

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

604	B.Sc Computer Science	C++ Programming	22UCS204	2022
605	B.Sc Computer Science	Java Programming	22UCS307	2022
606	B.Sc Computer Science	Android Programming	22UCS518	2022
607	B.Sc. CT	Operations Research	22UCT2A2	2022
608	B.Sc. CT	Python Programming	22UCT412	2022
609	B.Sc. CT	Core Lab V – Python Programming Lab	22UCT415	2022
610	B.Sc. CT	Core Elective I – Fundamentals of Block Chain Technology and Digital Currency	22UCT5E3	2022
611	B.Sc. CT	R Programming	22UCT5S1	2022
612	B.Sc. CT	Scripting Language	22UCT5S2	2022
613	B.Sc. CT	Core Elective III – Ethical Hacking	22UCT6E5	2022
614	B.Sc. CT	Machine Learning Techniques	22UCT6E6	2022
615	B.Sc. CT	Digital Marketing	22UCT6AL	2022
616	B.Sc. CT	Desktop Publishing Lab	22UCT6S1	2022
617	B.Sc. CT	Animation Lab	22UCT6S2	2022
618	BCA	Visual Basic Programming Lab	22UBC312	2022
619	BCA	ASP.Net	22UBC413	2022
620	BCA	Visual Programming Lab	22UBC416	2022
621	BCA	Software Testing Lab	22UBC522	2022
622	BCA	Internet of Things	22UBC5S2	2022
623	BCA	Information Security	22UBC6E3	2022
624	BCA	PhP Programming	22UBC624	2022
625	BCA	Mobile Application Development	22UBC625	2022
626	BCA	PhP Programming Lab	22UBC626	2022
627	BCA	Mobile Application Development Lab	22UBC627	2022
628	BCA	Cloud Computing Lab	22UBC6E5	2022

BOS Highlighted



New Course Introduced

Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

DEPARTMENT OF COMPUTER TECHNOLOGY

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

POLLACHI - 642001

**12th Board of Studies Meeting in the Department of
Computer Technology**

Date : 04.06.2022 Time: 10.00 A.M to 2.00 P.M

Agenda

BoS / CT11.1	:	Welcome address and Opening Remarks by Chairman, Board of studies in offline mode
BoS / CT11.2	:	Confirmation of the Minutes of the 12 th / Previous meeting of Board of studies in offline mode held on 04.06.2022 and Action taken report of 12 th meeting of Board of studies
BoS / CT11.3	:	11.3.1 Syllabus of I BSc COMPUTER TECHNOLOGY for semester I to VI under Regulation 2022-2025 Batch
		11.3.2 Syllabus of Value added course
BoS / CT11.4	:	Suggestion given by BOS Members

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

POLLACHI

DEPARTMENT OF COMPUTER TECHNOLOGY

MINUTES OF BOS MEETING

The 12th Meeting of the Board of studies of the Department of Computer Technology was held on 04.06.2022 at 10.00 a.m. in Offline mode

1. The following members were present:

Dr.M.RAJASENATHIPATHI Head of the Department Department of computer technology NGM College, Pollachi	Chairman
MS. C. KEERTHANA Assistant Professor	Internal Members
MS. K.S. LEELAVATHI Assistant Professor Department of computer technology NGM College, Pollachi	
Dr. R. JAYAPRAKASH Department of computer technology NGM College, Pollachi	
MS. A. KALAIVANI Assistant Professor Department of computer technology NGM College, Pollachi	
Dr. Juliana Sunil Associate Professor Department of Information Technology Rathinam College of Arts and Science, Coimbatore	University Nominee
Dr. S. Raja Head of the Department Department of CT, Rathinam College of Arts and Science, Coimbatore.	Academic Experts
Mr. M. Dinesh Application Development Team Lead Accenture Services Pvt. Ltd., Chennai Coimbatore	Industrial Expert

	Ms. Kadhambari. A Senior Process Executive, Cognizant Technology Solutions, Coimbatore.	Alumnus nominated by Principal / HoD
	Dr. N. Kavitha Associate Professor & Head Dept. of Computer Science Nehru Arts & Science College, Coimbatore	Subject Expert
	S. Selva kumar III- CT NGM College Pollachi	Student Members
	H. Dharshini III- CT NGM College Pollachi	

HoD

CDC Co-ordinator

COE

PRINCIPAL

M. RAJASENATHIPATHI, M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nehru Arts & Science College (Autonomous)
Pollachi - 642 001.
BOS/CT 11.3.1

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

R. MANICKA CHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

PRINCIPAL
NGM COLLEGE, POLLACHI

I B.Sc. COMPUTER TECHNOLOGY (I to VI SEMESTER)

SEMESTER I

The following papers from B.Sc., Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT101 – Core I – Programming in C
- 22UCT102 – Core II – Digital Fundamentals and Computer Organization
- 22UCT1A1 – Allied I – Mathematics I – Mathematical structures for Computer Science

SEMESTER II

- 22UCT204 – Core III – JAVA Programming

The presented syllabus was accepted by the experts and a syllabus is interchanged from III Semester to II Semester in-order to removed subject Core III: Object Oriented Programming with C++ in Semester II as Board of Study Members suggested.

- 22UCT206 – Core Lab II – JAVA Programming Lab

The presented syllabus was accepted by the experts and a syllabus is interchanged from III Semester to II Semester in-order to removed subject Core Lab II: Programming in C++ with Data Structures in Semester II as Board of Study Members suggested.

- 22UCT2A2- Allied II – Mathematics II-Operations Research

The presented syllabus was accepted by the experts and a few suggestions were given as follows:

The topic “Simple Problems” is to be added in UNIT III of the same syllabus.

The following papers from B.Sc., Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT205 – Core IV – Data Structures
- 22UCT2A2- Allied II – Mathematics II-Operations Research

SEMESTER III

- 22UCT307 – Core V – Advanced Java Programming

The presented syllabus was accepted by the experts and a syllabus is interchanged from IV Semester to III Semester in-order to moved subject Core V: Java Programming from III Semester to Semester II as Board of Study Members suggested.

- 22UCT310 – Core Lab III – Advanced Java Programming Lab

The presented syllabus was accepted by the experts and a syllabus is interchanged from IV Semester to III Semester in-order to moved subject Core Lab III: java Programming from III Semester to Semester II as Board of Study Members suggested.

The following papers from B.Sc., Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT308 – Core VI – Database Management System
- 22UCT309 – Core VII – Operating Systems
- 22UCT3A3 – Allied III – Software Engineering
- 22UCT311- LAB IV – Database Management System Lab
- 22UCT3N1/3N2 – Non Major Elective: HTML Lab / Multimedia Lab

SEMESTER IV

- 22UCT412 – Core VIII – Python Programming

The above New paper was introduced as per expert suggestions and Industry Demand

- 22UCT415 – Core Lab V – Python Programming Lab

The above New paper was introduced as per as Board of Study Members suggested.

As well as Industry Demand.

- 22UCT4A4- Allied IV – Big Data Analytics

The above paper is renamed as Big Data Analytics (New) from Big Data Management (Old Name) as BoS expert suggested.

The following papers from B.Sc., Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT413 – Core IX- Linux and Shell Programming
- 22UCT416- Lab-VI – Linux and shell programming Lab
- 22UCT414 – Core X – Data Communication and Networks
- 22UCT4N3/4N4 – Skill Based Non Major Electives

SEMESTER V

- 22UCT5E3- Core Elective I – Fundamentals of Block Chain Technology and Digital Currency
Introduced instead of Core Elective – I paper Management Information System
- 22UCT5S1/5S2 – R Programming / Scripting Language
Introduced instead of Skill Based Major Elective - I : Python Lab / HTML5 With CSS Lab .

The above New paper was introduced as per expert suggestions in elective paper list and optional paper for extra credit in advanced learner.

The following papers from B.Sc. Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT517 – Core XI – Open source Technologies
- 22UCT518 – Core XII – Information Security
- 22UCT5E1/5E2- Core Elective I – Cloud Computing / Embedded Systems
- 22UCT5AL –Advanced Learner course-1-Software Testing

SEMESTER VI

- 22UCT6E5/6E6 - Core Elective III – Ethical Hacking/ Machine Learning Techniques are introduced instead of papers in Elective list, Underwater Communication and Digital Image processing as per expert suggestions.

- 22UCT6AL –Advanced Learner course- II-Digital marketing new course was introduced instead of Data Analytics as per expert suggestions optional paper for extra credit in advanced learner.
- 22UCT6S1/6S2 – Skill Based Elective II – Desktop Publishing Lab / Animation Lab new course was introduced instead of Data Analytics (Big Data) and Dreamweaver Lab.

The following papers from B.Sc. Computer Technology were accepted by the experts fully without further suggestions:

- 22UCT6E1/6E2/6E3- Core Elective II – Mobile Computing /Software Project Management / Grid Computing
- 22UCT6E4 - Core Elective III – Artificial Intelligence
- 22UCT621 – Core XIII – Framework Technologies
- 22UCT622 – Core Lab IX – Framework Technologies
- 22UCT623 – Project

These changes have been made effect for the students admitted in 2022-2025 with SEMESTER NO. I TO VI accordingly.

BoS/CT 12.4 SUGGESTIONS GIVEN BY THE BoS MEMBERS

12.4.1: Introduce papers related to research and methodologies

12.4.2: Introduce papers related to Management problem solving task

The members had a brainstorming discussion and interaction among themselves. After discussion, fruitful suggestions were incorporated appropriately in the Curriculum and Syllabi.

Based on the suggestions given by the members, BOS resolved to recommend the following to the Academic Council for further approval.

- a) The syllabus of First Year Computer Technology under Regulation 2022.

Members Present:

Chairman	
Dr.M.RAJASENATHIPATHI Head of the Department Department of Computer Technology NGM College,Pollachi	M. Rajaseenath 4/6/22
Internal Members	
MS. C. KEERTHANA Assistant Professor Department of Computer Technology NGM College,Pollachi	C. Keerthana 4/6/22
MS. K.S. LEELAVATHI Assistant Professor Department of computer technology NGM College,Pollachi	K.S. Leelavathi 4/6/22
Dr. R. JAYAPRAKASH Department of Computer Technology NGM College,Pollachi	R. Jayaprakash 4/6/22
MS. A. KALAIVANI Assistant Professor Department of Computer Technology NGM College, Pollachi	A. Kalavani 4/6/22
University Nominee	
Dr.JulianaSunil Associate Professor Department of Information Technology Rathinum College of Arts and Science,Coimbatore	J. Sunil 4/6/22
Academic Experts	
Dr. S. Raja Head, Department of CT, Rathinam College of Arts and Science, Coimbatore	S. Raja 04/06/2022
Industrial Experts	
Mr. M. Dinesh Application Development Team Lead Accenture Services Pvt. Ltd., Chennai	M. Dinesh 04/06/2022

Alumnus nominated by Principal / HoD	
Kadhambari. A Senior Process Executive, Cognizant Technology Solutions, Coimbatore.	<i>A Kadhambari</i> 04/06/2022.
Subject Expert	
Dr. N. Kavitha Associate Professor & Head Dept. of Computer Science Nehru Arts & Science College, Coimbatore	<i>Dr. N. Kavitha</i> 4/6/2022 DR. N. KAVITHA
Student Members	
S. Selva kumar III- CT NGM College Pollachi	<i>S. Selva kumar</i> 4/6/22
H. Dharshini III- CT NGM College Pollachi	<i>H. Dharshini</i> 4/6/22

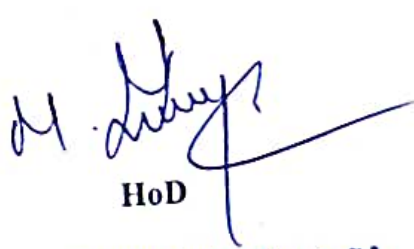
ANNEXURE I

Minutes of the 11th / Previous Meeting – Action Taken Report

S.No	Suggestion given by expert members	Action taken
1.	Industry Demand papers were introduced	Reviewed and Implemented
2.	Concept based and real time lab exercises is introduced in all practical papers	Implemented
3.	Advanced learning course papers were introduced	Implemented
4.	Guide lines for project is designed	Implemented


PRINCIPAL

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HoD

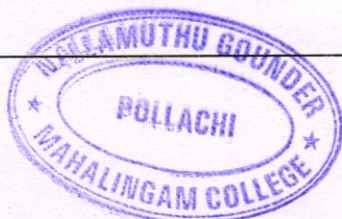
Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.W.P.D
Head of the Department
Department of Computer Technology
Nallamuthu Couder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Nallamuthu Gounder Mahalingam College - Curriculum Development Cell
Scheme of Examination For 2022 - 2025
Choice Based Credit System & OBES
Department of Computer Technology

For Part I and Part II in First & Second Semesters Only

SEMESTER – I

Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P			Internal	External		
I	22UTL101 / 22UHN101 / 22UFR101	Tamil Paper - I /	6	-	-	3	50	50	100	3
		Hindi Paper - I /		-	-					
		French Paper - I		-	-					
II	22UEN101	Communication Skills – I (Level I)	5	-	-	3	50	50	100	3
	22UEN102	Communication Skills – I (Level II)		-	-					
III	22UCT101	CORE - I : Programming in C	4	-	-	3	50	50	100	4
	22UCT102	CORE II: Digital Fundamentals and Computer Organization	4	-	-	3	50	50	100	4
	22UCT1A1	ALLIED I: Mathematics - I: Mathematical Structures For Computer Science	5	-	-	3	50	50	100	4
	22UCT103	CORE LAB -I : Programming in C	-	4	0	3	25	25	50	2
IV	22UHR101	Human Rights	1	-	-	2	-	50	50	2
	22HEC101	Human Excellence - Personal Values & SKY Yoga Practice – I	1	-	-	2	25	25	50	1
V		Extension Activities – Annexure I	-	-	-	-	-	-	-	-
CC	22CFE101	Fluency in English - I	-	-	-	-	-	-	-	-
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			26	4	0	22	300	350	650	23



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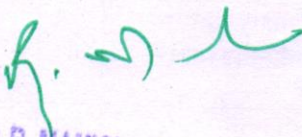
SEMESTER – II										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	22UTL202 / 22UHN202 / 22UFR202	Tamil Paper - II /	6	-	-	3	50	50	100	3
		Hindi Paper - II /		-	-					
		French Paper - II		-	-					
II	22UEN202	Communication Skills – II (Level I)	5	-	-	3	50	50	100	3
	22UEN203	Communication Skills – II (Level II)		-	-					
III	22UCT204	CORE III: Java programming	4	-	-	3	50	50	100	4
	22UCT205	Core - IV :Data Structures	4	-	-	3	50	50	100	4
	22UCT2A2	Allied - II : Mathematics II – Operations Research	4	-	-	3	50	50	100	4
	22UCT206	Core Lab - II : Java programming Lab	-	4	-	3	25	25	50	2
IV	22EVS201	Environmental Studies	2	-	-	2	-	-	50	2
	22HEC202	Human Excellence - Family Values & SKY Yoga Practice - II	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
CC	22CFE202	Fluency in English – II	-	-	-	-	-	-	-	-
	22CMM201	Manaiyiyal Mahathuvam - I	1	-	-	2	-	50	50*	Grade
	22CUB201	Uzhavu Bharatham – I	1	-	-	2	-	50	50*	Grade
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			26	4	-	26	300	350	650	23



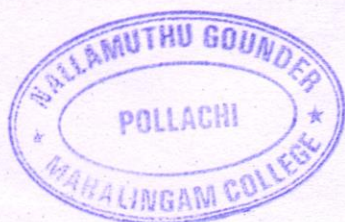
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SEMESTER – III										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
III	22UCT307	Core V: Advanced Java Programming	5		6	3	50	50	100	4
	22UCT308	Core VI: Database Management System	5		8	3	50	50	100	4
	22UCT309	Core VII: Operating Systems	5		4	3	50	50	100	4
	22UCT3A3	Allied - III : Software Engineering	5		6	3	50	50	100	4
	22UCT310	Lab - III : Advanced Java Programming Lab	-	4	0	3	50	50	100	2
	22UCT311	Lab-IV: Database Management System	-	4	0	3	25	25	50	2
IV	22UCT3N1 / 22UCT3N2	Non Major Elective - I : HTML Lab / Multimedia Lab	1	-	-	2	-	50	50	2
	22HEC303	Human Excellence - Professional Values & Ethics – III	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
CC	22CFE303	Fluency in English – III	-	-	-	-	-	-	-	-
	22CMM302	Manaiyiyal Mahathuvam - II	1	-	-	2	-	50	50*	Grade
	22CUB302	Uzhavu Bharatham – II	1	-	-	2	-	50	50*	Grade
Total			22	8	24	28	300	300	600	23




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SEMESTER – IV										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
III	22UCT412	Core VIII: Python Programming	5		4	3	50	50	100	4
	22UCT413	Core IX: Linux And Shell Programming	5		4	3	50	50	100	4
	22UCT414	Core X: Data Communication And Networks	5		3	3	50	50	100	4
	22UCT4A4	Allied IV: Big Data Analytics	5		3	3	50	50	100	4
	22UCT415	Lab - V: Python Programming Lab		4	0	3	50	50	100	2
	22UCT416	Lab - VI : Linux And Shell Programming Lab		4	0	3	50	50	100	2
IV	22UCT4N1/ 22UCT4N2	Non-Major Elective II - Office Automation Lab / CorelDraw Lab	1	-	-	2	-	50	50	2
	22HEC404	Human Excellence - Social Values & SKY Yoga Practice -IV	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	50	50	1
CC	22CFE404	Fluency in English – IV	-	-	-	-	-	-	-	-
	22CMM403	Manaiyiyal Mahathuvam – III	1	-	-	2	-	50	50*	Grade
	22CUB403	Uzhavu Bharatham – III	1	-	-	2	-	50	50*	Grade
Total			22	8	14	28	325	425	750	24



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SEMESTER – V										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External	100	
III	22UCT517	CORE XI: Open Source Technologies	6	-	2	3	50	50	100	5
	22UCT518	CORE XII: Information Security	6	-	2	3	50	50	100	5
	22UCT5E1 / 22UCT5E2 / 22UCT5E3	Core Elective - I : Cloud Computing / Embedded Systems / Fundamentals of Block chain Technology	6		2	3	50	50	100	5
	22UCT519	LAB -VII: Open Source Technologies	-	5	0	3	50	50	100	2
	22UCT520	LAB - VIII: Web Designing	-	4	0	3	50	50	100	2
	22UCT5AL	Advanced Learner Course - I : Software Testing- Self Study (Optional)	SS		-	3	50	50	100	4*
	22UCT5VA	VAC I- IoT (Internet of Things) (Mandatory)	30 Hrs		2	-	25	25	50	2*
IV	22UCT5S1 / 22UCT5S2	Skill Based Major Elective - I : R programming/ Scripting Language	2 Hours			2	25	25	50	3
	22HEC505	Human Excellence - National Values & SKY Yoga Practice – V	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
CC	22CFE505	Fluency in English - V	-	-	-	-	-	-	-	-
	22CSD501	Soft Skills Development – I	-	-	-	-	-	-	-	Grade
	22GKL501	General Awareness - Self Study (Online) (SBE) (Optional)	SS		-	2	-	50	50*	Grade
Total			19	11	6	-	300	350	650	23



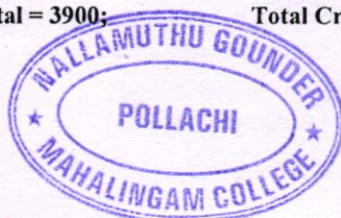
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SEMESTER – VI										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External	100	
III	22UCT621	Core - XIII : Framework Technology	6	-	8	3	50	50	100	4
	22UCT6E1 / 22UCT 6E2/ 22UCT 6E3	Core Elective - II : Mobile Computing / Software Project Management / Grid Computing	6	-	4	3	50	50	100	5
	22UCT 6E4 / 22UCT 6E5 / 22UCT 6E6	Core Elective - III : Artificial Intelligence / Ethical Hacking / Machine Learning Techniques	6	-	4	3	50	50	100	4
	22UCT622	Core Lab - IX : Framework Technology	-	5	0	3	50	50	100	3
	22UCT623	Project	-	4	0	-	50	50	100	4
	22UCT6AL	Advanced Learner Course -II : Digital Marketing (Optional) - Self Study	SS		-	3	50	50	100*	4*
	22UCT6VA	VAC-II:PC Assembly and CCTV camera Installation (Mandatory)	30Hrs		2	-	25	25	50*	2*
IV	22UCT6S1 / 22UCT6S2	Skill Based Major Elective -II : Desktop Publishing Lab / Animation Lab	-	2	0	2	25	25	50	3
	22HEC606	Human Excellence - Global Values & SKY Yoga Practice – VI	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
CC	22CFE606	Fluency in English - VI	-	-	-	-	-	-	-	-
	22CSD602	Soft Skills Development - II	-	-	-	-	-	-	-	Grade
Total			19	11	16	-	300	300	600	24
Grant Total							1750	2150	3900	140

AL – Advanced Learner Course (Optional);
CC – Certification Course / Co - Scholastic Course

VA – Department Specific Value Added Course
* - Extra Credits & Extra Hour Course

Grand Total = 3900; Total Credits = 140



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Programme:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)		
Course Code:	22UCT2A2			Title	Batch:	2022 - 2025	
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–	ALLIEDII: MATHEMATICS – II - OPERATIONS RESEARCH	Semester:	II	
					Credits:	4	

Course Objective

Every industrial organization faces multifaceted problems to identify best possible solution to their problems. OR aims to help the executives to obtain optimal solution with the use of OR techniques and to locate best or optimal solution.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the modeling tools and computational tools as well as analytic skills to evaluate the problems.	K1
CO2	To understand how to translate real world problem given in words into a mathematical formulation.	K2
CO3	To apply mathematical optimization techniques, existing optimization tool kits to write computer programs and to implement algorithms and solve problems.	K3
CO4	To analyze the problem situation leading to better control, better co-ordination, better systems and finally better decisions.	K4
CO5	To analyze the concept of CPM and PERT	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	H
CO2	M	M	H	L	MH	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	L	L
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Linear Programming Problem: Graphical Solution Method- General Linear Programming Problem (Definition alone) - Canonical and Standard forms of LPP. Simplex Method: Basic Solution and Degenerate Solutions to Linear Equation- Simplex Method.	12
Unit II	Transportation Problem: North West Corner Method- Least Cost Method- Vogel's Approximation Method- Moving towards optimality UV Method. Assignment Problem: Definition- Assignment Algorithm.	12
Unit III	Inventory Control: Introduction – Types of Inventory – Inventory Decision- Economical Order Quantity (EOQ) - Deterministic Inventory Problems.(Simple Problems)	12
Unit IV	Sequencing Problems: Introduction- Problems with n Jobs and 2 Machines- Problems with n Jobs and k Machines.	12
Unit V	Network Scheduling: Introduction- Network and Basic Components- Rules of Network Construction- Time calculation in Networks-CPM-PERT- PERT Calculations- Difference between CPM and Pert Network.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

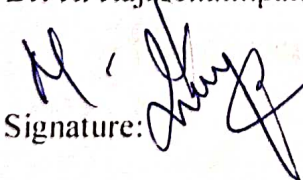
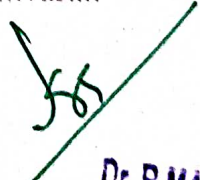
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	KantiSwarup, P.K.Gupta, Man Mohan	Operations Research	Sultan Chand & Sons, Seventh Edition ISBN-13: 978-8180547713	2010

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	R. Paneer Selvam,	Operation Research	Prentice Hall of India Pvt Ltd. second edition	2016

Web references:

1. https://ncert.nic.in/ncerts/l/lemh206.pdf
2. https://www.mygreatlearning.com/blog/transportation-problem-explained/
3. https://www.researchgate.net/publication/245280760_Deterministic_Inventory_Models_for_Variable_Production
4. https://link.springer.com/chapter/10.1007%2F978-3-662-08011-5_10
5. https://en.wikipedia.org/wiki/Network_congestion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: MS. K. S. Leelavathi  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT412			Title	Batch:	2022-2025
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	04	CORE VIII: PYTHON PROGRAMMING	Semester:	IV
					Credits:	04

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for core python and data types using objects and functions.	K4
CO2	To develop python programs for List, Stack, Queues.	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	To manage Errors and Exceptions and summarize the Network Programming.	K4
CO5	Understand and apply Well-Formed Object Oriented Features.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Basics: Python- Variables- Executing Python From the Command Line- Editing Python Files-Python Reserved Words-Basic Syntax-Comments-Strings And Numeric Data Types-Simple Input and Output.	15
Unit II	Control Statements: Control Flow and Syntax-Indenting- If Statement- Relational Operators- Logical Operators- Bit Wise Operators- While Loop- Break and Continue- For Loop-Lists-Tuple -Sets-Dictionaries.	15
Unit III	Functions: Definition- Passing Parameters to a Function-Variable Number of Arguments- Scope-Passing Functions to a Function- Mapping Functions in a Dictionary-Lambda-Modules- Standard Modules- Sys-Math- Time- Dir Function.	15
Unit IV	Error Handling: Run Time Errors-Exception Model-Exception Hierarchy-Handling Multiple Exceptions-Data Streams-Access Modes Writing-Data to a File Reading-Data From a File-Additional File Methods-Using Pipes as Data Streams-Handling IO Exceptions-Working With Directories.	15
Unit V	Object Oriented Features: Classes Principles of Object Orientation- <i>Creating Classes</i> -Instance Methods-File Organization-Special Methods- <i>Class Variables</i> - <i>Inheritance</i> -Polymorphism-Type Identification-Simple Character Methods- <i>Special Characters</i> - <i>Character Classes</i> -Quantifiers-Dot Character-Greedy Matches-Grouping-Matching at Beginning or End-Match Objects-Substituting-Splitting a String-Compiling Regular Expressions.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

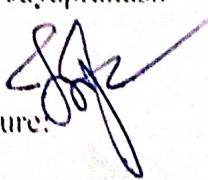
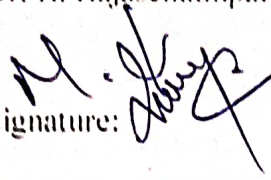
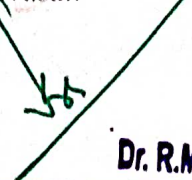
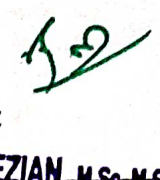
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark Summerfield	"Programming in Python 3 ", A Complete Introduction to the Python Language"	2 nd Edition, Addison-Wesley Professional	2019
2	Anurag Gupta, G P Biswas	Python Programming	McGraw Hill Education	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Allen Downey, Jeffrey Elkner, Chris Meyers	Learning With Python	Green Tea Press, Wellesley, Massachusetts	2016
2	Wesley J Chun	Core Python Application Programming.	3rd Edition. Prentice Hall Press Upper Saddle River, NJ, USA	2012

Web References

1.	http://docs.python.org/3/tutorial/index.html .
2.	http://interactivepython.org/courselib/static/pythonds .
3.	http://www.ibiblio.org/g2swap/byteofpython/read/
4.	https://www.edureka.co/blog/polymorphism-in-python
5.	https://www.programiz.com/python-programming/inheritance

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)		
Course Code:	22UCT415			Title	Batch:	2022 – 2025	
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	0	LAB - V: PYTHON PROGRAMMING LAB	Semester:	IV	
					Credits:	02	

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for list and control statements and understand the Different loops such as “for”, “while” and “do-while”.	K1
CO2	To Manage Errors and Exception and summarization of networks	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	Analyze the use control structures in programming.	K4
CO5	Design Python scripting language to develop innovative real time applications.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	M	H	L	H	H
CO3	H	M	H	H	M	H	L	H	M	H	H	H
CO4	H	H	M	H	H	L	H	H	L	M	H	H
CO5	H	H	H	M	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

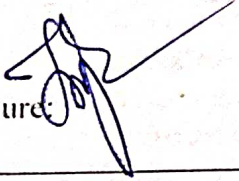
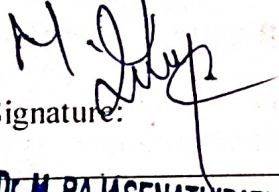
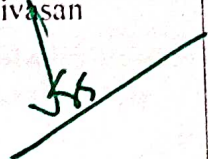
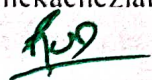
Content	Hrs.
List of Programs 1. Write a program to display the following information: Your name, Full address, Mobile number, College name, Course. 2. Write a program to find the largest three integers using if-else and conditional operator. 3. Write a program to find first n prime numbers. 4. Write a program to find the product of two matrices. 5. Write a program to find the GCD of two integers. 6. Write a program to print the Fibonacci sequence. 7. Write a GUI program that converts Celsius temperature to Fahrenheit temperature. 8. Write a GUI program that displays your details when a button is clicked. 9. Write a program that opens a specified text file and then displays a list of all unique words Found in the file. 10. Write a program that opens a specified text file and then displays the most frequent words in a text read from a file.	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature: Dr. R. MANICKA CHEZIAN, M.Sc., M.S. Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	22UCT5E3			Title	Batch:	2022 - 2025	
Lecture Hrs./Week or Practical Hrs./Week	6	Tutorial Hrs./Sem.	2	Core Elective - I : FUNDAMENTALS OF BLOCK CHAIN TECHNOLOGY	Semester:	V	
					Credits:	05	

Course Objective

On successful completion of this subject the students can understand various concepts of Blockchain, Cryptocurrency, Digital Signature, Bitcoins etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind the fundamentals of block chain technology and crypto currency.	K1
CO2	To understand the mining mechanism in block chain.	K2
CO3	To apply and identify security measures, and various types of services that allow people to trade and transact with bitcoin.	K3
CO4	To analyze security, privacy, and efficiency of a given Blockchain system.	K4
CO5	To Assess the concepts of Blockchain, Cryptocurrency, Bitcoin and Digital Signature.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	M	H	H	H	M	H	M	H	H	H	H	H
CO2	M	H	H	M	M	M	H	M	H	M	M	H
CO3	M	M	M	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	H	M	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H

Units	Content	Hrs
Unit I	Block Chain – Introduction – Problems with centralized System – Overview – Fundamentals.	18
Unit II	Bitcoin: Introduction – Transaction life cycle - Block chain2.0 – Smart Contracts. Block in Block chair Architecture - Distributed Consensus - Economics behind Block Chain Consensus	18
Unit III	The Chain and the Longest chain – Cryptocurrency to Block chain 2.0 – Permissioned model of Block chain. Cryptographic hash function – Properties – Hash pointer and Merkle tree.	18
Unit IV	Digital Signature - Public Key Cryptography - A basic cryptocurrency - Creation of coins - Payments and double spending - FORTH – the precursor for Bitcoin scripting - Bitcoin Scripts.	18
Unit V	Bitcoin P2P Network - Transaction in Bitcoin Network - Block Mining - Block propagation and block relay - Why Consensus - Distributed consensus in open environments - Consensus in a Bitcoin network.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

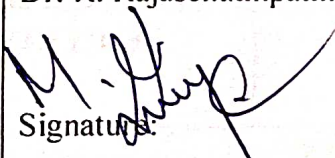
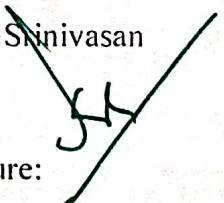
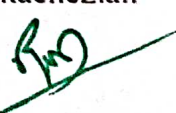
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder	Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction	Princeton University Press	2016
2	Antonopoulos	Mastering Bitcoin: Unlocking Digital Cryptocurrencies	O'Reilly Media Inc	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh	Blockchain Technology for Industry 4.0	Springer	2020
2	Satoshi Nakamoto	Bitcoin: A Peer-to-Peer Electronic Cash System	Oxford University Press	2019

Web References

1. https://www.slideshare.net/Mithileysh/blockchain-technology-181440314
2. https://www.slideshare.net/asrithak/blockchain-technology-ppt
3. https://www.buffalo.edu/content/dam/www/ubblockchain/files/basics/001%20What%20is%20Blockchain.pdf
4. https://blockchain.cse.iitk.ac.in/slides-NPTEL-BlockchainTechnologyApplications.pdf
5. https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	22UCT5S1			Title	Batch:	2022– 2025	
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SKILL BASED MAJOR ELECTIVE I – R PROGRAMMING	Semester:	V	
					Credits:	03	

Course Objective

To provide understanding of various concepts of R Programming like functions, variables, data types and standardizing etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Show the installation of R Programming Environment.	K1
CO2	Utilize and R Data types for developing programs.	K2
CO3	Design and implement R programming concept in Data Structures to develop innovative real time applications.	K3
CO4	Perform appropriate statistical tests using R	K4
CO5	Create and edit visualizations with R	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	H	H	H	H	M	L	H	H	H
CO2	H	M	M	M	H	H	M	H	M	H	M	H
CO3	H	M	H	M	H	L	M	H	M	H	M	L
CO4	M	H	L	H	M	M	H	M	H	M	H	L
CO5	H	L	H	M	H	H	M	H	M	H	L	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Study of basic Syntaxes in R 2. Write a program to find list of even numbers from 1 to n using R-Loops. 3. Create a function to print squares of numbers in sequence. 5. Write a program to join columns and rows in a data frame using cbind() and rbind() in R. 6. Implement different String Manipulation functions in R. 7. Implement different data structures in R (Vectors, Lists, Data Frames) 8. Write a program to read a csv file and analyze the data in the file in R. 9. Create pie chart and bar chart using R 10. Data Manipulation with dplyr package .	30
Total Contact Hrs	30

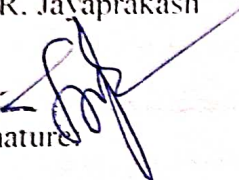
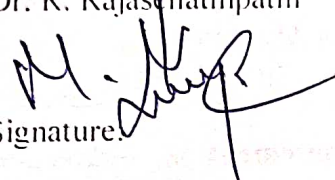
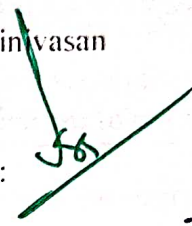
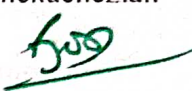
Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

22UCT5S1

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	22UCT5S2			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SKILL BASED MAJOR ELECTIVE I – SCRIPTING LANGUAGE	Semester:	V
					Credits:	03

Course Objective

To Understand the concepts of scripting languages for developing web based projects.

Course Outcomes

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

CO Number.	CO Statement	Knowledge Level
CO1	Understand VB Script language programming constructs and ability to understand the differences between Scripting languages and programming languages	K1
CO2	Gain knowledge of JavaScript language programming constructs.	K2
CO3	Understand the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.	K3
CO4	Develop a dynamic web page using client side and server side scripting language.	K4
CO5	Able to gain some fluency programming in HTML and Java Scripting.	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO1	H	H	H	H	H	H	H
CO2	H	M	H	H	H	H	H
CO3	H	H	M	H	L	H	H
CO4	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H

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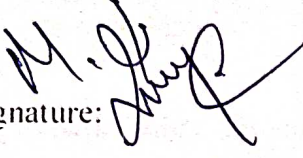
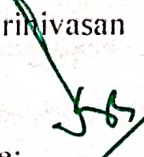
Content	Hrs
Sample Programs 1. Introduction to basic HTML elements. 2. Use table tag to format web page. Also create the Time Table of your class using table tag . 3. Create your profile page i.e. educational details. Hobbies, Achievement, My Ideals . 4. Create Style sheet to set formatting for text tags and embed that style sheet on web pages created for your site. 5. Design a web page and embed various multimedia features in the page. 6. Write a JavaScript program to determine whether a given year is a leap year in the Gregorian calendar. 7. Write a JavaScript program to convert temperatures to and from Celsius, Fahrenheit 8. Write a program outputs the squares, roots, cubes and complements of integers between 1 and 100. 9. Write a script to Sort numbers and strings. 10. Write a script to create a digital clock.	30
Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)		
Course Code:	22UCT6E5			Title	Batch:	2022 – 2025	
Lecture Hrs./Week	06	Tutorial Hrs./Sem.	04	Core Elective III:	Semester:	VI	
				ETHICAL HACKING	Credits:	4	

Course Objective

To help students understand how ethical hacking is used as a method to prevent hacking. To facilitate students. appreciate the need for understanding non-technology aspects of ethical hacking such as legal frameworks. documentation and report writing.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Explain the importance of numerous methods of real-world information intelligence	K1/K2
CO2	Differentiate the processes of vulnerability assessment and ethical hacking from penetration testing.	K2/K3
CO3	Comprehend the importance of appropriate countermeasures for managing vulnerabilities	K3
CO4	To familiarize with the methodologies that can be used to hack into a target	K4/K5
CO5	To appreciate the wide variety of attacks that can be performed against a wireless network	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	L	H	H	H	M	H	H	H	H
CO2	H	M	H	M	H	M	H	H	L	M	H	M
CO3	H	M	H	M	H	M	H	H	H	M	H	M
CO4	M	H	L	H	M	H	M	L	M	H	M	L
CO5	H	M	H	M	H	M	H	M	H	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction To Hacking: Terminologies. Categories of Penetration Test, Writing Reports. Structure of a Penetration Testing Report. Vulnerability Assessment Summary, Risk Assessment. Methodology. Linux Basics: File Structure. Cron Job, Users, Common Applications .BackTrack. Services.	18
Unit II	Information Gathering. Target Enumeration And Port Scanning Techniques: Active, Passive and Sources of information gathering. Copying Websites Locally. NeoTrace, Cheops-ng. Intercepting a Response. What Web. Net craft. Basic Parameters. Code Exploit Scanner. Interacting with DNS Servers. Fierce. Zone Transfer with Host Command and Automation. DNS Cache Snooping- Attack Scenario. Automating Attacks. SNMP - Problem. Sniffing Passwords. SolarWinds Toolset. sweep, Brute Force and Dictionary- Tools . Attack. Enumeration. Intelligence Gathering Using Shodan. Target enumeration and Port Scanning Techniques.	18
Unit III	Assessment & Network Sniffing: Introduction to Vulnerability Assessment - Pros and Cons. NMap, Updation of database. Testing SCADA Environments with Nmap, Nessus, Sniffing: Types, Hubs versus Switches. Modes. MITM Attacks, ARP Protocol Basics-working. Attacks, DoS Attacks, Dsniff tool. Using ARP Spoof to Perform MITM Attacks, Sniffing the Traffic with Dsniff. Sniffing Pictures with Drifnet, Urlsnarf and Webspay, Sniffing with Wireshark, Ettercap- ARP Poisoning, Hijacking Session with MITM Attack, ARP Poisoning with Cain and Abel, Sniffing Session Cookies with Wireshark, Hijacking the Session. SSL Strip: Stripping HTTPS Traffic, Requirements, Automating Man in the Middle Attacks, DNS Spoofing. DHCP Spoofing.	18
Unit IV	Remote Exploitation : Understanding Network Protocols. Attacking Network Remote Services. Common Target Protocols. tools for cracking network remote services, Attacking SMTP, Attacking SQL Servers. Client Side Exploitation Methods: E-Mails Leading to Malicious Attachments & Malicious Links, Compromising Client Side Update. Malware Loaded on USB Sticks. Post exploitation: Acquiring Situation Awareness, Privilege Escalation, Maintaining Access, Data Mining. Identifying and Exploiting Further Targets, Windows Exploit Development Basics.	18

Unit V	Wireless Hacking :Requirements , Aircracking , Hidden SSIDs , Monitor Mode , Monitoring Tool- Beacon Frames on Wireshark ,Airodump-ng , Wireless Adapter in Monitor Mode , Determining the Target , Cracking a WPA/WPA2 Wireless Network Using Aircrack-ng , Capturing Packets and Four-Way Handshake , Web Hacking :Attacking the Authentication , Brute Force and Dictionary Attacks , Types of Authentication , Crawling Restricted Links , Testing for the Vulnerability , Authentication Bypass with Insecure Cookie Handling , SQL injection. XSS – DOM based,BeEF,CSRF. Bypassing CSRF and BeEF with XSS. Vulnerability in FCKeditor. efront.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

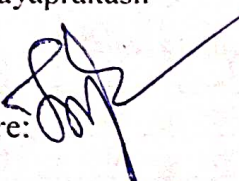
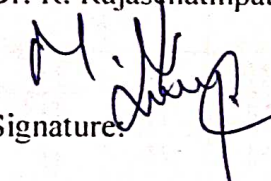
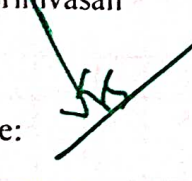
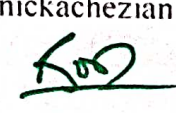
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Rafay Baloch	Ethical Hacking and Penetration Testing Guide	CRC Press	2015

Reference Books

S.N O	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Patrick Engebretson	The Basics of Hacking and Penetration Testing : Ethical Hacking and Penetration Testing Made Easy	Syngress Media , Second Revised Edition	2013
2	Michael T. Simpson. Kent Backman. James E. Corley	Hands On Ethical Hacking and Network Defense	Cengage Learning	2012

Web Resources

1. https://www.guru99.com/ethical-hacking-tutorials.html
2. https://www.javatpoint.com/ethical-hacking-tutorial
3. https://www.tutorialspoint.com/ethical_hacking/index.htm
4. https://www.futurelearn.com/info/blog/what-is-ethical-hacking-guide-for-beginners
5. https://www.certiology.com/tutorials/ethical-hacking-tutorial.html

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT6E6			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	Core Elective III:	Semester:	VI
				MACHINE LEARNING TECHNIQUES	Credits:	4

Course Objective

1. This class will familiarize students with a broad cross-section of models and algorithms for machine learning, and prepare students for research or industry application of machine learning techniques.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the difference between continuous class label and discrete class label classification methods.	K1/K2
CO2	Predict the continuous class variable using linear regression analysis	K2/K3
CO3	Predict the binary class variable using decision tree and random forest	K3
CO4	Understand the importance of Logistic regression and its application in business	K4
CO5	Apply the assessment method to find the better number of PCA and Clusters for the given data	K5/K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	M	H	H	M	M	H	M
CO3	H	L	H	M	H	M	H	H	M	M	L	M
CO4	M	H	M	H	M	H	M	M	H	H	M	H
CO5	H	M	H	M	L	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Machine Learning Algorithms: Introduction to Machine learning – Statistical Learning – types of Machine Learning –learning models: geometric, probabilistic and logistic models, introduction to supervised, unsupervised and reinforcement learning – model evaluation – model implementation – model accuracy indicators.	18
Unit II	Supervised Learning –Regression Analysis: Introduction to parametric machine learning method- assumptions of parametric machine learning methods- linear model and its assumptions- simple linear regression- parameter estimation- properties of regression parameters- testing the significance of regression parameters.	18
Unit III	Classification Techniques – Decision Tree: Introduction to decision tree algorithms- classification tree- characteristics of classification tree – size and hierarchical nature of tree- training and testing data set- induction algorithms- probability estimation in decision tree – Laplace correction and no match method- stopping criteria for tree development- pruning techniques and pruned tree-evaluation of decision tree classifiers- generalization error- F measure, Confusion matrix-ROC curve- Hit Rate Curve.	18
Unit IV	Classification Techniques – Logistic Regression: Introduction to logistic regression- assumptions involved in logistic regression-concepts on odds and odds ratio- maximum likelihood estimation- binomial logistic regression- parameter estimation- properties of logistic regression coefficients- logistic regression for correlated data- model accuracy testing- confusion matrix-Receiver Operating Characteristic Curve.	18
Unit V	Unsupervised Learning: Introduction to data dimension reduction techniques, linearity of variables- assumptions of linearity among variables- general purpose and description of principle component analysis- extraction of principle components- extraction techniques- orthogonal and oblique rotation of linear combination of variables- factor analysis and its relevance with business application.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar. Quiz. Assignments, Group Task.

Text Book

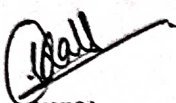
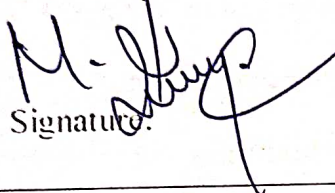
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Douglas C. Montgomery, Elizabeth A. Peck. G. Geoffrey Vining	Introduction to Linear Regression Analysis	A John Wiley & Sons, Fifth Edition	2018
2	Ethem Alpaydm	Introduction to Machine Learning	The MIT Press	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Norman R Draper, Harry Smith	Applied Regression Analysis	John Wiley & Sons, Third Edition	2015
2	Barbara G. Tabachnick, Linda S. Fidell	Using Multivariate Statistics	Pearson Education Inc	2020

Web Resources

1.	https://www.geeksforgeeks.org/machine-learning/
2.	https://www.cs.cmu.edu/~hn1/tex/machine-learning/notes.pdf
3.	https://www.tutorialspoint.com/machine_learning/machine_learning_tutorial.pdf
4.	https://u-aizu.ac.jp/~qf-zhao/TEACHING/ML/ML.html
5.	https://www.javatpoint.com/machine-learning-techniques

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT6AL			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS	Advanced Learner Course - II :	Semester:	VI
				DIGITAL MARKETING	Credits:	04

Course Objective

This course provides an overall understanding of the various digital marketing platforms and tools available for creating an effective digital marketing strategy. It provides technical skills to design and develop an integrated digital marketing plan for an organization.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the role of digital marketing in marketing strategy	K2
CO2	Identify the key elements of a digital marketing strategy	K1
CO3	Analyze the role that social marketing plays in the digital marketing	K3
CO4	Demonstrate common digital marketing tools such as SEO and Social media	K4
CO5	Apply conceptual frame works of digital marketing	K5

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	M	H	M
CO3	H	H	M	H	L	H	M	H	H	H	L	H
CO4	H	H	H	M	H	M	H	L	H	M	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	M

*H-High: M-Medium: L-Low

Units	Content	Hrs
Unit I	Introduction to Digital Marketing: Introduction - Original and Development of Digital Marketing - Internet Users: Penetration and Kind of Internet Use - Digital Marketing strategy – Digital Advertising Marketing Plan - Ethical and legal of framework of Digital Marketing - Skills Required in Digital Marketing	SS
Unit II	Search Engine Advertising: Introduction – Why pay for search advertising? – Understanding Ad Placement – Understanding Ad Ranks- Google Ads Account – E-Commerce Social Media Marketing: Introduction - Strategy – Implementation - Measure - Improve - Social Entertainment - Different forms of social entertainment	
Unit III	Face book Marketing : Introduction – Organic Marketing – Paid Marketing – Facebook Insights LinkedIn: Introduction - LinkedIn Strategy - Content Strategy - LinkedIn Native Videos - LinkedIn Analytics – Asset Copying - LinkedIn Sales Navigator - Adcampaign - Emerging Platforms: Instagram – Pinterest.	
Unit IV	Search Engine Optimization: Introduction – Search Engine – The Concept of SEO – SEO Phases –Website Audit – Content – On-Page Optimization – Off-Page Optimization – Social Media Reach – Maintenance – Local Search SEO – SEO Visual Search	
Unit V	Features – Mobile Analytics – Mobile APPS. Digital Analytics: Introduction – Data Collection – Key Metrics – Outcome Analysis – Experience Analysis.	
(*SS – Self Study)Total Contact Hrs		SS

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

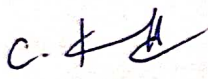
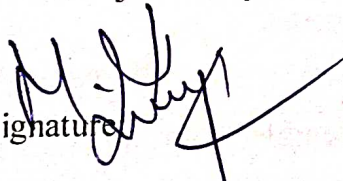
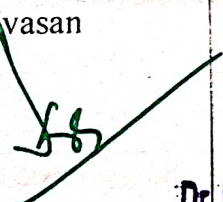
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Seema Gupta	Digital Marketing McGraw Hill Education	Digital Marketing McGraw Hill Education 2nd Edition.	2018

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Simon Kingsnorth	Digital Marketing Strategy: An Integrated Approach to Online Marketing 2nd Edition	Kogan Page, 2 nd Edition,	2019
2	Dave Chaffey	Digital Marketing	Pearson, 7th Edition,	2019
3	Kevin Hartman	Digital Marketing Analytics: In Theory And In Practice	Ostmen Bennett Bridge Publishing Services, 2 nd Edition,	2020

Web References

1. https://www.simplilearn.com/
2. https://www.michaelpage.ae/
3. https://digitalnow.undp.org/
4. https://www.facebook.com/business/small-business/advertise?
5. https://www.izito.co.in/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. C. Keerthana  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	22UCT6S1			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SKILL BASED MAJOR ELECTIVE II – DESKTOP PUBLISHING LAB	Semester:	VI
					Credits:	03

Course Objective

To provide the students understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the formatted text and graphics.	K3
CO2	To realize about the Print Industry. Printing technology	K4
CO3	To validate the Designing standards. Print layout Design and creative visualization for intuitive layout	K5
CO4	Visualize the special effects. Exporting drawings, outlining & filling objects	K4
CO5	Drawing lines, shapes .inserting pictures, objects, tables, templates	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

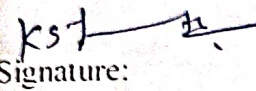
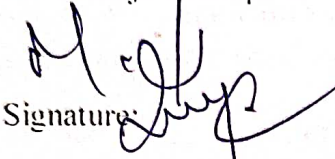
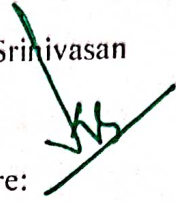
Units	Content	Hrs
Unit I	Sample Programs 1. Bokeh Effect / Blur Background using photoshop 2. To create a Visiting card using Adobe Photoshop tools. 3. To draw a frame using Custom Shape Tool in Shape preset. 4. Convert a color photo to black and white photo. 5. Explain the procedure to Creating a Cover Page for a text book 6. Explain the steps for Designing a Passport Size Photo on a Max Size Paper 7. Explain the elements of Adobe Photoshop window 8. Layers in Photoshop	30
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K. S. Leelavathi Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	22UCT6S2			Title	Batch:	2022 - 2025	
					Semester:	VI	
Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SKILL BASED MAJOR ELECTIVE II – ANIMATION LAB	Credits:	03	

Course Objective

To focus on using Photoshop and Flash to become expertise in life-drawing and related techniques.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Gained basic concepts and understanding of tools related to 3D production	K2
CO2	To familiarize with various approaches, methods and techniques of Animation Technology.	K3
CO3	Emphasis will be on conceptualization, creativity, and visual aesthetics	K4
CO4	Developing concepts, storyboarding and production of several 2 dimensional animations will be accomplished.	K5
CO5	Takes through various aspects of animation using a variety of 2 dimensional software.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	M	H
CO2	H	M	H	L	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	M	H	L	H	L	H	M	H	H	H	H	H
CO5	H	H	H	H	M	H	H	H	H	M	L	H

* H-High; M-Medium; L-Low

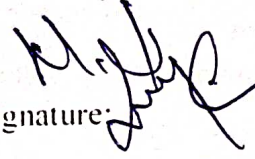
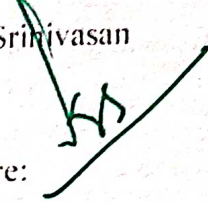
Units	Content	Hrs
Sample Programs	Using Photoshop and Animation, • Volcano Eruption • Drawing and Creating Text with Effects • Rotating Globe • Fog Effect • Lightning Effect • Animated Effect • Raining Effect • Cropping an Object	30
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K. S. Leelavathi  Signature:	Name: Dr. R. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:

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