4E9	2019
143	M.Com (CA)	Entrepreneurship and Project Management	19PCC3E2	2019
144	M.Com (CA)	Strategic Management	19PCC3E4	2019
145	M.Com (CA)	Customer Relationship Management	19PCC4E6	2019
146	MSW	Communication for Social Work Practice	19PSW1E2	2019

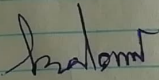
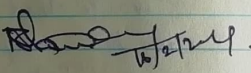
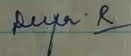
BOS HIGHLIGHTED



BOARD OF STUDIES IN COMPUTER SCIENCE (PGT)
SATURDAY (16.02.2019) - 2.00PM

18

19

S.No.	MEMBERS	SIGNATURE
1.	Dr. M. Sakthi (Chairman)	<u>M. Gamy</u> 16/2/19
2.	Dr. T. Christopher Asst. Professor Dept. of Computer Science GAC, CBZ (University Nominee)	
3.	Dr. P. Balamurugan Asst. professor Dept. of Computer Science GAC, CBZ (Subject Expert)	
4.	T. Anbarasu Manager- ITS, BA Continuum Intellectual Assured IT Park Chennai-613 (Industrialist)	
5.	Mr. R. Nandha Kumar	
6.	Dr. R. Deepa	
7.	Mrs. M. Dhavapriya	
8.	Mr. N. Anul Kumar	

MINUTES

The Board of Studies has been conducted on 16.02.2019 at 2.00pm in the Department of Computer Science.

The following agenda was discussed.

The schema of the Examination and syllabi has been finalized for the Semester I to IV for the batch 2019-2021.

* Data mining has been moved to core paper with the updation of syllabus by including R tools in unit - I

* Information Security is updated with Cryptography concepts.

* Python programming is renamed as Data Analytics using python programming with IT lab.

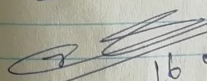
* Big Data Analytics syllabus is updated by including SPARK in fifth unit.

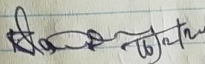
* Programming Lab-IV is replaced with Scalar programming.

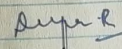
* Semester -III J2EE Technologies is removed and Advanced Java programming (Angular JS) with its lab

* Digital Image processing syllabus is updated.

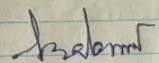
M. Gamy


16.02.2019








(Dr. P. BALAMURUGAN)
Tm

(T. ANBARASU)

Scheme of Examination

I SEMESTER									
Part	Subject Code	Title of the Paper	Duration in Hours per week	Examination					Page No.
				Hours	CIA	ESE	Total	Credits	
III	19PCS101	Android Programming	5	3	25	75	100	4	1
	19PCS102	Analysis & Design of Algorithms	5	3	25	75	100	4	3
	19PCS103	Advanced Networks	5	3	25	75	100	4	5
	19PCS104	Data Mining and Warehousing	5	3	25	75	100	4	7
	19PCS105	Programming Lab - I: Android Programming	5	3	40	60	100	4	9
	19PCS106	Programming Lab -II: Analysis & Design of Algorithms	5	3	40	60	100	4	11
II SEMESTER									
III	19PCS207	Data Analytics using Python Programming	5	3	25	75	100	4	13
	19PCS208	Information Security and Cryptography	4	3	25	75	100	4	15
	19PCS209	Big Data Analytics	4	3	25	75	100	4	17
	19PCS210	Programming Lab -III : Data Analytics	4	3	40	60	100	4	19
	19PCS211	Programming Lab-IV : Scala Programming	4	3	40	60	100	4	21
	19PCS212	Programming Lab-V : Unified Modeling Language and R Tool	3	3	40	60	100	4	23
	19PCS2EX	Elective – I	5	3	25	75	100	5	26
IV	19PCS2N1/ 19PCS2N2	Non Major Elective: Multimedia Packages Lab /Web Designing Lab	1	3	-	100	100	2	32



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III SEMESTER

Part	Subject Code	Title of the paper	Duration in Hrs per week	Examination					Page No.
				Hours	CIA	ESE	Total	Credits	
III	19PCS313	Angular JS	4	3	25	75	100	4	35
	19PCS314	Digital Image Processing	5	3	25	75	100	4	37
	19PCS315	Internet of Things	5	3	25	75	100	4	39
	19PCS316	Programming Lab-VI : Angular JS	5	3	40	60	100	4	41
	19PCS317	Programming Lab-VII: Digital Image Processing using MATLAB	5	3	40	60	100	4	42
	19PCS3EX	Elective-II	5	3	25	75	100	5	45
IV SEMESTER									
III	19PCS418	Project Work and Viva voce (Individual)	-	-	-	200	200	10	52
TOTAL MARKS							2200	90	



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ELECTIVE I

S.No	SUBJECT CODE	TITLE	Page No.
1	19PCS2E1	COMPUTING TECHNOLOGIES	26
2	19PCS2E2	SOFT COMPUTING	28
3	19PCS2E3	MOBILE COMPUTING	30

ELECTIVE II

S.No	SUBJECT CODE	TITLE	Page No.
1	19PCS3E1	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS	45
2	19PCS3E2	MACHINE LEARNING	47
3	19PCS3E3	EMBEDDED SYSTEMS	49



[Signature]
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Programme code:	M.Sc	Programme Title :	Master of Computer Science	
Course Code:	19PCS207	Title	Batch :	2019-2021
		Data Analytics using Python	Semester	II
Hrs/Week:	5	Programming	Credits:	4

Course Objective

On successful completion of this course the students should understand the core principles of the Python Language and use the tools to produce well designed programs in python and create effective GUI applications.

Course Outcomes (CO)

K1	CO1	To remember the principles of structured programming Recognize and construct common programming idioms: variables, loop, branch, subroutine, and input/output.
K2	CO2	To understand the common programming idioms: variables, loop, branch, subroutine, and input/output
K3	CO3	To deploy the concepts of lists, tuples, dictionaries, standard libraries, modular programming and the design of user interfaces
K4	CO4	To figure out ability to analyze and solve the problems using advanced facilities of the Python language
K5	CO5	To evaluate and apply the functions and python libraries to analyze and solve various data analytics problems

CONTENTS	Hours
UNIT I Introduction to Python: Introduction – Python overview – Getting started – Comments – Python identifiers – Reserved keywords – Variables – Standard data types – Operators – Statements and Expressions – String operations – Boolean expressions. Classes and Objects: Overview of OOP – Data encapsulation – Polymorphism – Class definition – Creating objects – <i>Inheritance</i> – Multiple inheritances – Method overriding – Data encapsulation – Data hiding.	10
UNIT II Control Statements and Functions: <i>Control Statements:</i> The for loop – While statement – if elif else statement – Input from keyboard. <i>Functions:</i> Introduction – Built-in functions – Type conversion – Type coercion – Date and time – dir() function – help() function – User defined functions – Parameters & arguments – Function calls – The return statement – Python recursive function. Strings and Lists: Strings – Compound data type – len function – String slices – String traversal – Escape characters – String formatting operator – String formatting functions. Lists – Values and accessing elements – Traversing a list – Deleting elements from list – Built-in list operators – Built-in list methods.	10
UNIT III Tuples and Dictionaries: Tuples – Creating tuples – Accessing values in tuples – Tuple assignment – Tuples as return values – Basic tuple operations – Built-in tuple functions Dictionaries – Creating dictionary – Accessing values in dictionary – Updating dictionary – Deleting elements from dictionary – Operations in dictionary Built-in dictionary methods.	10

Files and Exceptions: Introduction to File Input and Output-Using loops to process files-Processing Records-Exception.	
UNIT IV GUI Programming: Graphical user Interface, Using the tkinter Module, Display text with Label Widgets-Organizing Widget with Frames-Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget using Label as Output Fields, Radio button, Check buttons. Numpy: Arrays Array indexing data types Array math Broad casting	11
UNIT V Pandas: Environmental setup- Introduction to Data structures –Series- DataFrame –Panes- Basic Functionality- Function Application. IPython: Running and editing Python Script – History Commands- System Commands- Command Line Options-Importing Python Shell code – Magic commands.	11
Total Hours	52
* <i>Italicized</i> texts are for self study	
Power point Presentations, Group discussions, Seminar , Assignment	
Text Books 1. E Balagurusamy, 2016, “Introduction to computing and problem solving using python”, McGrawHill publication. 2. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython by Wes McKinney, O’Reilly Media, 2012. ISBN 978-1-4493-1979-3	
Reference Book 1. Mark Lutz, 2013, “Learning Python”, 5th Edition. 2. Welsey J. Chun, 2001, “Core Python Programming”, Prentice Hall.	

MAPPING

PSO CO	PS01	PS02	PS03	PS04	PS05
C01	M	S	M	H	M
C02	H	M	H	S	H
C03	M	S	L	M	S
C04	S	H	H	M	H
C05	S	M	H	H	H

S: Strong H: High M: Medium L: Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Name: Dr. R. Deepa	Name: Dr.M. Sakthi	Name: Dr. M. Durairaju	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme code:	M.Sc	Programme Title :	Master of Computer Science	
Course Code:	19PCS208	Title	Batch :	2019-2021
		Information Security and	Semester	II
Hrs/Week:	4	Cryptography	Credits:	4

Course Objective

On successful completion of the course students will be able to understand the possible threats, vulnerabilities and attacks on computer systems and also to apply the necessary approaches and techniques to develop protection mechanism against them.

Course Outcomes (CO)

K1	CO1	To remember the basics of information security and cryptography
K2	CO2	To understand the possible attacks on browsers and various methods to protect them.
K3	CO3	To apply the security in operating system and cloud applications
K4	CO4	To analyze differential and linear cryptanalysis in symmetric cryptography
K5	CO5	To evaluate various algorithms in public key cryptography

CONTENTS		Hours
UNIT I Introduction: Threats- vulnerabilities- controls- Confidentiality- integrity- availability- Attackers and attack types. Authentication- Identification Versus Authentication- Authentication Based on biometrics- Authentication Based on Tokens- Federated Identity management- Multifactor Authentication- Secure Authentication. Implementing Access Control- Procedure-Oriented Access Control- <i>Role Based Access Control</i> .		10
UNIT II Browser Attacks: Browser Attack Types- How Browser Attacks Succeed: Failed Identification and Authentication- Web Attacks Targeting Users False or Misleading Content- Malicious Web Content- Protecting Against Malicious Web Pages- Foiling Data Attacks- Email Attacks- Phishing-Protecting Against Email Attacks.		10
UNIT III Security in Operating System and Cloud: Operating System Security: Security in Operating Systems- Security in the Design of Operating Systems- Rootkit. Cloud Security: Cloud Computing Concepts- Service Models- Deployment Models- Moving to the Cloud- Risk Analysis Cloud Provider Assessment- Switching Cloud Providers- Cloud Security Tools and Techniques Data Protection in the Cloud- Cloud Application Security- Cloud Identity Management.		10
UNIT IV Symmetric Cryptography: Divisibility and the Division Algorithm- Euclid's algorithm Modular arithmetic - Congruence and matrices - Groups, Rings, Fields- Finite fields- Symmetric Key Ciphers: DES – Block cipher Principles of DES – Strength of DES – Differential and linear cryptanalysis - Block cipher design principles – Block cipher mode of operation – Evaluation criteria for AES – Advanced Encryption Standard - RC4 –Key distribution.		10

UNIT V Public Key Cryptography Primes – <i>Primality Testing</i> – Factorization – Euler’s totient function, Fermat’s and Euler’s Theorem - Chinese Remainder Theorem – Exponentiation and logarithm - Asymmetric Key Ciphers: RSA cryptosystem – Key distribution – Key management – Diffie Hellman key exchange - ElGamal cryptosystem – Elliptic curve arithmetic-Elliptic curve cryptography.		10
Total Contact Hrs		50
<i>*Italicized texts are for self study</i>		
Power point Presentations, Seminar , Assignment		
Text Books 1. Charles P. Pfleeger, Shari Lawrence Pfleeger, Jonathan Margulies, “Security in Computing”, 2015, 5th Edition, Pearson Publications (Unit-I,II & III). 2. William Stallings, “Cryptography and Network Security Principles and Practice”, 2011, 5 th Edition, Pearson Publications (Unit-IV & V)		
Reference Books 1. Taylor Sutton Finch Alexander, Information Security Management Principles, 2012, 2nd edition BCS Learning and development Limited, United Kingdom. 2. Behrouz A Fououzan, “Cryptograhpy & Network Security”, 2007, Tata McGraw Hill. 3. Josef Pieprzyk, Thomas Hardjono and Jennifer Sebery, “Fundamentals of Computer Security”, 2002, Springer.		

MAPPING

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

S: Strong H: High M: Medium L: Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Name: N. Arul kumar	Name: Dr.M.Sakthi	Name: Dr. M. Durairaju	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme code:	M.Sc	Programme Title :	Master of Computer Science	
Course Code:	19PCS313	Title	Batch :	2019-2021
		Angular JS	Semester	III
Hrs/Week:	4		Credits:	4

Course Objective

On successful completion of this course, students will be able to create dynamic web applications that depend on the Model-View-Controller architecture, and also to minimize the dependence on JavaScript requirement for functionalizing the web applications.

Course Outcomes (CO)

K1	CO1	To recollect the fundamental concepts of javascript
K2	CO2	To get the idea about AngularJS framework and Model View Controller(MVC)
K3	CO3	To deploy the programs using filters, modules, controllers and directives
K4	CO4	To review the various services and server communications
K5	CO5	To validate the forms by using model binding

CONTENTS	Hours
UNIT I JavaScript: Introduction- Including Scripts on a Page- Statements- Functions- Parameters and Return Values- Types and Variables- <i>Primitive Types</i> - JavaScript Operators- Equality vs. Identity- Pre- vs. Post-Increment- Working with Objects: Creating Objects- Reading and Modifying an Object's Properties- Adding Methods to Objects- Enumerating Properties- Control Flow- Working with Arrays- Callbacks- JSON.	10
UNIT II AngularJS: Basics of AngularJS-Framework- Downloading and Installing AngularJS- Browser Support- First AngularJS Application- Declarative vs. Procedural Programming- Directives and Expressions- Introduction to MVC: Design Patterns- Model View Controller- Why MVC- MVC the AngularJS Way- Filters and Modules: Introduction to Filters- Built-in Filters- The Number Filter- The Date Filter- The limitTo Filter- AngularJS Modules- Bootstrapping AngularJS- Creating a Custom Filter	10
UNIT III Controllers : Defining Controllers- Creating and Applying Controllers – Scopes: Setting up the scope- Modifying the Scope- Directives: Basics of Directives- Using Directives- Built-in Directives- Event-Handling Directives- Creating a Custom Directive- Working with Forms: <i>HTML Forms Overview</i> - Model Binding- AngularJS Forms- Validating Forms	10
UNIT IV Services and Server Communication: Using Services- The \$window Service- The \$location Service- The \$document Service- Creating Services- Server Communication- Handling Returned Data- Organizing Views: Installing the ngRoute Module- Using URL Routes- Defining Routes- Route Parameters- Eager vs. Conservative Routes- Route Configuration Options- HTML5 Mode.	10
UNIT V AngularJS Animation: Installing the ngAnimate Module- CSS Animation Overview- Applying	10

Animations- Deployment Considerations: Configuration- Testing- Error Handling- Hide Unprocessed Templates- Minification and Bundling- Managing the Build Process- Deployment.	
Total Hours	50
<i>*Italicized texts are for self study</i>	
Power point Presentations, Seminar , Assignment, Brain storming	
Text Books 1. Andrew Grant, “Beginning AngularJS”, 1st Edition, Apress, 2014 2. Adam Freeman, “Pro AngularJS”, 1st Edition, Apress, 2014	
Reference Books 1. Brad Green and Shyam Seshadri , “AngularJS – Up and Running”, 2 nd Edition, O’ Reilly, 2014	

MAPPING

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
C01	S	H	H	H	S
C02	H	H	M	S	M
C03	M	S	H	H	H
C04	S	M	S	H	M
C05	H	S	M	M	H

S: Strong H: High M: Medium L: Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Name: N. ArulKumar	Name: Dr. M. Sakthi	Name: Dr. M. Durairaju	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme code:	M.Sc	Programme Title :	Master of Computer Science	
Course Code:	19PCS316	Title	Batch :	2019-2021
		Programming Lab-VI: Angular JS	Semester	III
Hrs/Week:	5		Credits:	4

Course Objective

On successful completion of this course, students will gain the knowledge about the AngularJS framework and also to apply its various concepts in real-time web application development.

Course Outcomes (CO)

K3	CO1	To implement the programs for filters, modules, controllers and directives
K4	CO2	To evaluate the applications by applying the services, routes and animations
K5	CO3	To validate the forms by using model binding and events

Program using AngularJS	
1. Expressions 2. Modules 3. Directives 4. Model 5. Controllers 6. Filters	7. Services 8. Events 9. Forms 10. Form Validation 11. Routing 12. Animations
Power point Presentations, Brain storming	

MAPPING

PSO \ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	H	S	H
CO2	H	M	M	M	S
CO3	H	S	S	H	M

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Name and Signature	Name with Signature	CDC	COE
Name: N.ArulKumar Signature:	Name: Dr.M.Sakthi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature: