Curriculum Framework under Choice Based Credit System (CBCS) and

Syllabus for Outcome Based Education (OBE) in

B.Sc. DIGITAL AND CYBER FORENSIC SCIENCE (DCFS) Degree Programme

for the students admitted from the academic year 2021 – 22 and onwards

அறிவிலே தெளிவு
அகத்திலே அன்பு

SREE SARASWATHI THYAGARAJA COLLEGE

An Autonomous, NAACRe–Accreditedwith 'A' Grade, ISO 9001:2008 CertifiedInstitution,
Affiliated toBharathiar University,Coimbatore,ApprovedbyAICTEforMBA/MCA and by
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BOS
JUL 2021
HOD

SREE SARASWATHI THYAGARAJA COLLEGE [AUTONOMOUS], POLLACHI

B.Sc. (Digital & Cyber Forensic Science) degree program PEO, PO and PSO

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Within a few years of obtaining B.Sc. degree in Digital Cyber and Forensic Science, the student will be able to

PEO1: Graduates are prepared to be employed in the field of cyber security and IT industries by providing expected domain knowledge in Cyber Security and Digital Forensic Science

PEO2: Graduates are provided with practical training, hands-on and project experience to meet the needs in the field of Digital and Cyber Security.

PEO3: Achieve advanced knowledge in field of Cyber and Digital Forensic Science to excel professionally in the Industry with effective communication to work in a team.

PEO4: Produce graduates who demonstrate ethical backgrounds and who can articulate the ethical and professional standards of the discipline.

PROGRAMME OUTCOMES (PO)

The students at the completion of the Programme will be able to

PO1: Investigate professionally with ethical responsibility as an individual as well as in multifaceted teams with positive attitude

PO2: Adapt to sustain in emerging era in the field of digital forensic science and constantly upgrade skills towards independent and lifelong learning.

PO3: Develop oral and written communication skills through the sequence of courses, with particular attention to development of the ability to present technical information without bias, at a variety of levels in criminal justice system.

PO 4: Design, develop models and provide solutions to cater the needs and to develop the skills to take up research and higher studies in the field of digital forensic science.

PO 5: Inculcate skills to excel in the fields of digital forensic science and IT enabled services, Criminology sectors, Teaching and Research.

PROGRAMME SPECIFIC OUTCOMES (PSO)

At the completion of the Programme, the students will be able to

PSO1: Apply the knowledge gained during the course of the program with the ability to apply diverse information to solve a real problem.

PSO2: Apply the knowledge of ethical and management principles required to work in a team with stewardship of the society.

PSO3: Able to apply the knowledge gained during the course of the Programme in the areas of problem solving, analysis, critical thinking and analysis abilities

PSO4: Develop a conceptual understanding cyber laws, rules of evidence, legal system.

PSO5: To acquire the knowledge and to develop the ability to use diplomacy and professionalism in group interactions throughout the sequence of courses.

Mapping the POs with PEO

POs/PEOs	PEO1	PEO2	PEO3	PEO4
PO1	S	M	M	M
PO2	M	S	M	S
PO3	L	M	S	M
PO4	M	M	M	S
PO5	L	M	S	S

S- Strong; L- Low; M-Medium

Mapping the PSOs with PEO

PSOs/PEOs	PEO1	PEO2	PEO3	PEO4
PSO1	M	S	M	M
PSO2	S	M	M	M
PSO3	M	S	S	S
PSO4	M	S	S	S
PSO5	M	S	S	S

S- Strong; L- Low; M-Medium

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Curriculum Framework with Choice Based Credit System (CBCS) and Syllabus for Outcome Based Education (OBE) in Bachelor of Science (Digital& Cyber Forensic Science) degree programme for the students admitted from the academic year 2021 – 22 onwards

The Choice Based Credit System (CBCS) preserves the identity, autonomy and uniqueness of every programme and reinforce their efforts to be student centric in curriculum designing and skill imparting.

Choice Based Credit System (CBCS): Choice based credit system (CBCS), provides a learning platform wherein the student has the flexibility to choose their course from a list of electives, core, allied, non-major courses, value-based courses, and skill-based courses. This is a student-centric approach to learning or acquiring higher education. The curriculum with CBCS aims to achieve and accomplish the students experience their choice of courses and credits for their horizontal and vertical mobility

For BSc (DCFS) programme, a student must earn 140 credits as mentioned in the below table.

B.Sc. (DCFS) 2021-2022

Summary of Courses Pattern and Credit Distribution in Choice Based Credit System

Part	Curriculum Structure	No. of Courses	Credits to be earn
I	Languages	02	06
II	English	02	06
III	Core (Major) Courses	21	81
	Allied Courses	04	16
	Core Electives	03	15
IV	Non-Major Electives (NME)	02	04
	Value Based Courses (VBC)	02	04
	Skill Based Courses (SBC)	04	08
V	Extension Activities	01	Grade
Total		41	140
	Extra Credit Courses (ECC)	04	12
Grand Total		45	152

Outcome Based Education:

"Outcome-Based Education" (OBE) is considered as a student-centered instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes. In the OBE model, the required knowledge and skill sets for a particular degree is predetermined and the students are evaluated for all the required parameters (Outcomes) during the course of the program.

Part – I : **Languages:** Part – 1 comprises of category namely Tamil/Hindi/Malayalam/French

Part – II: **English:** Part – 2 comprises of the category namely English

Part – III: **Core Courses:** A set of major papers that include Theory, Practical, Allied, Core Electives, Project and Internship in the major field of study selected by the student. Core courses are mandatory in nature.

Part – IV: Non - Major Electives (NME): A set of non – major elective courses are offered as choices of the students, outside of their major discipline. The courses other than the core and allied shall be opted by the students as Non – Major Elective.

Value Based Courses (VBC): Courses of cross-cutting issues relevant to the current pressing concerns both nationally and internationally such as gender, environment and sustainability, human values and professional ethics, development of creative and divergent competencies.

Skill Based Courses (SBC): The courses offered as skill - based courses under Part IV of the programme is aimed at imparting Advanced Skill of the Programme. This comprises of four courses from 3rd to 6th semesters.

Massive Open Online Courses (MOOC): According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, Coursera, etc. As per University Grants Commission (UGC) notification published in the gazette of India about UGC (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2016 on 19th July 2016, The Massive Open Online Course (MOOC) through online portal is compulsory. The institute is transferring the equivalent credit earned through SWAYAM on receipt of MOOCs completion certificate and it shall incorporate these marks/credits in the overall mark sheet of the student.

Part – V: Extension Activities: Students shall be actively participated in the extension activities such as National Service Scheme (NSS), Youth Red Cross (YRC), Sports, and Red Ribbon Club (RRC). The extension activities are must for each student to take part in at least in any one of these activities for the fulfilment of the degree.

Scheme of Examination (Student admitted from 2021-22 and onwards)

PART		TYPE OF COURSE	COURSE CODE	NAME OF THE COURSE	INS.HR	CIA	EXT	TOT	CR
SEMESTER – I									
I	Language-1	Theory	21TAM1L10 21MAL1L10 21HIN1L10 21FRE1L10	Language-I (Tamil/Malayalam/Hindi/French)	6	50	50	100	3
II	English	Theory	21GEN1L10	Communicative English – I	6	50	50	100	3
III	Core1	Theory	21BFS1C10	Basics of Cyber Crime	4	50	50	100	4
III	Core2	Theory	21BFS1C20	Programming in C	4	50	50	100	4
III	Core3	Practical	21BFS1C30	Programming in C Lab	3	50	50	100	2
III	Allied1	Theory	21BMAGAM0	Fundamentals of Statistics	5	50	50	100	4
IV	VBC1	Theory	18DHE1V10	Environmental Studies	2	50	-	50	2
	ECC-1	Theory	21GEN1Z10	Professional English I	4*	25*	75*	100*	2*
				Total for Semester – I	**30+4***	-	-	**650**	**22+2***
SEMESTER – II									
I	Language -2	Theory	21TAM2L20 21MAL2L20 21HIN2L20 21FRE2L20	Language-II(Tamil/Malayalam/Hindi/ French)	6	50	50	100	3
II	English	Theory	21GEN2L20	Communicative English – II	6	50	50	100	3
III	Core4	Theory	21BFS2C10	Information Security	4	50	50	100	4
III	Core5	Theory	21BDA2C20	Object Oriented Programming with Java	4	50	50	100	4
III	Core6	Practical	21BDA2C30	Object Oriented Programming Lab	3	50	50	100	2
III	Allied2	Theory	21BMAGAN0	Discrete Structures and Applications	5	50	50	100	4
IV	VBC2	Theory	18DHE2V20	Value Education and Human Rights	2	50	-	50	2
	ECC-2	Theory	21GEN2Z10	Professional English II	4*	25*	75*	100*	2*
				Total for Semester – II	**30+4***	-	-	**650**	**22+2***
SEMESTER – III									
III	Core7	Theory	21BFS3C10	Operating System	5	50	50	100	5
III	Core8	Theory	21BFS3C20	Ethical Hacking	5	50	50	100	5
III	Core9	Practical	21BFS3C30	Ethical Hacking Lab	5	50	50	100	5
III	Core10	Practical	21BFS3C40	Operating System Lab	4	50	50	100	2
III	Allied3	Theory	21BCH3A10	Allied – 3	5	50	50	100	4
IV	SBC1	Theory	21BFS3S10	Cryptography and its Applications	4	30	45	75	2
IV	NME1	Theory	-	NME Course – I	2	-	50	50	2
				Total for Semester – III	**30**	-	-	**625**	**25**

				SEMESTER – IV					
III	Core11	Theory	21BFS4C10	Network Security	5	50	50	100	5
III	Core12	Theory	21BFS4C20	Cyber Forensic	5	50	50	100	5
III	Core13	Practical	21BFS4C30	Cyber Forensic Lab	4	50	50	100	4
III	Core14	Practical	21BFS4C40	Network Security Lab	5	50	50	100	4
III	Allied4	Theory	-	Allied – 4	5	50	50	100	4
IV	SBC2	Theory	21BFS4S20	Python Programming Lab	4	30	45	75	2
IV	NME2	Theory	-	NME Course – 2	2	-	50	50	2
				Total for Semester – IV	**30**	**-**	**-**	**625**	**26**
				SEMESTER – V					
III	Core15	Theory	21BFS5C10	Vulnerability Assessment and Penetration Testing	6	50	50	100	5
III	Core16	Practical	21BFS5C20	Vulnerability Assessment and Penetration Testing Lab	6	50	50	100	3
III	Core17	Theory	21BFS5C30	Digital Image Processing & Biometric Security	5	50	50	100	4
III	Core18	Project	21BFS5C40	Project Work Lab	4	50	50	100	2
III	CE1	Theory	-	Core Elective – 1	5	50	50	100	5
IV	SBC3	Practical	21BFS5S30	Android Application Development Lab	4	30	45	75	2
V	EAC		21ETN5XXX	**Extension Activity** National Service Scheme / Sports	GRADE				
				Total for Semester – V	**30**	**-**	**-**	**575**	**21**
				SEMESTER – VI					
III	Core19	Theory	21BFS6C10	Web application security	6	50	50	100	5
III	Core20	Theory	21BFS6C20	Malware Analysis	4	50	50	100	4
III	Core21	Practical	21BFS6C30	Web application security Lab	6	50	50	100	3
III	CE2	Theory	-	Elective – 2	5	50	50	100	5
III	CE3	Theory	-	Elective – 3	5	50	50	100	5
IV	SBC4	Theory	21BFS6S40	File system Forensic	4	30	45	75	2
				Total for Semester – VI	**30**	**-**	**-**	**575**	**24**
				Total	**180**	**-**	**-**	**3700**	**140**
	ECC*			**Professional English (2 courses)**	-	-	-	-	**8**
	ECC		-	**MOOC (2 courses)**	-		-	-	**4**
				Grand Total	**180**			**3700**	**152**

$ INS.HR = Instructional Hours

****Note: As per UGC guidelines SWAYAM Courses are made compulsory for students of BSc DCFS programme admitted during 2019 – 20 onwards. Every student has to compulsorily complete 4 SWAYAM courses and earn 8 credits (2 Credits per course) to become eligible for the award of degree. Credits will appear in the consolidated mark sheet only.**

This Regulation regarding SWAYAM-MOOC course was subsequently amended in Standing Committee meeting held on 9th Dec, 2020 as ... As per UGC Guidelines Online Courses are made compulsory for the students of all Under Graduate & Post Graduate programmers admitted during 2019-20 and onwards. Every student has to compulsorily complete 2 MOOC courses and earn 4 credits (2 credits per course) during the course of study to become eligible for the award of degree. Credits will appear only in the consolidated mark sheet.

List of Part – 1 Language Courses (CBCS)

S.No.	Semester	Type of course	Course Code	Course Name
1	I	Theory	18TAM1L10	Tamil – I
2	I	Theory	18HIN1L10	Hindi – I
3	I	Theory	18MAL1L10	Malayalam – I
4	I	Theory	18FRE1L10	French – I
5	II	Theory	18TAM2L20	Tamil – II
6	II	Theory	18HIN2L20	Hindi – II
7	II	Theory	18MAL2L20	Malayalam – II
8	II	Theory	18FRE2L20	French – II

List of Allied Courses (CBCS)

S.No.	Semester	Type of course	Course Code	Course Name
Allied – I				
1	I	Theory	19BMAGAI0	Fundamentals of Statistics
Allied – II				
1	II	Theory	19BMAGAJ0	Discrete Structures and Applications
Allied – III				
1	III	Theory	19BCH3A10	Forensic Chemistry
Allied – IV				
1	IV	Theory	19BPH4A10	Forensic Physics

List of Value Based Courses

S.No	Semester	Type of course	Course Code	Course Name
1	I	Theory	18DHE1V10	Environmental Studies
2	II	Theory	18DHE2V20	Value Education and Human Rights

List of Non – Major Electives (CBCS)

S. No.	Semester	Type of course	Course Code	Course Name	Offering Department
1	III	Theory	18TAM3N10	Basic Tamil – I	Tamil
2	III	Theory	18TAM3N20	Advanced Tamil – I	
3	IV	Theory	18TAM4N30	Basic Tamil II	
4	IV	Theory	18TAM4N40	Advanced Tamil II	
5	III	Theory	19BEN3N10	Basic English for Competitive Examinations I	English
6	IV	Theory	19BEN4N20	Basic English for Competitive Examinations II	

7	III	**Theory**	19BMA3N10	Numerical Ability-I	Mathematics
8	IV	**Theory**	19BMA4N20	Numerical Ability-II	
9	III	**Theory**	19BPH3N10	Physics of Sports	Physics
10	IV	**Theory**	19BPH4N20	Physics of Music	
11	III	**Theory**	19BCH3N10	Chemistry for everyday life -1	Chemistry
12	IV	**Theory**	19BCH4N20	Chemistry for everyday life -2	
13	III	**Theory**	19BSY3N10	Psychology Life Skills-I	Psychology
14	IV	**Theory**	19BSY4N20	Psychology Life Skills-II	
15	III	**Theory**	19BCM3N10	Practical Banking	Commerce
16	IV	**Theory**	19BCM4N20	Capital Market	
19	III	**Theory**	19BBA3N10	Customer Relationship Management	Management
20	IV	**Theory**	19BBA4N10	Rural Marketing	
21	III	**Practical**	19BCS3N10	Excel Communications and Slide Logic	Computer Science
22	IV	**Practical**	19BCS4N20	Web Design for Non-Designers	
23	III	**Theory**	19BFS3N10	Risk & Threat Management	DCFS
24	IV	**Theory**	19BFS4N20	Forensics Auditing	

List of Elective Courses (CBCS)

S.No.	Semester	Elective	Type of course	Course Code	Course Name
Electives of B.Sc. (CS)					
1	V	I	**Theory**	19BCS5EA0	Object Oriented System Development
2	V	I	**Theory**	19BCS5EB0	Mobile computing and WAP
3	VI	II	**Theory**	19BCS6EA0	Software Testing and Software Quality Assurance
4	VI	II	**Theory**	19BCS6EB0	Network Protocols
5	VI	III	**Theory**	19BCS6EC0	Software Project Management
6	VI	III	**Theory**	19BCS6ED0	Network Security
Electives of BCA					
1	V	I	**Theory**	19BCA5EA0	E- Commerce and M-Commerce
2	VI	II	**Theory**	19BCA6EA0	Business Intelligence
3	VI	III	**Theory**	19BCA6EB0	Cloud Computing
Electives of B.Sc(CT)					
1	V	I	**Theory**	19BCT5EA0	Computer Installation and Servicing
2	VI	II	**Theory**	19BCT6EA0	Mastering LAN and Troubleshooting
3	VI	III	**Theory**	19BCT6EB0	Embedded Systems and Real Time Operating Systems
Electives of B.Sc(IT)					
1	V	I	**Theory**	19BIT5EA0	Data Mining & Data Warehousing

2	VI	II	**Theory**	19BIT6EA0	**Big Data Analytics**
3	VI	III	**Theory**	19BIT6EB0	**Internet of Things**
Electives of B.Sc(DCFS)					
1	V	I	**Theory**	19BFS5EA0	Cloud Security
2	VI	II	**Theory**	19BFS6EA0	Block Chain Technology
3	VI	III	**Theory**	19BFS5EB0	Trends in Digital Forensic
Electives of B.Sc. (AI&ML)					
1	V	I	**Theory**	19BAM5EA0	Neural Networks Digital Image Processing Wireless Network
2	VI	II	**Theory**	19BAM6EA0	Fuzzy Logic Pattern Recognition Information Security
3	VI	III	**Theory**	19BAM6EB0	Embedded Systems Advanced data mining Social and web media analytics

The Course "Yoga" is offered as Capability Enhancement Course. Certificate with grade will be awarded according to the marks obtained.

SEMESTER – I

SEMESTER – I

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21TAM1L10	Language - I	Tamil-I	Language	75	-	-	3

சநயஅடிடந: தமிழ் இலக்கியத்தில் உள்ள நேரடித்தன்மை, நிகழ்கால சமூகஅசைவுகள், மொழிநடை ஆகியவற்றை மாணவர்கள் எளிதில் விளங்கிக் கொள்ளும் வகையில் முதல் பருவத்துக்கான பாடங்கள் தெரிவு செய்யப்பட்டுள்ளன. இன்றைய இலக்கியங்கள் தரும் படைப்பனுபவத்தின் நீட்சியாகப் பொதுக்கட்டுரைகள், கடிதம், கவிதை, சிறுகதை படைப்பதற்கான பயிற்சிகளையும் தமிழ்ப்பாடம் வழங்குகிறது.

சநசநஙரளைவநந:

- மேனிலைப்பள்ளி முடிய கற்றவற்றைப் பகுத்து தொகுத்து ஆராயும் போக்கில் பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
- மானிட மதிப்புகளை உணரும் வகையிலும், போட்டித்தேர்வுகளை எதிர்கொள்ளும் நிலையிலும் 'தமிழ்' - பகுதி - ஐ அமைக்கப்பட்டுள்ளது.
- பிழையின்றிப் பேச, எழுத ஆராயும் முயற்சிக்குப் பயிற்சி தரப்படுகிறது.

SYLLABUS:

Unit	Course contents		Instructional Hours
I	அலகு ஐ கவிதைகள்;		17
	பாரதியார்	பொய்யோ மெய்யோ - நிற்பதுவே நடப்பதுவே	
	பாரதிதாசன்	மாண்டவன் மீண்டான் - ஆற்றோரம் தழைமரங்கள்	
	நாமக்கல் கவிஞர்	கண்டிலேன் - ஐயம் இல்லை தெய்வம்	
	வாணிதாசன்	மாலை –அங்கு இங்குமாய் சிதறிய	
	கண்ணதாசன்	தத்துவப்பாடல் - பரமசிவன் கழுத்திலிருந்து	
	நா..காமராசன்	சரித்திர கர்ப்பம் - அம்மா இருட்டுக்குள்	
	மேத்தா	வெளிச்சம் வெளியே இல்லை – வீட்டுக்கு வெளியே	
	அப்துல் ரகுமான்	சுயப்பிரசவம் - தெரிந்துகொள்	
	சிற்பி	பெல்ஜியம் கண்ணாடி – மரச்சட்ட தங்கரேக்குகள்	
	இளம்பிறை	அறுவடைக்காலம் - அல்லும்பகலும்	
	விஜயலட்சுமி	அற்புத ரகசியங்கள் - எந்தப்பாடலும்	
	கல்பனா	பறத்தல் அதன் சுதந்திரம் - ஓடி ஓடித் திரிந்து	
	ஹைக்கூ கவிதைகள்	கிழிந்தது சேலை – என்.டி.ராஜ்குமார் விடுமுறையேவேண்டாம் – சீனு.தமிழ்நெஞ்சன் புதுச்செருப்பு – தோழன் மஞ்சள் பூசி – புதுவை தமிழ்நெஞ்சன் ஐயனார் கை – மணிசண்முகம்	

II	அலகுஐஐசிறுகதைகள் புதுமைப்பித்தன் — சங்குத்தேவனின் தர்மம் கு.அழகிரிசாமி — பித்தளை வளையல் வ.ரா. — கோட்டைவீடு ஜெயகாந்தன் — இரண்டு குழந்தைகள் பிரபஞ்சன் — அப்பாவின் வேஷ்டி தனுஷ்கோடி ராமசாமி — தீம் தரிகிட ஆதவன் — கனவுக்குமிழி தமயந்தி — பஞ்சாயத்து	16
III	அலகுஐஐஐபுதினம் திலகவதி - கல்மரம்	15
IV	அலகு ஐஏஇலக்கிய வரலாறு 1. கவிதை இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 2. சிறுகதையின் தோற்றமும் வளர்ச்சியும் 3. புதினத்தின் தோற்றமும் வளர்ச்சியும்	12
V	அலகுஏஇலக்கணம் பயிற்சி அளித்தல் - மொழித்திறன் வளர்த்தல் 1. எழுத்து மாற்றத்தால் ஏற்படும் பிழைகள் 2. வல்லினம் மிகும், மிகா இடங்கள் 3. மெல்லெழுத்து மிகும் இடங்கள் 4. வாக்கியங்களில் ஏற்படும் பிழைகள் 5. இலக்கணக் குறிப்பு 6. சரியான சொற்களைக் கண்டறிதல் கவிதை எழுதுதல், கடிதம், விண்ணப்பம் வரைதல்.	15
	Total	75

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	இக்கால இலக்கியங்களின் பயன்களை அறிவித்தலின் வெளிப்பாடாக கவிதைப் பரிமாணங்கள், படைப்புகள் குறித்த அடிப்படைச் செய்திகளை உணர்ந்து கொள்ளுதல்.	K1
CO2	தமிழர்களின் பண்பாட்டுக் கூறுகளையும் பின்னணியையும் வெளிப்படுத்தும் விதமாகச் சிறுகதைகள், புதினம் சார்ந்த கருத்துகளைப் புரியவைத்தல்.	K2
CO3	நடைமுறையில் தமிழைப் பிழையின்றி எழுத உதவுதல், கவிதை, கடிதம், கதை எழுதும் திறமையை வளர்த்தல்.	K3

Mapping Course Outcomes with Programme Outcomes& Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	L	L	S	S	L	L	L
CO2	S	S	M	L	L	S	S	L	L	L

SEMESTER- I

Coursecode	21MAL1L10	PART-I MALAYALAM PAPER I	L	T	P	C
			60	-	-	3
Pre-requisite			SyllabusVersion			2020-21

COURSEOBJECTIVE:

- Improves grammatical knowledge
- Will continue to read and learn about articles andthink about them
- It is possible to read and understand short stories and understand the thoughts and life of the people of this state
- Translation knowledge and the ability to read and analyze a message are alsoavailable
- Translation knowledge and the ability to read and analyze a message are also

	PARTI MALAYALAMPAPERI	
Unit	**Course Content**	**Instructional hours**
I	Novel-PathummayudeAadu-VaikamMuhammed Basheerr	15
II	Novel--PathummayudeAadu -VaikamMuhammedBasheerr	15
III	ShortStory-EntePriyappetaKadhakal –Akbar Kakkattil)	10
IV	ShortStory-EntePriyappetaKadhakal –Akbar Kakkattil)	10
V	Composition&Translation(EnglishtoMalayalam)	10
	TOTAL	60

Teachingmethods:
Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projectionthrough LCD

TextBooks:

1.Novel-PathummayudeAadu-VaikamMuhammedBasheer(D.C.Books,Kottayam,Kerala)

2. Short Story –EntePriyappetaKadhakal – Akbar Kakkattil)(D.C.Books, Kottayam,Kerala)

3.Expansionofideas,General Essayand Translation.(Asimplepassage)

ReferenceBooks:

1.MalayalaNovelSahithyaCharitram-K.M.Tharakan(N.B.S.Kottayam)
2.Cherukatha Innale Innu-M.Achuyuthan (D.C Books. Kottayam)
3.SahithyaCharitramPrasthanangalilude-Dr.K.M George,(D.C.BooksKottayam)
4.MalayalaSahithyavimarsam-SukumarAzheekode(D.C.books)

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO1	Understandthetextstylesandgrammaticalelements	K1
CO2	Discussthe content ofareadingpassage	K1
CO3	Developaninterest intheappreciation ofshortstories	K2
CO4	Comprehendthe grammaticalstructuresandsentencemaking	K3
CO5	UnderstandthelanguageanddevelopingEnglishtoMalayalamtranslationskill	K4

MappingwithProgrammeOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	M	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	M	S	M	L	L	L	L

SEMESTER- I

Coursecode	21HIN1L10	HINDIPAPER -I	L	T	P	C
			60	-	-	3

COURSEOBJECTIVE:

- Improvesgrammaticalknowledge
- Willcontinuetoread andlearnaboutarticles andthinkaboutthem
- It is possible to read and understand short stories and understand the thoughts and lifeofthe people ofthis state
- Translation knowledge and the ability to read and analyze a message are alsoavailable

UnitNo.	PARTIHINDI PAPER I Course Content	Instructional hours
I	**PROSE:NUTHANGADYASANGRAH** Lesson1 – BharathiyaSanskurthi - Dr.Rajendra Prsad Lesson3 –Razia -RamavikshaBenipuri Lesson4 –Makreal -Yespal Lesson5 – BahthaPani Nirmala -'AGEYA' Lesson6–RashtrapithaMahathmaGandhi -Mukthibodh Lesson9–NindaRas -HarishankarParsayi.	15
II	**NONDETAILEDTEXTSHORTSTORIES:KAHANIKUNJ** 1. Pareksha –Premchand 2. Mamtha -JayashankarPrasad 3. Apnaparaya -Jaynendrakumar 4. Admika bachcha -Yespal 5. Bolaramkajeev -HarishankarParsayi 6. Vapasi -MannuBhandari	15
III	**GRAMMAR :SHABDHAVICHARONLY** (NOUN.PRONOUN,ADJECTIVE, VERB,TENSE, CASE ENDINGS)Theoretical &Applied.	10
IV	**TRANSLATION:English–Hindionly.** ANUVADHABHYAS –III(1-15lessonsonly)	10
V	**COMPREHENSION:** 1Passagefrom ANUVADHABHYAS–III(16-30)	10
	TOTAL	60

TextBooks:

1. Nuthangadyasangrah,2009, editor:Jayaprakash,publisher:Sumitraprakashansumitravas,16/4,hastings road, Allahabad – 211001.
2. Kahani kunj, 2011, Editor :V.P. Amithab.Publisher : Govind Prakashan Sadhar Bagaar,Mathura,UttarPradesh,–281 001

ReferenceBooks:

NAVEENHINDIVyakaran, 2002,DakshinBharatHindiPrachar Sabha,Chennai–600017

Teachingmethods:

Lecturing,Assignment,GroupDiscussion,Quiz, GroupActivity.PowerPointProjectionthrough LCD

WebLink:

https://hi.wikipedia.org/wiki/https://en.wikipedia.org/wiki/Premchandhttp://hindigrammar.in/

MappingwithProgrammeOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	M	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	M	S	M	L	L	L	L

SEMESTER - I

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21GEN1L10	Communicative English-I	Language	70	5	-	3

Preamble: This course aims to provide a better understanding on the various aspects of communicative skills through a keen focus on LSRW.

Prerequisite: Basic knowledge in Communicative English and Skills

Unit	Course Contents	Hours
I	1. **Listening and Speaking** a. Listening and responding to complaints (formal situation) b. Listening to problems and offering solutions (informal) 2. **Reading and writing** a. Reading aloud (brief motivational anecdotes) b. Writing a paragraph on a proverbial expression/motivational idea. 3. **Word Power/Vocabulary** a. Synonyms & Antonyms 4. **Grammar in Context** • Adverbs Prepositions	15
II	1. **Listening and Speaking:** a. Listening to famous speeches and poems b. Making short speeches- Formal: welcome speech and vote of thanks. Informal occasions- Farewell party, graduation speech 2. **Reading and Writing:** a. Writing opinion pieces (could be on travel, food, film / book reviews or on any contemporary topic) b. Reading poetry b .i. Reading aloud: (Intonation and Voice Modulation) b .ii. Identifying and using figures of speech - simile, metaphor, personification etc. 3. **Word Power** : a. Idioms & Phrases 4. **Grammar in Context:** Conjunctions and Interjections	15
III	1. **Listening and Speaking** a. Listening to Ted talks b. Making short presentations – Formal presentation with PPT, analytical presentation of graphs and 3 reports of multiple kinds c. Interactions during and after the presentations 2. **Reading and writing** a. Writing emails of complaint b. Reading aloud famous speeches 3. **Word Power** a. One Word Substitution 4. **Grammar in Context**: Sentence Patterns	15
IV	1. **Listening and Speaking** a. Participating in a meeting: face to face and online b. Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks. 2. **Reading and Writing** a. Reading visual texts – advertisements b. Preparing first drafts of short assignments 3. **Word Power** a. Denotation and Connotation 4. **Grammar in Context**: Sentence Types	15
V	1. **Listening and Speaking** a. Informal interview for feature writing b. Listening and responding to questions at a formal interview 2. **Reading and Writing** a. Writing letters of application b. Readers' Theatre (Script Reading) c. Dramatizing everyday situations/social issues through skits. (writing scripts and performing) 3. **Word Power** a. Collocation 4. **Grammar in Context**: Working With Clauses	15
Total		75

Text Book:
Communicative English Text Book

Reference Book(s):
a. Books by Penny Ur

b. The Oxford English-English-Tamil dictionary (for pronunciation) c. https://www.esolcourses.com/ d. For Readers' Theatre: https://www.youtube.com/watch?v=JaLQJt8orSw&t=469s (the link to the performance; refer scripts by Aaron Shepherd)
Focus of the Course: Skill Development
Course Designer TRANSCE **BoS Chairman**

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Gain mastery in LSRW Skills	K1
CO2	Understand the fundamentals of grammar	K1
CO3	Apply LSRW skills and practice it	K3
CO4	Comprehend the nuances of English Language	K3

Mapping Course Outcomes with Programme Outcomes & Programme Specific Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	S	M	S	S	S	S	S	M
CO2	M	S	S	M	M	S	M	S	L	M
CO3	M	S	S	S	L	S	M	S	S	S
CO4	M	S	S	M	M	S	M	S	S	M

S – Strong; **L** – Low; **M** – Medium

Approved by Academic Council
14 JUL 2021

SEMESTER I

Course:French1
Course Code: 21FRE1L10
Credits: 3
Hours: 60

CourseObjectives:
To understand,speak,read and write simple,standard speech which is very slow and is carefully articulated and can recognize familiar words and very basic phrases concerning themselves, their family and immediate concrete surroundings when people speakslowly and clearly

Part1 -French1		
UnitNo.	**Topics**	**Instructional hours**
1	Etape0 Etape 1(Lecons 1 -3)	15
2	Etape 2(Lecons 1 -3)	15
3	Etape3 -Leçons 1 -2	10
4	Etape3 –Leçon3 Etape4 –Leçon1	10
5	Etape4 –Leçons 2 -3	10
	Total	60
Etapes 0to4,Pages 11to62		

TextBookPrescribed:Adomania1–Methodedefrancais Authors:Céline Himber,CorinaBrillant,Sophie ErlichPublisher: HACHETTEFLE
Availableat:GOYALPublishers and Distributors PvtLtd,NewDelhi(9810322459)

Reference:Latitudes1
Author:YvesLoiseau,RégineMerieuxPublisher:FrenchandEuropeanPublicationsInc
Availableat:GOYALpublishersanddistributorsPvtLtd,NewDelhi(9810322459)

SWAYAM:https://swayam.gov.in/nd2_cec19_lg04/preview
byProf.NirupamaRastogi(Retd)EnglishandForeignLanguagesUniversity,Hyderabad

SEMESTER – I

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BFS1C10	Core	Basics of Cyber Crime	Concept	45	5	-	4

Preamble: To make the students to understand the basic concepts of Cyber Crime, Cyber Security, Boolean algebra, Malware and Back door attacks and to acquire the knowledge on the Basics of Cyber Security.

Prerequisite: Knowledge in Logical Skills

Syllabus:

Unit	Course contents	Instructional Hours
I	Introduction to Cyber Crime: Introduction - Cyber Crime - Definition and Origins of the Word-Cyber Crime and Information Security - Who are Cyber criminals? - Classification of Cyber Crimes - The Legal perspectives - An Indian Perspective	9
II	Cyber offenses: How Criminals Plan them: Introduction - How criminals plan the attacks - Social Engineering - Cyber stalking - Cybercafé and cybercrimes - Botnets- Attack vector.	9
III	Cyber Crime: Mobile and Wireless Devices: Introduction - Proliferation of Mobile and Wireless Devices - Trends in Mobility - Credit card frauds in mobile and wireless computing Era - Security challenges posed by mobile devices - Registry setting for mobile devices - Authentication service security - Attacks on Mobile/Cell phones.	12
IV	Mobile Devices : Security implications for organizations - Organizational measures for handling mobile -Organizational security policies and measure in mobile computing era- Laptops Tools and Methods used in Cyber Crime: Introduction - Proxy servers and Anonymizers - Phishing - Password Cracking-Key loggers and Spywares - Virus and Worms - Trojan Horse and Backdoors - steganography	10
V	Phishing and Identity Theft: Phishing –Methods – Techniques – Spear phishing – Types of phishing scams – Phishing Toolkits and spy phishing – Phishing counter measures. Identity Theft: Personally identifiable information – Types – Techniques – countermeasures – How to efface your online identity.	10
	Total	**50**

Text Book(s):

1) Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina Godbole, SunitBelapure

Reference book(s):

1) Fundamental Of Cyber Security (Principles, Theory and Practices) by MayankBhushan , Rajkumar Singh Rathore , AatifJamshed

2) Cyber security: Managing Systems, Conducting Testing, and Investigating Intrusions by Thomas J. Mowbray

Focus of Course: Employability

e-Resource/e-Content URL: • Vidyamithra Portal : http://vidyamitra.inflibnet.ac.in/ • NPTEL
Course Designer : Mr. S.Dhanaraj Dr.S.Sasikala PC , Dept. of DCFS, BoS Chairman

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Define cybercrime and its classification	K1
CO2	Outline the offenses	K2
CO3	Summaries the different types of frauds	K2
CO4	Make use of the tools to identify cyber crime	K3

Mapping Course Outcomes with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	L	M	M	M	L	M	M	M
CO2	M	L	M	M	M	M	L	M	M	M
CO3	L	M	M	S	M	M	M	S	M	M
CO4	L	M	S	M	S	S	M	S	M	S

S –Strong; L –Low; M –Medium

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BFS1C20	Core	Programming In C	Application	45	5	-	4
Preamble: This course provides the student with strong foundation on programming concepts and its application.							
Prerequisite: Mathematical and logical skills.							

SYLLABUS:

Unit	Course contents	Instructional Hours
I	**Introduction to C**: Structure of a C Program - Programming Rules - The C Character Set - The C Keywords - Identifiers – Constants. Variables: Rules for Defining Variables - Declaring Variables - Data Types - Type Conversion - Arithmetic Operators - Relational Operators - Logical Operators - Bitwise Operators - Comma and Conditional Operator.	09
II	**Input and Output in C**: Formatted Functions - Unformatted Functions. Decision Statements: If Statements - The Break Statement - The Continue Statement - The GOTO Statement - The Switch Statement. Looping Statements: For Loops - The While Loop - The Do-While Loop - Bohm and Jacopini's Theory.	09
III	**Arrays:** Array Initialization - Definition of Array - Characteristic of Array - Two-Dimensional Array - Three or Multi-Dimensional Arrays. Functions: Basics of a function – Function Definition – The return statement - Types of Functions - Call by Value - Call by Reference - Recursion. Strings: Introduction - String Standard Functions.	11
IV	**Pointers:** Introduction - Features of Pointers - Pointer Declaration - Array of Pointers - Pointers to Pointers. **Structure and Union:** Introduction - Features of Structures - Declaration & Initialization of Structures - Array of Structures - Pointer to Structures – Union.	11
V	**Files:** Introduction - Streams & File Types - Steps for File Operations - File I/O - Structures Read & Write - Other File Functions - Command Line Arguments - Environment Variables - I/O Redirection	10
	Total	**50**

Text Book(s):

1. Ashok N.Kamthane,Amit Ashok Kamthane, "**Programming in C**", Pearson India Education Services Pvt, Ltd, Third Edition, 2019.

Reference book(s):

1. YaeshwantKanitkar, **"Let Us C"**, BPB publications, New Delhi, 16th Edition, 2018.
2. E. Balagurusamy, **"Programming in ANSI C"**, TMH Publishing Pvt., Ltd., 6th Edition, 2013.
3. Byron S. Gottfried, **"Programming with C"**, TMH Publishing Pvt., Ltd., 3rd Edition, 2013.
4. Paul Deitel, Harvey Deitel ", **C How to Program"**, Pearson India Education Services Pvt. Ltd, 6th Edition, 2010.

Focus of Course: Employability

e-Resource/e-Content URL: https://nptel.ac.in/courses/106104128/ https://www.udemy.com/c-programming-for-beginners
Course Designer : Mr. S.Dhanaraj Dr.S.Sasikala **PC , Dept. of DCFS,** **BoS Chairman**

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO1	Define the structure and fundamental concept of C programming.	K1
CO2	Demonstrate various control statements.	K2
CO3	Construct program using arrays, functions, structures and union.	K3
CO4	Implement pointer and file operations for any given application.	K3

Mapping Course Outcomes with Programme Outcomes &Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO 4	PSO5
CO1	L	M	M	S	M	M	L	S	M	M
CO2	L	M	M	M	M	M	L	M	M	M
CO3	M	M	M	S	M	S	M	S	M	M
CO4	M	M	S	M	M	S	M	S	M	M

S –Strong; L –Low; M –Medium

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BFS1C30	Core	Programming In C Lab	Practical	-	5	25	2

Preamble: Students will be able to apply logic which helps to develop programs, applications in C.

Prerequisite: Basic programming skills and logical thinking.

Syllabus:

Ex. No	Course contents	Instructional Hours
	Implementation of Control structures	
1	Develop a C Program to find the sum and average of a mark.	2
2	Develop a C program using Switch case.	2
	Implementation of Looping's	
3	Develop a C program to find the Fibonacci series for a given limit	2
4	Develop a C program to check whether the given number is prime or not and display the n range of prime numbers.	2
	Implementation of Functions	
5	Develop a C program to illustrate recursive function.	2
6	Develop a C program to find the palindrome in a given sentence	2
7	Develop a C program to manipulate strings using string functions.	2
8	Develop a C Program using Functions	2
	Implementation of Pointers	
9	Develop a C program to swap two integers using pointers.	2
10	Develop a C program using Array of Pointers.	2
	Implementation of Structures	
11	Develop a C program using the structures.	2
12	Develop a C program using Array of Structures.	2
	Implementation of Files	
13	Develop a C program to calculate electricity bill using files.	2
	Implementation of Security	
14	Develop a C program to encrypt and decrypt a string	2
15	Develop a C program to encrypt and decrypt Files	2
	Total	**30**

Reference Book:

1. Ashok N.Kamthane, Amit Ashok Kamthane, "**Programming in C**", Pearson India Education Services Pvt, Ltd, Third Edition, 2019.

Recommended Tools to be used: C Editor	
Focus of Course: Employability	
Course Designer : Mr. S.DhanarajDr.S.Sasikala **PC , Dept. of DCF&,**	**BoS Chairman**

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Apply the fundamental concepts of C programming & Data Structures	K3
CO2	Implement various control statements	K3
CO3	Develop C programs to implement arrays, function, structures, pointers	K3
CO4	Solve analytical problems using Data Structure programming paradigm	K4

Mapping Course Outcomes with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	M	S	M	M	M	M	M	M
CO2	L	M	M	M	M	M	M	M	M	M
CO3	M	M	S	S	S	S	M	S	M	M
CO4	M	M	S	S	M	S	M	S	S	S

S –Strong; **L** –Low; **M** –Medium

SEMESTER – I

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BMAGAM0	Fundamentals of Statistics	Employability	50	10	-	4

Preamble: To facilitate the learner to have sound knowledge of various measures of central tendency & Dispersion application of correlation & Regression, importance of Index numbers and Time series

Prerequisite: Basic knowledge of statistics taught at HSC level

SYLLABUS: Fundamentals of Statistics

Unit	Course contents	Hours
I	**Measure of Central Tendency** :Averages- Introduction- Requisites of a good average or Measure of Central Tendency –Various Measure of Central Tendency-Arithmetic Mean: Step Deviation Method for Computing Arithmetic Mean – Merits and Demerits of Arithmetic Mean –Median:Calculation of Median – Merits and Demerits of Median Mode : Computation of Mode — Merits and Demerits of Mode **Measures of Dispersion** : Introduction-Range-Quartile deviation or Semi Quartile deviation-Mean Deviation -Standard Deviation-Standard Deviation of the combined Series –Coefficient of Variation (Derivations excluded)	12
II	**Correlation** : Introduction- Types of Correlation-Methods of studying Correlation -Scatter Diagram – Karl Pearson's Coefficient of Correlation – Properties of Correlation Coefficient - Rank Correlation method –Computation of Rank Correlation Coefficient (Derivations excluded)	12
III	**Linear Regression Analysis** : Introduction-Linear and nonlinear Regression – Lines of Regression-Deviation of line of Regression of y on x- line of Regression of x on y-Theorems on Regression Coefficients-To find the Mean values$(\bar{X},\bar{Y})$ from the Two lines of Regression- To find the Regression Coefficients and The Correlation Coefficient from the Two lines of Regression (Derivations excluded)	12
IV	**Time Series Analysis:** Introduction -components of time series– Secular Trend-Short Term Variations – Random or Irregular Variations-Analysis of Time series-Mathematical Models for Time series-Measurement of Trend – Graphic or free Hand Curve fitting by the principle of Least squares-Conversion of Trend	12
V	**Time Series Analysis:** -Method of Moving Averages-Measurement of Seasonal Variations – Method of Simple Averages-Ratio to Trend Method-Ratio to Moving Average Method (Derivations excluded)	12
Total		60

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO 1	To list various measures of Central Tendency, Dispersion and components of Time Series.	K1
CO 2	To learn the concepts of correlation	K1
CO 3	To learn the concepts of Regression and Index Numbers	K2
CO 4	To learn the concepts of Index Numbers and Solve the problems in Index Numbers	K3
CO 5	To apply these concepts in statistical tools.	K3

Mapping with Program Outcomes: (For DCFS)

Cos/POs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	S	M	S	S	L	S	S	M
CO2	M	M	S	M	M	S	M	M	M	L
CO3	M	M	M	L	L	M	L	S	M	S
CO4	L	M	S	M	S	S	M	M	L	S

CO5	L	S	S	M	M	S	S	M	M	L

S – Strong; L – Low; M – Medium

SEMESTER – I

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
18DHE1V10	VBC1	Environmental Studies	-	27	-	-	2

1.1. Definition, scope and importance
1.2. Need for public awareness
1.3. Natural resources

1.3.1. NATURAL RESOURCES AND ASSOCIATED PROBLEMS **6 Hours**

a. Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
b. Water resources: use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems
c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d. Food resources: world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e. Energy resources: growing energy needs, renewable and non-renewable energy sources, use of alternate sources. Case studies.
f. Land resources: land as a resource, land degradation, man induced landslides, soil erosion and desertification.

1.3.2. Role of an individual in conservation of natural resources.
1.3.3. Equitable use of resources for sustainable lifestyles.

2. ECOSYSTEMS **5 Hours**

2.1 Concept of an ecosystem.
2.2 Structure and function of an ecosystem.
2.3 Producers, consumers and decomposers.
2.4 Energy flow in the ecosystem.
2.5 Ecological succession.
2.6 Food chains, food webs and ecological pyramids.
2.7 Introduction, types, characteristic features, structure and function of the following ecosystem: -

- Forest ecosystem.
- Grassland ecosystem.
- Desert ecosystem.
- Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

3. BIODIVERSITY AND ITS CONSERVATION **5 Hours**

3.1 Introduction – Definition: genetic, species and ecosystem diversity.
3.2 Biogeographical classification of India.
3.3 Value of biodiversity: consumptive use, productive use, social, ethical, Aesthetic and option values
3.4 Biodiversity at global, National and local levels.
3.5 India as a mega –diversity nation.

3.6 Hot-spots of biodiversity.
3.7 Threats to biodiversity: habitat loss, poaching of wildlife man-wildlife conflicts.
3.8 Endangered and endemic species of India.
3.9 Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

4. ENVIRONMENTAL POLLUTION **5 Hours**

4.1 Definition
Causes, effects and control measures of: -

1) Air pollution
2) Water pollution
3) Soil pollution
4) Noise pollution

5) Thermal pollution

4.2 Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.
4.3 Role of an individual in Prevention of Pollution.
4.4 Pollution Case Studies.
4.5 Disaster Management: Floods, Earthquake, Cyclone and Landslides.

5. SOCIAL ISSUES AND THE ENVIRONMENT **6 Hours**

5.1 Sustainable development
5.2 Urban problems related to energy.
5.3 Water conservation, rainwater harvesting, watershed management.
5.4 Resettlement and rehabilitation of people; its problems and concerns. Case studies.
5.5 Environmental ethics: issues and possible solutions.
5.6 Climate change, global warming, ozone layer, depletion, acid rain, nuclear accidents and holocaust. Case studies
5.7 Consumerism and waste products.
5.8 Environmental protection Act.
5.9 Air (Prevention and Control of Pollution) Act.
5.10 Water (Prevention and Control of Pollution) Act.
5.11 Wildlife Protection Act.
5.12 Forest Conservation Act.
5.13 Issues involved in enforcement of environmental legislation.
5.14 Public awareness.
5.15 Human population and the environment.
5.15.1 Population growth and distribution.
5.15.2 Population explosion – Family Welfare Programme.
5.15.3 Environment and human health.
5.15.4 Human rights.
5.15.5 Value Education.
5.15.6 HIV/ AIDS
5.15.7 Women and Child Welfare
5.15.8 Role of Information Technology in Environment and Human Health
5.15.9 Medical Transcription and Bioinformatics

TEXT BOOKS:

1. Balu V, **"Environmental Studies"**, Sri Venkateshwara Publications. 2004
2. Arumugam N, Kumaresan V. **"Environmental Studies"**, Saras Publication. 2004
3. Rajagopalan R. **"Environmental Studies"**, Oxford University Press. 2005

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO1	To remember key concepts from environmental studies, political and social studies	K1
CO2	To understand the concepts and methods from renewable and non-renewable sources and their applications in environmental problem solving	K2
CO3	To acquire knowledge on concept of environment issues and links between human and natural system	K3
CO4	To demonstrate the general understanding of the breadth and inter disciplinary nature of environmental issues	K3

Mapping Course Outcomes with Programme Outcomes & Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	L	S	S	M	S	S
CO2	S	S	M	S	L	S	S	M	S	S
CO3	S	S	M	S	L	S	S	M	S	S

CO4	S	S	M	S	M	S	S	M	S	M

S –Strong; L –Low; M –Medium

SEMESTER – I

Course Code	Course Name	Category	Lecture(L)	Tutorial(T)	Practical(P)	Credit
20GEN1Z10	Professional English I	Language	55	5	–	2
Preamble: The course aims to Develop students' competence in the use of English with particular reference to the workplace situation						
Prerequisite: Basic knowledge in English						

SYLLABUS

Unit	Course contents	Instructional Hours
I	**COMMUNICATION** **Listening:** Listening to audio text and answering questions- Listening to Instructions **Speaking:** Pair work and small group work. **Reading:** Comprehension passages –Differentiate between facts and opinion **Writing:** Developing a story with pictures. **Vocabulary:** Register specific - Incorporated into the LSRW tasks	12
II	**DESCRIPTION** **Listening:** Listening to process description.-Drawing a flow chart. **Speaking:** Role play (formal context) **Reading:** Skimming/Scanning Reading passages on products, equipment and gadgets. **Writing:** Process Description –Compare and Contrast Paragraph-Sentence Definition and Extended definition- Free Writing. **Vocabulary:** Register specific -Incorporated into the LSRW tasks.	12
III	**NEGOTIATION STRATEGIES** **Listening:** Listening to interviews of specialists / Inventors in fields (Subject specific) **Speaking:** Brainstorming. (Mind mapping). Small group discussions (Subject- Specific) **Reading:** Longer Reading text. **Writing:** Essay Writing (250 words) **Vocabulary:** Register specific - Incorporated into the LSRW tasks	12
IV	**PRESENTATION SKILLS** **Listening:** Listening to lectures. **Speaking:** Short talks. **Reading:** Reading Comprehension passages **Writing:** Writing Recommendations Interpreting Visuals inputs **Vocabulary:** Register specific - Incorporated into the LSRW tasks	12
V	**CRITICAL THINKING SKILLS** **Listening:** Listening comprehension- Listening for information. **Speaking:** Making presentations (with PPT- practice). **Reading:** Comprehension passages –Note making. Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills **Writing:** Problem and Solution essay– Creative writing –Summary writing **Vocabulary:** Register specific - Incorporated into the LSRW tasks	12
		60
Text Books: Tamil Nadu State Council for Higher Education(TANSCHE)		
Reference Books: Tamil Nadu State Council for Higher Education(TANSCHE)		
Focus of Course: Employability (Employability/Skill Development)		

e-Resource/e-Content URL: • **Vidya-MitraPortal:**http://vidyamitra.inflibnet.ac.in/index.php/search • **e-PG Pathshala**:http://epgp.inflibnet.ac.in/ahl.php?csr	
Course Designer **TANSCHE** Assistant Professor of English	**BoS Chairman**

COURSE OUTCOMES

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

CO Number	Course Outcome (CO) Statement	Bloom's Taxonomy Knowledge Level
CO1	Enhance the creativity of the students, which will enable them to think of innovative ways to solve issues in the workplace.	K1
CO2	Develop students' competence and competitiveness and thereby improve their employability skills.	K2
CO3	Attend interviews with boldness and confidence	K3
CO4	Adapt easily into the workplace context, having become communicatively competent	K4
CO5	Apply to the Research and Development organizations/ sections in companies and offices with winning proposals	K5

Mapping Course Outcomes with Programme Outcomes& Programme Specific Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	S	S	S	M	M	S	S	S
CO2	M	M	M	S	S	S	M	S	S	S
CO3	M	M	M	S	S	S	S	S	S	S
CO4	M	S	S	S	S	S	M	S	S	S
CO5	M	S	S	S	S	S	M	S	S	S

S- Strong; L- Low; M-Medium

	2.தூய்மை அருள் ஊண் சுருக்கம் பொறை (556) 3.உள்ளத்தும் உள்ளன் புறத்துள்ளன் (1532) 4.தானே தனக்குப் பகைவனும் நட்டானும் (2228) 5.அவமும் சிவமும் அறியார் அறியார் (2340) சித்தர் பாடல்கள் - சிவவாக்கியர் (2 பாடல்கள்) பாம்பாட்டிச்சித்தர் (2 பாடல்கள்) இடைக்காட்டுச்சித்தர் (2 பாடல்கள்) கடுவெளிச்சித்தர் (2 பாடல்கள்) அழுகணிச்சித்தர் (2 பாடல்கள்) சிற்றிலக்கியங்கள் - தமிழ்விடுதூது – தமிழ்மொழியின் சிறப்பு, சிவபெருமானின் சிறப்பு (20 வரிகள்) அற்புதத்திருவந்தாதி - அரனென்கோ நான்முகன், இன்று நமக்கெளிதே, நேர்ந்தரவங் கொள்ளச், திறத்தான் மடநெஞ்சே, அடிபேரிற பாதாளம் (5 பாடல்கள்) திருவரங்கக் கலம்பகம் - பெருமாளின் அவதாரச் சிறப்பு, புயவகுப்பு (இரண்டாம் பாடல்)	
III	அலகு ஐஐஐ உரைநடை 1. நேரம் கடிகாரத்தில் இல்லை - வெ. இறையன்பு 2. நான் தோல்வியைத் தழுவிய போது - ஏ.பி. ஜே. அப்துல்கலாம் 3. தமிழகத்தில் இதழியல் வளர்ச்சி – மா. பா. குருசாமி 4. மனிதனும் சுற்றுச்சூழலும் - பேராசிரியர் ஜே. தர்மராஜ் 5. எதையும் தீர்மானிக்கும் சக்தி – சி. எஸ். தேவநாதன்	15
IV	அலகு ஐஏ இலக்கிய வரலாறு 1. சங்க இலக்கியத்தின் சிறப்புகள் 2. பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 3. சிற்றிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 4. உரைநடையின் தோற்றமும் வளர்ச்சியும்	12
V	அலகு ஏ இலக்கணம் 1. பயிற்சி அளித்தல் - மொழித்திறன் வளர்த்தல் - மொழி ஆளுமை 2. ஒருமை பன்மை மயக்கங்கள் 3. வழூஉச்சொற்களை நீக்குதல் 4. பிறமொழிச் சொற்களை நீக்குதல் 5. சொற்பிரிப்பு பிழைகளை நீக்குதல் 6. ஒலி வேறுபாடு அறிந்து அதனால் வரும் பொருள் அறிதல் 7. மொழிபெயர்ப்பு (ஆங்கிலத்திலிருந்து தமிழுக்கு) 8. சிறுகதை எழுதுதல்.	15
	Total	**75**

Text Book(s):பாட நூல்கள்

1. சங்க, பக்தி இலக்கிய, உரைநடைத்திரட்டு - தமிழ்த்துறை வெளியீடு,
   i. ஸ்ரீ சரஸ்வதி தியாகராஜா கல்லூரி
   ii. 2021 ஜூன் பதிப்பு

2. தமிழ் இலக்கிய வரலாறு - முனைவர் கா. வாசுதேவன்
   1. தேவன் பதிப்பகம்,
   2. 16 ∴43,திருநகர், திருவானைக்கோவில்,
   3. திருச்சிராப்பள்ளி - 620 005
   4. பன்னிரெண்டாம் பதிப்பு - 2017.

3. 3. தமிழ் இலக்கிய வரலாறு - மு. வரதராசன்
   1. சாகித்ய அகாடமி வெளியீடு. புதுதில்லி.
   2. மறுபதிப்பு - 2012

Reference Book(s):பார்வை நூல்கள்

SEMESTER – II

SEMESTER – II

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21TAM1L20	Language - II	Tamil-II	Language	75	-	-	3

PPreamble:தொன்மையான தமிழ்ச் சமூகத்தின் பண்பாடு வாயிலாக எடுத்துக் கொள்ளப்பட வேண்டிய அம்சங்களை விளக்குதலையும், வாழ்க்கையை நெறிப்படுத்துவதையும் சமூக நோக்கமாகக் கொண்டிருக்கும் இலக்கியங்களின் வழியே மானிட மதிப்புகளை அறிந்து கொள்ளும் வகையில் தமிழ்ப்பாடம் அமைக்கப்பட்டுள்ளது. மாணவர்களுக்குப் பயன்பாட்டு நோக்கில் மொழிபெயர்ப்புப் பயிற்சி வைக்கப்பட்டுள்ளது.

Prerequisite:

1. மேனிலைப்பள்ளி முடிய கற்றவற்றைப் பகுத்து தொகுத்து ஆராயும் போக்கில் பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
2. மானிட மதிப்புகளை உணரும் வகையிலும், போட்டித்தேர்வுகளை எதிர்கொள்ளும் நிலையிலும் 'தமிழ்' - பகுதி - ஐ அமைக்கப்பட்டுள்ளது.
3. பிழையின்றிப் பேச, எழுத ஆராயும் முயற்சிக்குப் பயிற்சி தரப்படுகிறது.

SYLLABUS:

Unit	Course contents	Instructional Hours
I	அலகு ஐ சங்க இலக்கியம் நற்றிணை - நின்றசொல்லர் (1) – கபிலர் ஐங்குறுநூறு - அன்னாய் வாழி வேண்டன்னை (203) - கபிலர் மறுவல்தூவிச் சிறுகருங்காக்கை (391) - ஓதலாந்தையார் கலித்தொகை - அரிதாய அறன்எய்தி (11) - பாலை பாடிய பெருங்கடுங்கோ அகநானூறு - கிளியும் பந்தும் கழங்கும் (49) வண்ணப்புறக்கந்தரத்தனார் சிறுகரு பிடவின் வெண்தலை (34) – மருதனிளநாகனார் புறநானூறு - பல்சான்றீரே பல்சான்றீரே (246) - பெருங்கோப்பெண்டு குழவி இறப்பினும் ஊன்தடி பிறப்பினும் (74) – சேரமான் கணைக்கால் இரும்பொறை	17
II	அலகு ஐஐ பக்தி இலக்கியங்கள் ரூ சிற்றிலக்கியங்கள் தேவாரம் - சுந்தரர் 1. மேலைவிதியே வினையின் பயனே (419) 2. பிறவாய் இறவாய் பேணாய் மூவாய் (420) 3. பொய்யே உன்னைப் புகழ்வார் புகழ்ந்தால் அடியேன் (421) 4. ஊனைப் பெருக்கி உன்னை நினையாது (422) 5. காதல்செய்து களித்துப் பிதற்றி (423) திருக்கோவையார் - மாணிக்கவாசகர் 1.முனிவரும் மன்னரும் பொன்னான் முடியுமென (332) 2.மூவர்நின் றேத்த முதலவன் ஆடமுப் பத்து மும்மைத் (337) 3.பிரியா ரெனவிகழ்ந் தேன் முன்னம் யான்பின்னை எற்பிரியின (340) கருவூர்த்தேவர் - தஞ்சை ராசராசேச்சரம் 1.உலகெலாம் தொழவந்து எழுகதிர்ப் பருதி (162) 2.நெற்றியிற் கண்என் கண்ணின்நின் றகலா (163) 3.எவரும்மா மறைகள் எவையும் வானவர்கள் (166) 4.தனிப்பெருந் தாமே முழுதுறப் பிறப்பின் (168) திருமந்திரம் - திருமூலர் 1.என்பே விறகாகி இறைச்சி அறுத்திட்டு (272)	16

1. சங்க இலக்கியத் தொகுப்புகள் - நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்,
   ii. 41 - டீ, சிட்கோ இண்டஸ்டிரியல் எஸ்டேட்,
   iii. அம்பத்தூர், சென்னை - 600 098
   iv. இரண்டாம் பதிப்பு - 2004.
2. 2. பத்தாயிரம் மைல் பயணம் - வெ. இறையன்பு
   i. புதிய தலைமறை பதிப்பகம்,
   ii. 24, ஜி.என். செட்டி சாலை,
   iii. தியாகராயநகர், சென்னை - 600 017,
   ஆறாம்பதிப்பு - 2015.
3. 3. இந்தியக் கலைகள் - பி. கோதண்டராமன்
   i. நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்,
   ii. 41 - டீ, சிட்கோ இண்டஸ்டிரியல் எஸ்டே,
   iii. அம்பத்தூர், சென்னை - 600 098
   iv. இரண்டாம் பதிப்பு - 2009.
4. அலைகடலுக்கப்பால் அருந்தமிழ் - முனைவர் ஆ. கார்த்திகேயன்
   i. அகரம், மனை எண்.1, நிர்மலா நகர்
   ii. தஞ்சாவூர் - 613 007. முதல் பதிப்பு - 2007.
5. 5. பக்தி இலக்கியம் - ப. அருணாசலம்
   சைவ சித்தாந்த நூற்பதிப்புக்கழகம்
   i. சென்னை - 06, பதிப்பு - 1900.
6. 6. சைவமும் சமணமும் - வேலுப்பிள்ளை
   i. எனி இந்தியன் பதிப்பகம்
   102 எண் 57 பி.எம்.ஜி.காம்ளெக்ஸ்
   ii. தெற்கு உஸ்மான் சாலை
   iii. தி.நகர், சென்னை -17, பதிப்பு -1900
7. தமிழில் தவறின்றி எழுத,பேச
   i. கற்க! - நல்லாமூர். முனைவர் கோ. பெரியண்ணன்
   ii. முத்தமிழ்
   பதிப்பகம்
   iii. 9எ மேக்மில்லன் காலனி, நங்கை நல்லூர்,
   iv. சென்னை - 61, பதிப்பு - 2006.

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	தமிழ்ப்பண்பாடு, சமூகஅமைப்பு, குறிக்கோள் அமைந்த இனவாழ்க்கையைப் பற்றிய செய்திகளை உணர்ந்து கொள்ளுதல்.	K1
CO2	பக்தி இயக்கம் வளர்ந்த வரலாறு, தமிழ் உரைநடை காலந்தோறும் மாறிவந்த நிலை ஆகியவை சார்ந்த கருத்துகளைப் புரியவைத்தல்.	K2
CO3	நடைமுறையில் தமிழைப் பிழையின்றி எழுத உதவுதல். மொழிபெயர்ப்புக் கலை, கதை எழுதும் திறமையை வளர்த்தல்.	K3

Mapping Course Outcomes with Programme Outcomes& Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	L	L	S	S	L	L	L
CO2	S	S	M	L	L	S	S	L	L	L
CO3	S	S	S	L	L	M	S	L	L	L

S- Strong; L- Low; M-Medium

SEMESTER- II

Coursecode	21HIN2L20	HINDIPAPER-II	L	T	P	C
			60	-	-	3

COURSEOBJECTIVE:

- A basic understanding of contemporary poetry can be gained and the nature ofmodernpoetry can berealized.
- Realizing the nature of drama and its nature and improving the knowledge ofreadingand understanding the natureofcontemporary plays.
- Understands the benefits of correspondence and can enhance thecorrespondenceyou need.
- TranslationisespeciallyusefulfortranslatingfromHinditoEnglish

PARTI -HINDI II		
UnitNo.		**Instructional Hours**
I	**MODERNPOETRY:** **PANCHVATIby MYTHLISHARANGUPT**	12
II	**ONEACT PLAY:EKANIKIPIYUSH** 1) Owrangjebki aakirirath -Ramkumarvarma 2) Ek din -LakshminarayanMisra 3) Vapasi -Vishnuprabhakar 4) Badsurathrajkumari -Krishnachandra 5) Aakket -Harijeeth	18
III	**LETTERWRITING** (Leave Letter, Job Application, Ordering Books, Letter to Publisher,Personal Letter)	10
IV	**CONVERSATION:** (Doctor&Patient,Teacher&Student, Storckeeper&Buyer,TwoFriends.Booking Clerk&PassengeratRailwayStation,Autorickshawdriverand Passenger) Ref: Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan VaniPrakashan, NewDelhi.	10
V	**TRANSLATION:HINDI-ENGLISHONLY**Lessons –1-15onlyANUVADHABYAS-III	10
	TOTAL	60

Teachingmethods:

Lecturing,Assignment,GroupDiscussion,Quiz, GroupActivity.PowerPointProjectionthrough LCD.

TextBook:

1. Panchvati,MythilisharanGupt, 2015,RajkamalPrakashan.1BNethajiSubashMarg,NewDelhi.
2. Ekanikipiyush,SrimathiUshamehra,1999.HindusahithyaBhandar,55choupattyanrode,Lacknow226003

ReferenceBooks:

BolchalKiHindiAurSanchar,2015,Dr.MadhuDhavanVaniPrakashan, NewDelhi.

WebLink:

https://hi.wikipedia.org/wiki/
https://en.wikipedia.org/wiki/Premchand
http://hindigrammar.in/

MappingwithProgrammeOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	S	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	S	L	S	S	S	S	S

SEMESTER- II

Coursecode	21MAL2L20	MALAYALAMPAPERII	L	T	P	C
			60	-	-	3

COURSEOBJECTIVE:

- A basic understandingofcontemporarypoetrycan be gained andthenatureofmodern poetrycan berealized.
- Realizing the nature of drama and its nature and improving the knowledge ofreadingand understandingthe natureofcontemporaryplays.
- Understandsthebenefitsofcorrespondenceandcanenhancethecorrespondenceyou need.
- Translationisespeciallyuseful fortranslatingfrom EnglishtoMalayalam

PARTI– MALAYALAMII		
UnitNo.	**Topics**	**Instructional Hours**
I	Novel-Enmakaje	12
II	Novel-Enmakaje	18
III	Memmories–NeermaathalamPootthakaalam	10
IV	Memmories–NeermaathalamPootthakaalam	10
V	Translation(EnglishtoMalayalam)	10
	TOTAL	60

Teachingmethods:
Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection throughLCD

TextBooks:

1. Emakaje–AmbikasuthanMangad –DCBooksKottayam,Kerala
2. NeermaathalamPootthakaalam-Madhavikutty-DCBooksKottayam,Kerala

ReferenceBooks:

1. AthmakathasahithyamMalayalathil-Dr.VijayalamJayakumar(N.B.S.Kottayam)
2. MalayalaNovelSahithyaCharitram-K.M.Tharakan(N.B.S.Kottayam)
3. SahithyaCharitramPrasthanangalilude-Dr.K.MGeorge.(D.C.BooksKottayam)
4. MalayalaSahithyavimarsam-SukumarAzheekode(D.C.books)

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO1	Getabasic understandingofMemories	K1
CO2	ItwillcreatebasicknowledgeaboutEnvironmentalPsychology.	K1
CO3	Itwillcreateawarenessaboutourenvironment.	K2
CO4	Knowledgeisgainaboutour country,cultureetc.	K3
CO5	ItwillbeaneyeopenertothestudentstowardsourMotherEarth.	K4

MappingwithProgrammeOutcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	S	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	S	L	S	S	S	S	S

SEMESTER- II

Course:French2

CourseCode:21FRE2L20

Credits: 3

Hours:60

Course Objectives:

To understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type

Part1 –French2		
UnitNo.	**Topics**	**Instructional Hours**
1	Etape 5(Lecons 1 -3)	**12**
2	Etape 6(Lecons 1 -3)	**18**
3	Etape 7-Leçons 1 -2	**10**
4	Etape 7–Leçon3	**10**
	Etape 8–Leçon1	
5	Etape 8–Leçons 2 -3	**10**
	TOTAL	60
Etapes5to8,Pages63-114		

Text Book Prescribed: Adomania 1 – Methode de francais Authors: Céline Himber, Corina Brillant, Sophie Erlich Publisher: HACHETTE FLE

Available at: GOYAL Publishers and Distributors Pvt Ltd, New Delhi (9810322459)

Reference: Latitudes 1
Author: Yves Loiseau, Régine Merieux Publisher: French and European Publications Inc

Available at: GOYAL publishers and distributors Pvt Ltd. New Delhi (9810322459)

SWAYAM: https://swayam.gov.in/nd2_cec19_lg04/preview by Prof. Nirupama Rastogi (Retd) English and Foreign Languages University, Hyderabad

SEMESTER – II

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BFS2C10	Core	Information Security	Concept	45	5	-	4
Preamble: This course provides the student with basic knowledge in Information Security							
Prerequisite: Should have the basic knowledge in Cyber Security.							

Syllabus:

Unit	Course contents	Instructional Hours
I	Introduction to Information Security, The history of Information security, What is security, CNSS security model, Component s of an Information system, Balancing Information security and access, Approaches to Information security implementation, The systems development life cycle, The security systems development life cycle, Security professionals and the organization, Communities of Interest. Information Security :is it an Art or a Science	09
II	The need for security: Introduction, Business needs first, Threats-Compromises to individual property, Deliberate software attacks, Deviations in quality of service, Espionage, Sabotage, Theft, Attacks :Malicious code, Hoaxes, Back doors, Password crack, Brute force, Dictionary, Denial of service and Distributed denial of service, Spoofing, Man-in-the-middle, Spam, Mail bombing, Sniffers, Social Engineering, Pharming, Timing attack, Secure software development.	10
III	Risk Management: Introduction, An overview of Risk Management, Risk Identification : Lan and Organize, Asset Identification and Inventory Classifying and Prioritizing Information assets, Information Asset Valuation, Identifying and Prioritizing Threats, Vulnerability identification Risk Assessment : Introduction, Likelihood, Risk Determination, Identify Possible Controls, Documenting the Results of Risk Assessment Risk Control Strategies: Defend, Transfer, Mitigate, Accept, Terminate	11
IV	Information security planning and governance- Planning levels, Planning and the CISO, Information security governance, Information security policy, standards and practices- Definitions, EISP, ISSP, SysSP, Policy management, The Information security blueprint, Designing of security architecture, Security education training and awareness program, Continuity strategies, Security technology Firewalls and VPNs, Access control- Identification, Authentication, Authorization , Accountability, Firewall processing modes, Firewalls categorized by generation, Firewalls categorized by structure, Firewall architectures, Selecting the right firewall, Configuring and managing firewalls, Content filters, Protecting remote connections- Remote access, VPNs	10
V	Intrusion detection and prevention systems- Why IDPS?, types, detection models, response behavior ,strengths and limitations, deployment and implementation, measuring the effectiveness. Honeypots, Honey nets and padded cell systems- Trap-and-trace systems, Active intrusion prevention	09
	Total	**50**

Text Book(s):

1.Principles of Information Security- Michael E. Whitman, Herbert J. Mattord, Cengage Learning, Fourth edition, 2011

Reference book(s):

1.Information Security Management Principles- Andy Taylor, David Alexander, Amanda Finch, David Sutton, BCS publishers, 2008
2.Guide to Computer forensics and Investigations- B. Nelson, A. Phillips, F. Enfinger, C. Steuart, CengageLearning, 4th edition, 2010
3.Applied Information security: A Hands-On guide to Information security- R. Boyle, Prentice Hall, 2010

4.Fundamentals of Network Security- E. Maiwald, McGraw- Hill, 2004
5.Managing Information Security- John R. Vacca, Elsevier Inc, 2010
6.Computer Security basics- Rick Lehtinen, O'Reilly, 2nd edition, 2006
7.Absolute beginner's guide to Security, Spam, Spyware& Viruses- Andy Walker, Que publishers,2005

Focus of Course: Employability

e-Resource/e-Content URL:
Vidya-Mitra Portal:http://vidyamitra.inflibnet.ac.in/index.php/search
Tutorials point :https://www.tutorialspoint.com/information_security_cyber_law/

Course Designer : BoS Chairman
Mr. S.DhanarajDr.S.Sasikala
PC , Dept. of DCES,

HOD, CS

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO1	Define the Security and its models	K1
CO2	Outline the concepts of attacks.	K2
CO3	Define the risk management policies.	K2
CO4	Employ the methods Intrusion detection and prevention and security Planning	K3

Mapping Course Outcomes with Programme Outcomes & Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	L	L	L	L	L	L	M	L
CO2	L	M	L	L	L	M	L	M	M	S
CO3	L	M	M	M	M	S	L	M	M	L
CO4	L	L	M	M	S	S	L	M	M	S

S –Strong; L –Low; M –Medium

SEMESTER II

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BDA2C20	Core-5	**Object Oriented Programming with Java**	Application	45	5	-	4
Preamble: This course provides the student with strong foundation in object oriented programming and JAVA							
Prerequisite: Programming knowledge							

Syllabus:

Unit	Course contents	Hours
I	**OOPS:** Fundamentals of Object Oriented Programming – Introduction- Object Oriented Paradigm–Basic Concepts of Object Oriented Programming– Benefits of OOP-Applications of OOP. **Java Evolution:** Java History – Java Features - How java differs from C and C++. Overview of Java Language - Constants, Variables and Data types.	10
II	**Classes and Objects:** Operators and Expressions- Decision Making and Branching, Decision Making and Looping- Classes, Objects and Methods-Arrays, Strings and Vectors.	10
III	**Interfaces:** Multiple Inheritances. **Packages:** Putting classes' together- Multithreaded Programming- Creating threads -Life Cycle of a Thread – Implementing the 'Runnable' Interface- Managing Errors and Exceptions.	10
IV	**Applet and AWT:** Applet programming- Introduction- Applet Lifecycle- Adding Applet to HTML File-Graphics Programming. **Frames and Windows:** Frame class-Creating and displaying a Frame – Displaying messages in a window-Button and Label- Events Handling.	10
V	**I/O Package:** Managing Input / Output Files in Java: Introduction-Concepts of Streams- Stream Classes – Using streams - Input/output Exceptions – Creation of files – Reading / Writing Characters, Reading / Writing Bytes - Handling Primitive Data types.	10
	Total	**50**

Text Book(s):

1. E. Balagurusamy, "**Programming With Java – A Primer**", TMH publication 4th Edition, 2011. (UNIT I, II, III, IV, V).
2. C.Xavier, "**Programming With Java 2**", Scitech Publications (INDIA) Pvt. Ltd.2010 (UNIT IV).

Reference Book(s):

1. Patrick Naughton & Hebert Schildt, "The Complete Reference Java 2", 6thEdition, TMH Publication, 2012.
2. Herbert Schildt, "Java: A Beginner's Guide", TMH Publication, 6th Edition, 2014.
3. D.T. Editorial Services , "Java 8 Programming Black Book", Dream Tech Publication,2015 edition.
4. John R. Hubbard, "**Programming with Java**", McGraw Hill Publication, 2nd Edition,2012

Focus of Course: Employability

Course Designer :BoS Chairman
Mr. M.PremkumarMs.D.Geetha
Dept of CS HoD – CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Understand the fundamentals of Object Oriented Programming	K1
CO2	Outline the major concepts like inheritance, packages to implement in Java Programming	K2
CO3	Make use of exception handling and Input/Output operations in programming	K3
CO4	Develop Programs using event handling and abstract window tool kit	K3

Mapping with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	M	S	M	M	L	S	M	M
CO2	L	M	M	M	M	M	L	M	M	M
CO3	M	M	M	S	M	S	M	S	M	M
CO4	M	M	S	M	M	S	M	S	M	M

S –Strong; L –Low; M –Medium

SEMESTER II

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
21BDA2C30	Core	**Object Oriented Programming Lab**	Practical	-	-	30	2
Preamble: Students will be able to apply logic which helps to develop programs using OOPS concepts							
Prerequisite: Basic programming skills and logical thinking.							

Syllabus

Ex. No	Course contents	Hours
1	Develop a Java program to implement Method Overloading.	2
2	Develop a Java Applications to implement String class methods.	2
3	Develop a Java program to implement Vectors.	2
4	Develop a Java program to create package.	2
5	Develop a Java Program to implement the concept of multiple inheritance using Interfaces.	2
6	Develop a Java Program to implement the concept of multithreading.	2
7	Develop a Java Program to create a user defined exception.	3
8	Develop a Java Program to draw gridlines using Applets.	3
9	Develop a Java Program to create an Applet with three text fields for name, age and qualification and a text field for multiple line for address.	3
10	Develop a Java Program to demonstrate the Multiple Selection List-box.	3
11	Develop a Java Program to create Menu Bars and pull down menus.	3
12	Develop a Java Program to perform file operations.	3
	Total	**30**
Focus of Course: Employability		
Course Designer : Mr. M. PremKumar Dept. of CS		MS. D.Geetha, HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Illustrate the basic features of OOPs concepts in various programs	K2
CO2	Demonstrate interfaces and packages using JAVA programs	K2
CO3	Apply the concepts of multithreading and exception handling in programming	K3
CO4	Develop applets and implement the concepts of file handling.	K3

Mapping Course Outcomes with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	M	S	M	M	L	S	M	M
CO2	L	M	M	M	M	M	L	M	M	M
CO3	M	M	M	S	M	S	M	S	M	M
CO4	M	M	S	M	M	S	M	S	M	M

SEMESTER – II

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BMAGAN0	Discrete Structures and Applications	Allied	50	10	-	4

Preamble: This course aims at facilitating the student to learn the concepts in Discrete Mathematics and apply the fundamental concepts in graph theory and apply the fundamental concepts in Number theory

Prerequisite: Basic concepts in Mathematics at HSC level and know the concept of number theory, matrices and basic set operations in Mathematics

SYLLABUS: Discrete Structures and Applications

Unit	Course contents	Hours
I	**Relations:** Cartesian product of two sets – Relations – Representation of Relation – Operations on Relations – Equivalence of Relation – Closures and Warshall's Algorithm – Partitions and equivalence classes	12
II	**Coding Theory**: Introduction – Hamming distance – Encoding a Message – Group codes –Procedure for Generating Group Codes – Decoding and error correction – An example of Simple Error Correcting Code.	12
III	**Mathematical Logic:** Introduction – True / False - Statements – Connectives – Atomic and Compound Statements – Well Formed (Statement) Formulae – The truth table of a formula – Tautology – Tautological implications and equivalence of a formula – Normal forms – Principal Normal Forms.	12
IV	**Graph Theory** :Graphs and sub graphs - Operations on Graphs - Isomorphism of Graphs - Walks, paths and cycles - Trees - spanning trees of graph - Algorithm for finding a spanning tree of a connected graph - Kruskal's algorithm to find an optimal tree of a weighted graph.	12
V	**Number Theory:** Divisibility: Divisibility of integer – Division algorithm – Common divisor – Greatest common divisor– The Euclidean algorithm –**Primes and Composite Number**: Definition of Prime, Composite, Twin prime – Euclid's theorem – Unique factorization theorem – To find GCD & LCM of two integers – Positional representation of on integers – Worked examples	12
Total		**60**

Text Book:

Unit – I, II, III

1. Dr. M. K. Venkataraman, Dr. N. Sridharan, N. Chandarasekaran, Discrete Mathematics, The National Publishing Company Chennai, 2006.

Unit – I Chapter 2: 2.1, 2.6,. 2.10, 2.13, 2.21, 2.29, 2.40

Unit –II Chapter 8: 8.1, 8.2, 8.3, 8.5, 8.6, 8.8, 8.11

Unit – III Chapter 9: 9.1, 9.4, 9.13, 9.14, 9.21, 9.25, 9.30, 9.34, 9.40, 9.42,9,49

Unit – IV

2. S. Kumaravelu&SusheelaKumaravelu, Graph Theory, JankiCalender Corporation, Sivakasi, 1999

Page No. 1 to 54, 56 to 64, 66 to 77, 88 to 90

Unit – V

3. Kumaravelu and SuseelaKumaravelu, Elements of Number Theory, Raja Sankar offset Printers, 2002.

Unit – V Number Theory Chapter 3 Page no 45-57 Chapter 4 Page no 60-75

Theory -40%,Problems -60%

Reference Book(s):

1. J.P.Tremblay, R Manohar, Discrete Mathematical Structures with Applications to Computer Science, McGraw Hill International Edition, 2007.

2. Dr. A. Singaravelu, Dr.V.Ravichandran, Dr. T.N. Shanmugam, Discrete Mathematics, Meenakshi agency 2008, 5th edition

3.NarsinghDeo, Graph Theory with applications to engineering and computer science, Prentice hall of India, New Delhi, 2003

4. Ivan Nivan and Herbert S. Zuckerman, An introduction to the Theory of Numbers, Third Edition Wiley Easter Ltd. 1972

Learning Methods (*): • Assignment/Seminar/Quiz/Group Discussion/Case-Study/Self-Study/etc.,
Focus of Course: Employability
e-Resource/e-Content URL: https://www.youtube.com/watch?v=0C0wKICC9Ac
Course Designer: **Prof. K. Sivaswamy,**R.Karpagam, Dean Mathematics, STC, Asst.ProfDepartment of Mathematics BoS Chairman

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Understand the concepts of sets and relations Know the concepts of mathematical logic.	K1
CO 2	Know the concepts of mathematical coding theory	K1
CO 3	Know the concepts of mathematical logic	K2
CO 4	Know the basic concept of graph theory and the types of graphs and Relate connectedness, connectivity and various matrices	K3
CO 5	Find results involving divisibility and greatest common divisors and Find integral solution to specified linear Diophantine equations	K3

Mapping with Program Outcomes:

Cos/POs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	S	M	S	S	L	S	S	M
CO2	M	M	S	M	M	S	M	M	M	L
CO3	M	M	M	L	L	M	L	S	M	S
CO4	L	M	S	M	S	S	M	M	L	S
CO5	L	S	S	M	M	S	S	M	M	L

S – Strong; L – Low; M – Medium

SEMESTER – II

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
18DHE2V20	VBC2	Value Education & Human Rights	-	27	-	-	2

Preamble: In order to promote and encourage interest in Value Education and Human rights, we, teach the noble purpose of education, life and living standards- Create patriotism and awareness in the national interest by teaching the history of the country's freedom struggle – Make a good citizen imbibed with the knowledge of Indian constitution and human rights.

Prerequisite:

- The curriculum has been setup in the course of the classroom with the study of the lessons learned from the higher Secondary school.
- The syllabus is setup, to realize human values, to promote patriotism and to compete with competitive exams.

Syllabus:

Unit	Course contents	Instructional Hours
I	Education – Definition –The purpose of education – Important values of life – The excellence of family and family relations – The significance and the necessity of culture – The role of individual in a society – The art of complete life.	05
II	History of Indian freedom struggle – East India Company and its rule in India 1757 - 1858 – Its unlawful practices and atrocities – Direct rule by British Government – Sepoy mutiny – Indians revolt against British Raj – The massacre of Jallionwalah Bagh – Indians' non-cooperation movement. **Short notes:** Pandit Jawaharlal Nehru, Patel, Subash Chandra Bose,V.O.Chithambaram pillai, Baghat Sing.	05
III	Indian Constitution – The birth and the significance of Indian Constitution – Indian citizenship – Equality of rights – The right to freedom – Right to arts, culture and education –Right to property – Basic responsibilities of every Indian – The rights and the Acts concerned.	06
IV	Gandhian thoughts – Gandhi and his principle of Sathyagraha – Sarvodhaya – concept and meaning – Swami Vivekananda and his teachings to the students – Dr. Abdul Kalam and the students.	05
V	Human rights – Definition – Classification of human rights – Rights to live – Rights to Equality – Traditional and cultural rights – Social, political and economic rights – Rights of women – Rights of children – Exploitation and cruelty to women – Organization protecting women's rights – Human rights organizations – Courts of justice – Safety of women rights.	06
	Total	**27**

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Define the purpose of education, role of a person in a family relationship, culture and society.	**K1**
CO2	Understand the history of Indian independence and the Indian constitution.	**K2**
CO3	Develop Gandhian ideas, Vivekananda's norms, Abdulkalam's languages, need for human rights and feminism.	**K3**

Mapping Course Outcomes with Programme Outcomes & Programme Specific Outcomes

COs/POs/PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	L	S	S	M	M	M
CO2	S	M	M	L	L	S	S	L	L	L
CO3	S	S	M	M	M	S	S	M	M	L

S- Strong; L- Low; M-Medium

Semester II

Course Code	Course Name	Category	Lecture(L)	Tutorial(T)	Practical(P)	Credit
20GEN2Z10	Professional English II	Language	55	5	–	2
Preamble: The course aims to Develop students' competence in the use of English with particular reference to the workplace situation						
Prerequisite: Basic knowledge in English						

SYLLABUS

Units	Course Contents	Instructional Hours
I	**Communicative Competence** **Listening** – Listening to two talks/lectures by specialists on selected subject specific topics and answering comprehension exercises (inferential questions) eg://youtu.be/moJjKqkn_Xs. **Speaking:** Small group discussions and narrating stories. **Reading:** Two subject-based reading texts followed by comprehension activities/exercises **Writing:** Summary writing based on the reading passages. Grammar and vocabulary exercises/tasks to be designed based on the discourse patterns of the listening and reading texts in the book. This is applicable for all the units.	12
II	**Persuasive Communication** **Listening**: listening to a product launch- sensitizing learners to the nuances of persuasive communication **Speaking:** Debates and Just a Minute Activities **Reading:** investigate a topic by answering inferential questions **Writing:** dialogue writing- writing an argumentative /persuasive essay.eg:Watch a youtube video on Natural Language Processing and draft a report based on the following link:https://youtu.be/5ctbvkAMQO4.	12
III	**Digital Competence** **Listening** to you tube video and doing exercises in comprehension e.g. https://youtu.be/nt2OlMAJj6o. **Speaking:** Interviews with subject specialists (usingvideo conferencing skills) group discussion regarding drastic industrial disasters.eg:Vishakhapatnam gas leak disaster on 7 May, 2020 **Reading:** Selected sample of Web Page (subject area) and discuss the benefits of multilingualism and prepare a presentation based on discussion. **Writing:** Creating Web Pages. Essay Writing - Digital Competence for Academic and Professional Life. This essay must address all aspects of digital competence in relation to MS Office and how they can be utilized in relation to work in the subject area.	12
IV	**Creativity and Imagination** **Listening** to short (2 to 5 minutes) academic videos (prepared by EMRC/ other MOOC videos on Indian academic sites – E.g. https://www.youtube.com/watch?v=4WZTzKu3CsY) **Speaking:** Talk about a script on Analytical Engine – subject based. **Reading:** Essay on Creativity and Imagination **Writing:** Basic Script writing imagining your floating(individual).Role play of considering one'sown self as a water molecule(group discussion).	12
V	**Workplace Communication and Basics of Academic Writing** **Listening:** Pronunciation Practice(Collins Dictionary) and Listening Comprehension. **Speaking:** Short academic presentations using PowerPoint, e.g. How man interferes with nature to console his greed. **Reading**: comprehension and reading activity Product Profiles, Circulars, Minutes of Meeting, Imagine a meeting to decide if you can invest a research product related to artificial photosynthesis. **Writing:**Introduction.Paraphrase and Summary, Creating webpages, Blogs, Flyers and	12

	brochures - Poster making writing slogans/captions Punctuation(period, question mark, exclamation point, comma, semicolon, colon, dash, hyphen, parentheses, brackets, braces, apostrophe, Capitalization (use of upper case quotation marks, and ellipsis)	
		60

Text Books:
Tamil Nadu State Council for Higher Education(TANSCHE)

Reference Books:
Tamil Nadu State Council for Higher Education(TANSCHE)

Focus of Course: Employability (Employability/Skill Development)

e-Resource/e-Content URL:

- **Vidya-MitraPortal:**http://vidyamitra.inflibnet.ac.in/index.php/search
- **e-PG Pathshala**:http://epgp.inflibnet.ac.in/ahl.php?csr

Course Designer
TANSCHEAssistant Professor of English

BoS Chairman

COURSE OUTCOMES

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

CO Number	Course Outcome (CO) Statement	Bloom's Taxonomy Knowledge Level
CO1	Enhance the creativity of the students, which will enable them to think of innovative ways to solve issues in the workplace.	K1
CO2	Develop students` competence and competitiveness and thereby improve their employability skills.	K2
CO3	Attend interviews with boldness and confidence	K3
CO4	Adapt easily into the workplace context, having become communicatively competent	K4
CO5	Apply to the Research and Development organizations/ sections in companies and offices with winning proposals	K5

Mapping Course Outcomes with Programme Outcomes & Programme Specific Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	S	S	S	M	M	S	S	S
CO2	M	M	M	S	S	S	M	S	S	S
CO3	M	M	M	S	S	S	S	S	S	S
CO4	M	S	S	S	S	S	M	S	S	S
CO5	M	S	S	S	S	S	M	S	S	S

S- Strong; L- Low: M-Medium

EXAMINATIONS SYSTEM UNDER AUTONOMY

1. OBE ASSESSMENT COMPONENT MATRIX

Theory

Course Category	UG	UG/PG			UG	UG	PG
Assessment Components	Language	Concept	Application	Analysis	Skill Based Course	Value Based Course	IDC
Component -1 CIA – Test	30	30	30	30	15	45	50
Component -2 UG – Attendance	5	5	5	5	5	5	-
Component -3 Assignments	5	5	5	5	5	-	-
Component -4 Skill Based Task	10*	10*	10*	10*	5#	-	-
Total Marks	**50**	**50**	**50**	**50**	**30**	**50**	**50**

Note:
 # - Skill based task – 1 task
*** - Skill based tasks – 2 tasks for UG, – 3 tasks for PG**

Practical

Course Category	UG/PG		Skill Based
Assessment Components			
Component -1 CIA – Test	30	15	15
Component -2 Lab Performance	5	2.5	5
Component -3 Observation	5	2.5	5
Component -4 Skill Based Task	10*	5#	5#
Total Marks	**50**	**25**	**30**

Note:
 # - Skill based task – 1 task
*** - Skill based tasks – 2 tasks for UG, – 3 tasks for PG**

Project & Internship

Course Category	Project	Summer Internship	Project
Assessment Components			
Component -1 Review I	15	25	30
Component -2 Review II	15	25	30
Component -3 Report Submission	10	-	20
Component -4 Model Viva voce	10	-	20
Total Marks	**50**	**50**	**100**

Internship & Field Work for Psychology/Social Work

Course Category	Internship
Assessment Components	
Component -1 Attendance	10

Component -2 Work Diary/IC	10
Component -3 Report/Record	10
Component -4 Prof. Knowledge& Initiatives/ Viva voce	20
Total Marks	**50**

SKILL BASED TASKS FOR THEORY / PRACTICAL COURSES:

- FLOWCHARTS
- MINIATURES
- DEMONSTRATION
- SNAP TALK
- VIVA VOCE
- CLASS PRESENTATION [ORAL/POSTER]
- BUSINESS PLAN
- GROUP DISCUSSION
- SIMULATION EXERCISE
- CASE STUDY
- GAMES
- PUZZLES
- MODELS
- PAPER PRESENTATION
- ARTICLE REVIEW
- DEBATE
- SEMINAR
- REPORTS
- PORTFOLIOS
- QUESTIONNAIRE
- PUBLICATION
- SURVEY
- MINI PROJECT [INDIVIDUAL / GROUP]
- USP COMPONENT [UNIQUE TO THE COURSE]

2. Mark Preparation Format

Sl.No.	Name	Reg.No.	Rubrics Evaluation				
			Component 1	Component 2	Component 3	Component 4	Total

3. Pattern of Examinations: The College follows semester pattern. Each academic year consists of two semesters and each semester ends with the End Semester Examinations. A student should have a minimum of 75% attendance out of 90 working days to become eligible to sit for the examinations.

4. Internal Examinations: The questions for every examination shall have equal representation from the units of syllabus covered. The question paper pattern and coverage of syllabus for each of the internal (CIA) tests for UG programs are as follows.

Internal Assessment Test

i. First Internal Assessment Test

Syllabus : First Two Units
Working Days : On completion of 30 working days, approximately
Duration : Two Hours
Max. Marks : 50

ii. Second Internal Assessment Test

Syllabus : Third and Fourth Units
Working Days : On completion of 65 working days, approximately
Duration : Two Hours
Max. Marks : 50

iii. Model Examinations

Syllabus : All Five Units
Working Days : On completion of 85 working days, approximately
Duration : Three Hours
Max. Marks : 100 (or) 75

CIA Assessment (for CIA-I and CIA-II) - UG

Bloom's Category Level	Sections	Marks			Description
K1= Remember	Section A 5 Questions * 1 Marks	5			Multi choice Questions
K1= Remember K2= Understand K3= Apply	Section B 3 Questions (out of 5 questions) * 5 Marks (Open choice type)	15			Open choice type Questions (250 words)
		K1	K2	K3	
		2	2	1	
K1= Remember K2= Understand K3= Apply	Sections C 3 Questions * 10 Marks (either or type)	30			Either or types Questions (500 words)
		K1	K2	K3	
		2	2	2	
	Total	**50**			

For the internal assessment test, the question paper pattern shall be as given below.

UG: CIA TEST – I & II

[FOR 2 UNITS - 2 HOURS – 50 MARKS]
[FOR CORE/ELECTIVE/ALLIED/SKILL BASED COURSES]

SECTION A

[05 MULTIPLE CHOICE QUESTIONS]
[ALL 5 FROM K1 LEVEL]: **05 x 01= 05 MARKS**
(MINIMUM TWO QUESTION SHALL BE ASKED FROM EACH UNIT)

SECTION B

[250 WORDS – OPEN CHOICE TYPE – 3 OUT OF 5 QUESTIONS]

[2 QUESTIONS FROM K1 LEVEL]
[2 QUESTIONS FROM K2 LEVEL]
[1 QUESTION FROM K3 LEVEL]: **03 x 05 = 15 MARKS**
(MINIMUM TWO QUESTION SHALL BE ASKED FROM EACH UNIT)

SECTION C

[500 WORDS – EITHER OR TYPE – 3 QUESTIONS]
[ALL 3 ARE FROM K1, K2& K3 LEVEL RESPECTIVELY]: **03 x 10 = 30 MARKS**
(MINIMUM TWO QUESTION SHALL BE ASKED FROM EACH UNIT)

For the First internal assessment test, the question paper pattern shall be as given below.

Model & Semester Examinations

Assessment - UG for 100 marks

Bloom's Category Level	Sections	Marks	Description
K1= Remember	Section A 10 Questions * 1 Marks	10	Multi choice Questions
K1= Remember K2= Understand K3= Apply	Section B 5 Questions (out of 7 questions)* 6 Marks (Open choice type)	30 K1 K2 K3 2 3 2	Open choice type Questions (250 words)
K1= Remember K2= Understand K3= Apply	Sections C 5 Questions * 12 Marks (either or type)	60 K1 K2 K3 4 4 2	Either or types Questions (500 words)
	Total	**100**	

Model & Semester ExaminationsAssessment - UG for 75 marks

Bloom's Category Level	Sections	Marks	Description
K1= Remember	Section A 10 Questions * 1 Marks	10	Multi choice Questions
K1= Remember K2= Understand K3= Apply	Section B 5 Questions (out of 7 questions)* 5 Marks (Open choice type)	25 K1 K2 K3 2 3 2	Open choice types Questions (250 words)
K1= Remember K2= Understand K3= Apply	Sections C 5 Questions * 8 Marks (either or type)	40 K1 K2 K3 4 4 2	Either or types Questions (500 words)
	Total	75	

UG: MODEL & SEMESTER EXAMINATIONS
[FOR CORE/ELECTIVE/ ALLIED COURSES]
[FOR 5 UNITS – 3 HOURS – 100 MARKS]

SECTION A

[10 MULTIPLE CHOICE QUESTIONS]
[ALL 10 FROM K1 LEVEL]:
(Two each from all units) **10x01= 10 MARKS**

SECTION B

[250 WORDS – OPEN CHOICE TYPE – 5 OUT OF 7 QUESTIONS]
[2 QUESTIONS FROM K1 LEVEL]
[3 QUESTIONS FROM K2 LEVEL]
[2 QUESTIONS FROM K3 LEVEL]:
(Minimum One question shall be asked from each unit) **05 x 06 = 30 MARKS**

SECTION C

[500 WORDS – EITHER OR TYPE – 5 QUESTIONS]
[2 QUESTIONS FROM K1 LEVEL]
[2 QUESTIONS FROM K2 LEVEL]
[1 QUESTION FROM K3 LEVEL]:
(Two each from all units) **05 x 12 = 60 MARKS**

UG: MODEL & END SEMESTER EXAMINATIONS
[FOR SKILL BASED COURSES / ALLIED & NME]
[FOR 5 UNITS – 3 HOURS – 75 MARKS]

SECTION A

[10 MULTIPLE CHOICE QUESTIONS]
[ALL 10 FROM K1 LEVEL]:
(Two each from all units) **10x01= 10 MARKS**

SECTION B

[250 WORDS – OPEN CHOICE TYPE – 5 OUT OF 7 QUESTIONS]
[2 QUESTIONS FROM K1 LEVEL]
[3 QUESTIONS FROM K2 LEVEL]
[2 QUESTIONS FROM K3 LEVEL]:
(Minimum One question shall be asked from each unit) **05 x 05 = 25 MARKS**

SECTION C

[500 WORDS – EITHER OR TYPE – 5 QUESTIONS]
[2 QUESTIONS FROM K1 LEVEL]
[2 QUESTIONS FROM K2 LEVEL]
[1 QUESTION FROM K3 LEVEL]:
(Two each from all units) **05 x 08 = 40 MARKS**

The following is the Question Paper Pattern for the courses Environmental Studies and Value Education and Human Rights,.

Syllabus : All Five Units
Duration : Three Hours
Max. Marks : 50

Question Paper Pattern

Section A **(5 x 10 = 50 marks)**

Five Questions of *"either / or"* type. Each question carries 10 marks.
Answer all questions

Q.1 (a) _____ or (b) _____

Q.2 (a) _____ or (b) _____

Q.3 (a) _____ or (b) _____

Q.4 (a) _____ or (b) _____

Q.5 (a) _____ or (b) _____

Assignments

Each student is expected to submit at least two assignments per course. The assignment topics will be allocated by the course teacher. The students are expected to submit the first assignment before the commencement of first CIA and the second assignment before the commencement of second CIA.

Scoring pattern for Assignments

Punctual Submission : 2 Marks
Contents : 4 Marks
Originality/Presentation skill : 4 Marks
Maximum : 10 Marks x 2 Assignments = 20 marks
(Reduce these marks to a maximum of 5 i.e., (Marks obtained / 20) X 5)

Attendance Mark

Attendance Range Marks
96 % and above - 5 Marks
91 % & up to 95 % - 4 Marks
86% & up to 90 % - 3 Marks
81% & up to 85 % - 2 Marks
From 75 % to 80% - 1 Mark
Maximum - 5 Marks

Outcome Based Education Assessment Pattern (Internals)
2021–22 batch onwards

InternalsSetup : Theory – 50 marks (UG/PG)

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	7.5
CIA Test – II	50	7.5
Model Examination	100	15
Assignment	5	5
Attendance	5	5
Skill Based Task	5	10
Total Marks		**50**

InternalsSetup : Theory – 30 marks (UG)

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	3
CIA Test – II	50	3
Model Examination	100	9
Assignment	5	5
Attendance	5	5
Skill Based Task	5	5
Total Marks		**30**

InternalsSetup : Value Based Course – 50 marks (UG)

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	10
CIA Test – II	50	10
Model Examination	100	25
Assignment	-	-
Attendance	5	5
Skill Based Task	-	-
Total Marks		**50**

InternalsSetup : *Practical – 50 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	7.5
CIA Test – II	50	7.5
Model Examination	100	15
Lab Performance	5	5
Observation	5	5
Skill Based Task	10	10
Total Marks		**50**

InternalsSetup : *Practical – 25 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	3.5
CIA Test – II	50	3.5
Model Examination	100	8
Lab Performance	2.5	2.5
Observation	2.5	2.5
Skill Based Task	5	5
Total Marks		**25**

InternalsSetup : *Practical – 30 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
CIA Test – I	50	3
CIA Test – II	50	3
Model Examination	100	9
Lab Performance	5	5
Observation	5	5
Skill Based Task	5	5
Total Marks		**30**

InternalsSetup : *Project – 50 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
Review – I	15	15
Review – II	15	15
Report Submission	10	10
Model Viva-voce	10	10
Total Marks		**50**

InternalsSetup : Summer *Internship – 50 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
Review – I	25	25
Review – II	25	25
Total Marks		**50**

InternalsSetup : *Project– 100 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
Review – I	30	30
Review – II	30	30
Report Submission	20	20
Model Viva-voce	20	20
Total Marks		**100**

InternalsSetup : *Internship and Field Work – 50 marks*

Name of the Examinations	Examination Conduction Marks	Marks to convert as Final Mark
Work diary/IC	10	10
Report/Record	10	10
Professional Knowledge & Initiatives / Viva-voce	20	20
Attendance	10	10
Total Marks	*	**50**

External Examinations:

The external examinations for theory courses will be conducted for 50% marks for all UG and PG degree programs, (In case of Total mark is 75, External will be 45 marks). The external theory examinations will be conducted only after the completion of 90 working days in each semester.

Normally, the external practical examinations will be conducted before the commencement of theory examinations. Under exceptional conditions these examinations may be conducted after theory examinations are over. The external evaluation will be for 50 %(In case of Total mark is 75, External will be 45 marks) of each practical course.

The **External Assessment marks forPractical Examinations** are based on the following criteria. The assessment is for 50 % marks of each practical course.

Programmes (2*20) 40

(Algorithm 10 marks, Key and execution10 marks)

Record 10

Total 50

The **External Assessment marks forSkill BasedPractical Examinations** are based on the following criteria. The assessment is for 45 marks of each practical course.

Programmes (2*20)	40
(Algorithm 08 marks, Key and execution12 marks)	
Record	05
Total 45	

The **External Assessment marks forNon Major ElectivePractical Examinations** are based on the following criteria. The assessment is for 50 marks.

Programmes (2*21)	42
(Algorithm 7 marks, Key and execution 14 marks)	
Record	8
Total 50	

The **External Assessment marks for Project and Summer Internship [Inclusive of Psychology & Social Work]**are based on the following criteria. The assessment is for 50 marks.

a)Evaluation	30
b)Viva	20
Total 50	

The **External Assessment marks for Project** are based on the following criteria. The assessment is for 100 marks.

a)Evaluation	60
b)Viva	40
Total 100	

The external viva voce examinations for project works also will be conducted after completion of theory examinations. The external assessment is for 100 % marks of the project work.

The **External Assessment mark for project evaluation / summer internship [50 marks]** is based on the following criteria.

a)Assessment	30
b)Viva	20
Total 50	

The **External Assessment mark for project evaluation / summer internship [100 marks]** is based on the following criteria.

a)Assessment	60
b)Viva	40
Total 100	

End Semester Examinations Question Paper Pattern - I

Syllabus : All Five Units
Working Days : On completion of a minimum of 90 working days.
Duration : Three Hours
Max. Marks : 100

Question Paper Pattern

For the **End SemesterExternalTheoryExaminationsfor 100 marks** the question paper pattern shall be the same **for all UG & PG programmes.**

Section – A (10 X 1 = 10 Marks)

Answer the following questions

Multiple Choice questions

1. Unit I
2. Unit I
3. Unit II
4. Unit II
5. Unit III
6. Unit III
7. Unit IV
8. Unit IV
9. Unit V
10. Unit V

Section – B (5 X 6 = 30 Marks)
Answer any 5 out of 7 of the following questions
1. Answers should not exceed 250 words

11. Unit – I/II/III/IV/V
12. Unit –I/II/III/IV/V
13. Unit – I/II/III/IV/V
14. Unit – I/II/III/IV/V
15. Unit – I/II/III/IV/V
16. Unit – I/II/III/IV/V
17. Unit – I/II/III/IV/V

Section – C (5 X 12 = 60 Marks)
Answer either (a) or (b) from all questions
Answers should not exceed 500 words

18. a) Unit – I Or
    b) Unit – I
19. a) Unit II Or
    b) Unit II
20. a) Unit III Or
    b) Unit III
21. a) Unit IV Or
    b) Unit IV

22. a) Unit V Or

b) Unit V

End Semester Examinations Question Paper Pattern - II

Syllabus : All Five Units
Working Days : On completion of a minimum of 90 working days.
Duration : Three Hours
Max. Marks : 75

Question Paper Pattern

For the **End SemesterExternalTheoryExaminations (for 75 marks)**, the question paper pattern shall be the same **for all UG programmes [Skill Based Courses & NME].**

Section – A (10 X 1 = 10 Marks)

Answer the following questions
Multiple Choice questions

1. Unit I
2. Unit I
3. Unit II
4. Unit II
5. Unit III
6. Unit III
7. Unit IV
8. Unit IV
9. Unit V
10. Unit V

Section – B (5 X 5 = 25 Marks)

Answer any 5 out of 7 of the following questions

Answers should not exceed 250 words

11. Unit – I/II/III/IV/V
12. Unit –I/II/III/IV/V
13. Unit – I/II/III/IV/V
14. Unit – I/II/III/IV/V
15. Unit – I/II/III/IV/V
16. Unit – I/II/III/IV/V
17. Unit – I/II/III/IV/V

Section – C (5 X 8 = 40 Marks)

Answer either (a) or (b) from all questions

Answers should not exceed 500 words

16. a) Unit I Or

b) Unit I

17. a) Unit II Or
b) Unit II
18. a) Unit III Or
b) Unit III
19. a) Unit IV Or
b) Unit IV
20. a) Unit V Or
b) Unit V

Essential conditions for the Award of Degree / Diploma / Certificates:

1. Pass in all components of the degree, i.e., Part–I, Part–II, Part–III, Part – IV and Part–V individually is essential for the award of degree.
2. First class with Distinction and above will be awarded for part III only. Ranking will be based on marks obtained in Part – III only.
3. GPA (Grade Point Average) will be calculated every semester separately. If a candidate has arrears in a course, then GPA for that particular course will not be calculated. The CGPA will be calculated for those candidates who have no arrears at all. The ranking also will be done for those candidates without arrears only.
4. The improvement marks will not be taken for calculating the rank. In the case of courses which lead to extra credits also, they will neither be considered essential for passing the degree nor will be included for computing ranking, GPA, CGPA etc.
5. The grading will be awarded for the total marks of each course.
6. Fees shall be paid for all arrears courses compulsorily.
7. There is provision for re-totaling, Xerox copy and revaluation for UG and PG Programmes on payment of prescribed fees.

Classification of Successful Candidates [Course-wise]

RANGE OF MARKS (In percent)	GRADE POINTS	GRADE	DESCRIPTION
90 – 100	9.0 - 10.0	O	OUTSTANDING
80 – 89	8.0 - 8.9	D+	EXCELLENT
75 – 79	7.5 - 7.9	D	DISTINCTION
70 – 74	7.0 - 7.4	A+	VERY GOOD
60 – 69	6.0 - 6.9	A	GOOD
50 – 59	5.0 - 5.9	B	AVERAGE
40 – 49 #	4.0 - 4.9	C	SATISFACTORY
00 – 39	0.0	U	RE-APPEAR
ABSENT	0.0	U	ABSENT

Reappearance is necessary for those who score below 50% Marks in PG **;
those who score below 40% Marks in UG*;

only applicable for UG programs

Individual Courses

C_i= Credits earned for course "i" in any semester
G_i= Grade Point obtained for course "I" in any semester
'n' refers to the semester in which such courses were credited.

GRADE POINT AVERAGE [GPA] = $\frac{\Sigma Ci\ G\ i}{\Sigma Ci}$

GPA = $\frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses in a semester}}$

Classification of Successful Candidates (Overall):

CGPA	GRADE	CLASSIFICATION OF FINAL RESULT
9.5 to 10.0	O+	First Class - Exemplary *
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction *
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
4.5 and above but below 5.0	C+ #	Third Class
4.0 and above but below 4.5	C #	
0.0 and above but below 4.0	U	Re-appear

"*" The candidates who have passed in the first appearance and within the prescribed semester of the Programme (Major, Allied, Inter Departmental and Elective Course alone) are eligible.

"#" Only applicable to U.G. Programme

CUMULATIVE GRADE POINT AVERAGE [CGPA] = $\frac{\Sigma n\Sigma_i Cn_i Gn_i}{\Sigma n\Sigma_i\ Cn_i}$

CGPA = $\frac{\text{Sum of the multiplication of grade points by the credits of entire program}}{\text{Sum of the credits of the Courses of the entire Program}}$

In order to get through the examination, each student has to earn the minimum marks prescribed in the internal (wherever applicable) and external examinations in each of the theory course, practical course and project viva.

Normally, the ratio between internal and external marks is 50:50. There is no passing minimum for internal component. The following are the minimum percentage and marks for passing of each course, at UG and PG levels for external and aggregate is as follows:

S.No	Program	Passing Minimum in Percent	
		External (50)	Aggregate (100)
1	UG Degree	40% (20)	40% (40)
2	PG Degree	50% (25)	50% (50)

However, the passing minimum marks may vary depending up on the maximum marks of each course. The passing minimum at different levels of marks is given in the following table:

S.No	UG & PG Maximum Marks			Passing minimum for UG			Passing minimum for PG		
	Int.	Ext.	Total	Int.	Ext.	Agg. 40%	Int.	Ext.	Agg. 50%
1	50	50	100	-	20	40	-	25	50
2	30	45	75	-	18	30	-	-	-
3	50	-	50	20	-	20	25	-	25
4	25	25	50	-	10	20	-	13	13
5	-	50	50	-	20	20	-	25	25
6	100	100	200	-	40	80	-	50	100
7	-	100	100	-	40	40	-	50	50

Reappearance

The students having arrears shall appear in the subsequent semester (external) examinations compulsorily. The candidates may be allowed to write the examination in the same syllabus for 3 years only. Thereafter, the candidates shall be permitted to write the examination in the revised / current syllabus depending on various administrative factors. There is no re-examination for internals.

Criteria for Ranking of Students:

1. Marks secured in core, elective and Inter Disciplinary Course (Part III) courses will be considered for PG Programs and marks secured in Core, Elective, Inter Departmental and Allied Courses (Part-III) will be considered for UG programs, for ranking of students.
2. Candidate must have passed all courses prescribed chosen / opted in the first attempt itself.
3. Improvement marks will not be considered for ranking but will be considered for classification.

External Examination Grievances Committee:

Those students who have grievances in connection with examinations may represent their grievances, in writing, to the chairman of examination grievance committee in the prescribed Performa. The Principal will be chairman of this committee.

SREE SARASWATHI THYAGARAJA COLLEGE (AUTONOMOUS)
THIPPAMPATTI, POLLACHI - 642 107

Student Grievance Form

(Forms Available at Utility Stores)

Date:
Place:

From
Register No : .....,
Name : .....,
Class : .....,
Sree Saraswathi Thyagaraja College,
Pollachi – 642 107

To
The Principal / Examination-in-charge,
Sree Saraswathi Thyagaraja College,
Pollachi – 642 107

Through:

1. Head of the Department,
   Department of .....,
   Sree Saraswathi Thyagaraja College,
   Pollachi – 642 107
2. Dean of the Department
   Faculty of .....,
   Sree Saraswathi Thyagaraja College,
   Pollachi – 642 107

Respected Sir / Madam,

Sub: ..... - reg.

NATURE OF GRIEVANCE

.....
.....
.....

Thanking you,

Yours Truly,

Signature

Forwarded by:
HOD with comments / recommendation
.....
2. Dean with comments / recommendation
.....
3. Signature and Directions of the Principal
.....
4. Controller of Examinations:
.....

SEMESTER – V

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS5C10	Vulnerability Assessment and Penetration Testing	Concept	70	5	-	4
Preamble: This course facilitate to student to understand the concept of Vulnerability Assessment and Penetration Testing in all respect.						
Prerequisite: Basics of Security and networks, information security						

SYLLABUS

Unit	Course contents	Hours
I	PENETRATION TESTING METHODOLOGY: Types of penetration testing, Vulnerability assessment v/s penetration testing, Security testing methodologies: OSSTMM, ISSAF, OWASP, WASC-TC, Back tracking testing methodology, Ethics.	15
II	FOOT PRINTING & SOCIAL ENGINEERING: Information gathering methodologies- Competitive Intelligence- DNS Enumerations- Social Engineering attacks.	15
III	SCANNING &ENUMERATION :Port Scanning-Network Scanning- Vulnerability Scanning- NMAP scanning tool OS Fingerprinting- Enumeration	15
IV	SYSTEM HACKING: Password cracking techniques- Key loggers- Escalating privileges- Hiding Files Steganography technologies- Countermeasures.	15
V	SNIFFERS & SQL INJECTION : Active and passive sniffing- ARP Poisoning- Session Hijacking- DNS Spoofing Conduct SQL Injection attack - Countermeasures.	15
	Total	75

Text Books

1. Shakeel Ali &Tedi Heriyanto, "Backtrack -4: Assuring security by penetration testing", PACKT Publishing., 2011.
2. Kimberly Graves, "CEH: Official Certified Ethical Hacker Review Guide", Wiley Publishing Inc.,

Focus of Course: Employability

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS

HOD

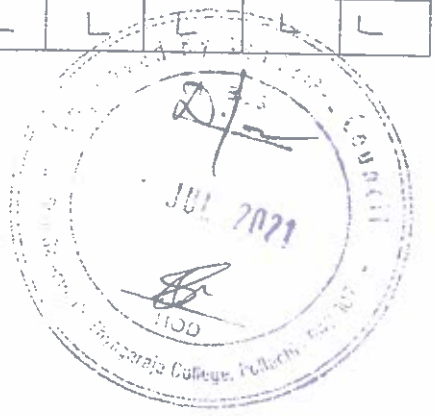
BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Understand vulnerability and its implications.	K1
CO 2	Formulate the techniques of information gathering	K1
CO 3	Discover the system hacking methods and its advancement	K2
CO 4	Perform vulnerability assessments and pen testing	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; L – Low; M – Medium



SEMESTER – V

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS5C20	Core	Vulnerability Assessment and Penetration Testing Lab	Practical	-	5	70	3
Preamble: This The main objective of this practical session is that students will get the exposure to various Penetration testing methods and forensic tools.							
Prerequisite: Basics of Security and networks, information security.							

Syllabus:

Ex. No	Course contents	Hours
1	Information gathering through Social Engineering	6
2	Understanding Data Packet Sniffers	5
3	Understand the process of phishing attacks and the security levels	8
4	Implementing Web Data Extractor and Web site watcher.	8
5	Vulnerability scanning using tool Nessus.	8
6	Vulnerability assessment using tool Burp Suite.	8
7	Penetration Testing and its justification	8
8	Performing sql injection attacks.	8
9	Denial of Service and Session Hijacking using Tear Drop, DDOS attack.	8
10	Windows Hacking – NT LAN Manager, Secure 1 password recovery	8
	Total	75

Reference Book:

1. Kimberly Graves, "CEH: Official Certified Ethical Hacker Review Guide", Wiley Publishing Inc.,
2. Shakeel Ali &Tedi Heriyanto, "Backtrack -4: Assuring security by penetration testing", PACKT Publishing. 2011.

Recommended Tools to be used: Burp Suite, Web Data Extractor, Open source tools

Focus of Course: Employability

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Understand vulnerability and its implications.	K2
CO2	Formulate the techniques of information gathering	K3
CO3	Discover the system hacking methods and its advancement	K3
CO4	Perform vulnerability assessments and pen testing	K4

Mapping Course Outcomes with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	L	L	L	L	L	L	M	L
CO2	L	L	L	L	L	M	M	M	M	S
CO3	M	M	M	M	M	S	L	M	M	L
CO4	L	L	M	M	S	S	L	M	M	S

S –Strong; **L** –Low, **M-** Medium

SEMESTER V

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS5C30	Network Security	Concept	55	5	-	5
Preamble: This course provides basic concept on network security.						
Prerequisite: information security						

SYLLABUS

Unit	Course contents	Hours
I	Introduction: - Types of Computer Networks, Reference Models - ISO-OSI Reference Model, TCP/IP Reference Model. Protocol Hierarchies Network layer: Routing Algorithm , ARP,RARP-Transport Layer: Elements of transport protocols, UDP, Segment Structure, TCP ,Service model, TCP Protocol, Application Layer: HTTP, DNS. Computer Security Concepts, the OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security. Access Control Models, Chinese Wall, Clark-Wilson, Bell-LaPadula, Non Interference and Role Base Model.	12
II	Intrusion detection/prevention system: Overview, Approached Used for IDS/IPS, Netwok Based IDS/IPS, Hostbased IDS/IPS, Honeypots, Detection of Polymorphic/Metamorphic worms, Distributed Intrusion Detection Systems and Standards, SNORT, TippingPoint IPS, McAfee Approach to IPS, Security Community's Collective Approach to IDS/IPS Hash and Authentication: Authentication, Hash functions, HMAC, Password Based Authentication, Password Based Encryption Standard, Automated Password Generator Standard, Password based Security protocols, One-time password and token, OPenID and OAuth..	12
III	Symmetric Key Ciphers and Wireless LAN security: Block ciphers, Stream Ciphers, US Govt's Cryptography Module Standards, Side channel attacks and defensive mechanisms Public Key Cryptography, Infrastructure and Certificates: DH protocol, Digital Signatures, PKC characteristics, ECC, Certificates and Public Infrastructure, PKCS, X.509 certificate and Private Key File Formats, US Govt. Standards, Attacks which target PKI and certificates, Email security.	12
IV	Secure Socket /Transport Layer Security(SSL/TLS) Protocols for Transport Layer Security: Handshake Protocol and Attacks, Record Protocol, SSL/TLS, DTLS, US Govt. Recommendations, EV-SSL, Establishing a CA, Web server Certificate Setup and Client Computer Configuration, CA's self signed root certificate, Browser security configurations Virtual Private Networks for Network Layer Security: Network security, IPSec, IKE, Data Lin Layer VPN protocols, VPN Configuration Procedure Examples.	12
V	Network Access Control and Wireless Network Security: Overview of NAC, Kerberos, TPM, Multiple Factor Authentications, 802.1X, Enterprise Wireless Network Security Protocols Cyber Threats and Their Defense: DNS protection, Router security, Spam Defensive measures, Phishing Defensive measures, Web-	12

	based attacks, Database defensive measures, Botnet attacks and applicable defensive techniques.	
	Total	**60**

TEXT BOOK:

1. Network Security Essentials – William Stallings, Edition 4, Pearson Education, 2011

2. I Chwan-Hwa (John) Wu , J. David Irwin, Introduction to Computer Networks and Cybersecurity, CRC Press, 2013

3. Network Security Bible- Eric Cole, Ronald Krutz, James W. Conley, Edition 2, Wiley India Pvt Ltd, 2010

4. Cryptography and Network Security: Principles and Practice-William Stallings, Edition 6, Pearson education, 2013

5. "The Internet", Douglas. E. Comer, Prentice hall of India – Third Edition

6.Cyber Law Crimes, Barkhs and U. Rama Mohan, Third Edition ,2017,Asia Law House

7.. Cyber Laws Simplified,ViveekSood, Fourth reprint 2008,McGraw Hill.

Focus of Course: Employability

Course Designer
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	To understand the basics of network security	K1
CO 2	To discuss about the network security attacks and network security assessment	K1
CO 3	To understand the concept of encryption mechanisms and its standards.	K2
CO 4	To apply the defensive mechanisms for network security.	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO3	PSO4	PSO5
CO1	L	M	L	L	L	L	L	L	M	L
CO2	L	L	L	L	M	M	M	M	M	S
CO3	M	M	M	M	M	S	L	M	M	L
CO4	L	L	M	M	S	S	L	M	M	S
~~CO5~~										

S – Strong; L – Low; M – Medium

SEMESTER V

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS5S30	SBC	Network Security Lab	Practical	-	2	33	2
Preamble: This course provides basic concept of free and open source Softwares and its implementations.							
Prerequisite: Basics of network security concepts.							

Syllabus:

Ex. No	Course contents	Hours
1	Perform an experiment to demonstrate how to sniff for router Traffic by using the tool like Wireshark.	3
2	Familiarization with network simulator NS 2	3
3	Perform an experiment to sniff traffic using ARP poisoning.	3
4	Demonstrate intrusion detection system using any tool eg. Snort or any other s/w.	3
5	Simulation of DoS attacks and detection using various tools.	4
6	Hacking wireless network using various tools	4
7	Securing wired and wireless networks.	4
8	Familiarization of various tools used in Network forensics.	4
9	Generating password hashes with OpenSSL.	3
10	Install JCrypTool (or any other equivalent) and demonstrate Asymmetric, symmetric crypto algorithm, hash and digital/PKI Signatures.	4
	Total	**35**

Reference Book:

1. I Chwan-Hwa (John) Wu , J. David Irwin, Introduction to Computer Networks and Cybersecurity, CRC Press, 2013

2. Network Security Bible- Eric Cole, Ronald Krutz, James W. Conley, Edition 2, Wiley India Pvt Ltd, 2010

3. Michael Gregg, Build Your Own Security Lab: A Field Guide for Network Testing , 1st Edition, Wiley 2008.

4.Michael Gregg, The Network Security Test Lab: A Step-by-Step Guide, 1st Edition, Wiley 2015

5. Richards Stevens, Unix network programming, , Vol I & Vol II, 4th edition, Prentice .

Hall, 2007.

6. Stallings, Cryptography and Network Security, Pearson Education,2007

Recommended tools to be used : NS 2, JCrypTool, OpenSSL, Snort
Focus of Course: Skill Development
Course Designer : **Ms. Anjana K S** Assistant Professor, Dept. of DCFS,
BoS Chairman **Prof. D Geetha** HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO1	Understand the dynamic nature of Communication Network	K3
CO2	Understand different tool and techniques	K3
CO3	Formulate the techniques in wired and wireless network	K3
CO4	Discover the network security methods and its advancement	K4

Mapping Course Outcomes with Programme Outcomes and Programme Specific Outcomes:

COs/POs/ PSOs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	L	L	L	L	L	L	M	L
CO2	L	L	L	L	L	M	M	M	M	S
CO3	M	M	M	M	M	S	L	M	M	L
CO4	L	L	M	M	S	S	L	M	M	S

S –Strong; **L** –Low; **M** –Medium

Semester V

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS5EA0	Elective – 1 Trends in Digital Forensic	Concept	50	10	-	5

Preamble: The students will understand the resent trends of digital forensics in various domains.

Prerequisite: Knowledge on digital forensic

SYLLABUS

Unit	Course contents	Hours
I	**Digital forensics for IoT-based networks**-Applying Digital Forensics to IoT and WSNs-Challenges in IoT and WSN Forensics- Device Level Investigation-Network Level Investigation-Cloud Level Investigation.	12
II	**Digital forensics for software privacy and security**- Introduction-Data Collection-current trend of privacy in digital forensics-Privacy prevention in Users perspective- Privacy prevention in forensics investigator perspective- Privacy prevention in technologies perspective.	12
III	**Digital forensics for artificial intelligence**- introduction- Artificial intelligence-Representation of knowledge-Explaining the reasoning process- Knowledge discovery-Adaption.	12
IV	**Big data and digital forensics**- How Big Data Is Helping Cybersecurity- The Analysis of Current and Historical Data for Threat Visualization- Security controls in big data tools- Data Authenticity and Integrity	12
V	**Digital forensics of quantum computing**- Introduction- Quantum Computation- Quantum Forensics- Security and Privacy Aspects Using Quantum Internet- The Role of Quantum Computing in Software Forensics and Digital Evidence	12
Total		60

Reference:

- "Digital Forensics for IoT and WSNs"- Research paper by Umit Karabiyik, Kemal Akkaya A Survey on Privacy Issues in Digital Forensics – Research paper by Ali Dehghantanha, Asou Aminnezhad, Mohd Taufik Abdullah
- THE USE OF ARTIFICIAL INTELLIGENCE IN DIGITAL FORENSICS: AN INTRODUCTION – Research paper by Dr Faye Mitchell
- BIG DATA ANALYTICS FOR CYBER SECURITY - Bharath Krishnappa
- Digital Quantum Forensics: Challenges and Responses -Research paper by Richard Overill

Focus of Course: Employability

Course Designer
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)

On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO 1	Understand Digital forensics for IoT-based networks	K1
CO 2	To understand Digital forensics for software privacy and security	K1
CO 3	It provides conceptual understanding of Digital forensics for artificial intelligence and Big Data	K2
CO 4	To understand and analyze on Digital forensics of quantum computing	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; L – Low; M – Medium

Semester VI

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6C10	Preserving and Recovering Digital Evidence	Concept	70	5	-	5

Preamble: To learn to analyze different laws related to computer crime, how to Secure Digital Evidences, to understand the Investigation.

Prerequisite: : Cyber Forensic

SYLLABUS

Unit	Course contents	Hours
I	Digital Investigation: Digital evidence and computer crime ,history and terminals of computer crime investigation ,technology and law ,the investigate process ,investigate reconstruction ,modus operandi, motive and technology ,digital evidence in the court room.	15
II	Computer basics for digital investigators: applying forensic science to computers, forensic examination of windows systems ,forensic examination of Unix systems ,forensic examination of Macintosh systems, forensic examination of handheld devices.	15
III	Networks: Networks basics for digital investigators, applying forensic science to networks ,digital evidence on physical and data link layers ,digital evidence on network and transport layers ,digital evidence on the internet..	15
IV	Investigating Computer Crime: Investigating computer intrusions ,investigating cyberstalking ,digital evidence as alibi.	15
V	Guidelines: Handling the digital crime scene – digital evidence examination guidelines.	15
	Total	**75**

Text Books

1. Digital Evidence and Computer Crime Forensic science, Computers and Internet, Eoghan Casey,Second Edition, 2011 ,Elsevier Academic Press.
2. A Electronic Discovery and Digital Evidence in a Nut Shell-Daniel J Capra,Shira A scheindlin,-Third Edition, 2009 The Sedona Conerence-Academic Press.
3. The Best Damn Cybercrime and Digital Forensics Book Rep,Jack Wiles, Anthony Reyes , Jesse Varsalone,2007 Syngress Publishing.
4. Computer Evidence and Computer Crime: Forensic Science, Computers, and the Internet.Casey, Eoghan, 2000 , Cambridge University Press.
5. Computer Forensics Computer Crime Scene Investigation,Vacca, John R. ,2002,Charles River Media.

Focus of Course: Entrepreneurship

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS.

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	It helps to recover, analyze, and preserve computer and related materials in such a manner that it helps the investigation agency to present them as evidence in a court of law.	K1
CO 2	It helps to postulate the motive behind the crime and identity of the main culprit	K1
CO 3	Designing procedures at a suspected crime scene which helps you to ensure that the digital evidence obtained is not corrupted	K2
CO 4	Data acquisition and duplication: Recovering deleted files and deleted partitions from digital media to extract the evidence and validate them.	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; L – Low; M – Medium

Semester VI

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6C20	Malware Analysis	Concept	45	5	-	2

Preamble: To learn the different perspective of malwares, designs, implications and analysis in all respective.

Prerequisite: Basics of cyber-crime.

SYLLABUS

Unit	Course contents	Hours
I	Fundamentals of Malware Analysis (MA), Reverse Engineering Malware (REM) Methodology, Brief Overview of Malware analysis lab setup and configuration, Introduction to key MA tools and techniques, Behavioral Analysis vs. Code Analysis, Resources for Reverse-Engineering Malware (REM) Understanding Malware Threats, Malware indicators, Malware Classification, Examining Clam AV Signatures, Creating Custom Clam AV Databases, Using YARA to Detect Malware Capabilities, Creating a Controlled and Isolated Laboratory, Introduction to MA Sandboxes, Ubuntu, Zeltser's REMnux, SANS SIFT, Sandbox Setup and Configuration New Course Form, Routing TCP/IP Connections, Capturing and Analyzing Network Traffic, Internet simulation using INetSim, Using Deep Freeze to Preserve Physical Systems, Using FOG for Cloning and Imaging Disks, Using MySQL Database to Automate FOG Tasks.	10
II	Scanners: Virus Total, Jotti, and NoVirus Thanks, Analyzers: Threat Expert, CWSandbox, Anubis, Joebox, Dynamic Analysis Tools: Process Monitor, Regshot, HandleDiff, Analysis Automation Tools: Virtual Box, VM Ware, Python , Other Analysis Tools Malware Forensics: Using TSK for Network and Host Discoveries, Using Microsoft Offline API to Registry Discoveries , Identifying Packers using PEiD, Registry Forensics with Reg Ripper Plu-gins:. Bypassing Poison Ivy's Locked Files, Bypassing Conficker's File System ACL Restrictions, Detecting Rogue PKI Certificates.	10
III	Malware and Kernel Debugging: Opening and Attaching to Processes, Configuration of JIT Debugger for Shellcode Analysis, Controlling Program Execution, Setting and Catching Breakpoints, Debugging with Python Scripts and Py Commands, DLL Export Enumeration, Execution, and Debugging, Debugging a VMware Workstation Guest (on Windows), Debugging a Parallels Guest (on Mac OS X). Introduction to WinDbg Commands and Controls, Detecting Rootkits with WinDbgScripts, Kernel Debugging with IDA Pro	10
IV	MALWARE DESIGN USING OPEN SOURCE :Computer Virus in Interpreted programming language- Designing Shell bash virus - under Linux- Fighting over infection- Anti –antiviral fighting – Polymorphism- Case Study: Companion virus.	10
V	Memory Forensics and Volatility: Dumping with MoonSols Windows Memory Toolkit, Accessing VM Memory Files Overview of Volatility, Investigating Processes in Memory Dumps, Code Injection and Extraction, Detecting and Capturing Suspicious Loaded DLLs, Finding Artifacts in Process Memory, Identifying Injected Code with Malfind and YARA. Using WHOIS to Research Domains, DNS Hostname Resolution, Querying, Passive DNS, Checking DNS Records, Reverse IP Search New Course Form, Creating Static Maps, Creating Interactive Maps.	10
	Total	50

Text Books

1. Michael Sikorski, Andrew Honig, Practical Malware Analysis: The Hands-On Guide to Dissecting

Malicious Software publisher William Pollock, 2012.
2. Michael Hale Ligh, Andrew Case, Jamie Levy, AAron Walters, The Art of Memory Forensics: Detecting Malware and Threats in Windows, Linux, and Mac Memory, 1st Edition, 2014.
3. Mark.A .Ludwig, "The Giant black book of computer viruses, Create Space Independent Publishing Platform, 2 nd edition, ISBN 10: 144140712X, 2009.

Focus of Course: Employability

Course Designer	**BoS Chairman**
Ms. Anjana K S	**Prof. D Geetha**
Assistant Professor , Dept. of DCFS,	HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Define malware and its life cycle process	K1
CO 2	Outline the working principle of malwares	K1
CO 3	Summaries the designs and implications of malwares.	K2
CO 4	Ability to examine different kinds the malwares.	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; L – Low; M – Medium

Semester VI

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6C30	Mobile Devices Forensic Lab	Practical	-	5	70	4

Preamble: To enable the students to learn the basic mobile forensic tools and techniques.

Prerequisite: Basics of ethical hacking

SYLLABUS

Unit	Course contents	Hours
I	Screen lock bypassing techniques	6
II	Extracting device information	5
III	Gaining root access in Android	8
IV	Jailbreak iOS devices	8
V	Imaging a memory (SD) card	8
VI	Data Recovery Techniques	8
VII	Extracting details from Android devices using AFLogical tool	8
VIII	Extracting data from a mobile phone such as deleted data, call history, data files, passwords, data from various apps using tool MOBILedit	8
IX	Analyzing an Android in ADB.	8
X	Acquisition of volatile memory from Linux based devices using tool LiMe	8
	Total	75

Reference Books

1. Practical Mobile Forensics: Dive Into Mobile Forensics on IOS, Android, Windows, and Blackberry devices with This Action-Packed Practical Guide Paperback – 21 July 2014 by Satish Bommisetty ,Rohit Tamma ,Heather Mahalik

2.Practical Mobile Forensics- Third Edition: A hands-on guide to mastering mobile forensics for the iOS, android, and the Windows Phone platforms, 3rd Edition by Rohit Tamma Oleg Skulkin Heather Mahalik Satish Bommisetty.

Focus of Course: Entrepreneurship

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Define the mobile forensics	K1
CO 2	Outline the techniques behind retrieval of device information.	K1
CO 3	Define the data recovery techniques.	K2
CO 4	Apply different Mobile forensics tools.	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	M	S	L
CO5	L	M	L	L	L	L	L

S – Strong, L – Low; M – Medium

Semester VI

Course Code	Type	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6C40	SBC	File System Forensic	Concept	25	5	-	2

Preamble: To gain knowledge about information security and Risk Management. To be familiar with Risk assessment methodology and IT audit and its activities.

Prerequisite: Basics of Vulnerability assessment and Penetration testing

SYLLABUS

Unit	Course contents	Hours
I	**Unit 1:** Digital investigation foundation - Digital investigations and evidence, Digital crime scene investigation process, Data analysis, overview of toolkits, Computer foundations — Data organizations, booting process, Hard disk technology, Hard disk data acquisition.	6
II	**Unit 2**: Volume Analysis introduction, background, analysis basics, PC based partitions- DOS partitions, Analysis considerations, Apple partitions, removable media, Server based partitions- BSD partitions, Sun Solaris slices, GPT partitions, Multiple disk volumes- RAID, Disk Spanning.	6
III	**Unit 3**: File system analysis- What is a file system, File system category, Content category, Metadata category, File name category, Application category, Application-level search techniques, Specific file systems, FAT concepts and analysis- Introduction, File system category, Content category. Metadata category, File name category, The big picture, File recovery, determining the type. Consistency check. FAT data structure- Boot sector, FAT 32 FS info, FAT, Directory entries, Long file name directory entries.	6
IV	**Unit 4:** NTFS concepts- Introduction, Everything is a role, MFT concepts, MFT entry attribute concepts, Other attribute concepts, Indexes, Analysis tools, NTFS Analysis- File system category, Content category, Metadata category, File name category. The big picture, File recovery, determining the type, Consistency check. NTFS data structure- Basic concepts, Standard file attributes, Index attributes and data structures, File system metadata rules.	6
V	**Unit 5**: Ext2 and Ext3 concepts- File system category, Content category, Metadata category, File name category, Application Category. Ext2 and Ext3 data structures-Super block, group descriptor tables, Block bitmap, Inodes, Extended attributes, Directory **Entry,** Symbolic Link, Hash trees, Journal data structures, UFS1 and UFS2 concepts and analysis - Introduction, File system category, Content category, Metadata category, File name category, UFS1 and UFS2 data structures- UFS1 superblock, UFS2 superblock.	6
	Total	**30**

Text Books

1. File System Forensic Analysis — Brian Carrier, Addison Wesley, 2005
2. Digital Evidence and Computer Crime- Casey, Eoghan , edition.2: Academic Press, 2004.

3. Computer Forensics- Kruse, Warren and Jay Heiser, Addison Wesley, 2002.
Focus of Course: Skill Development
Course Designer : **Ms. Anjana K S** Assistant Professor , Dept. of DCFS, — **BoS Chairman** **Prof. D Geetha** HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Able to explain the knowledge about Digital investigation.	K1
CO 2	Able to analysis Volume analysis approaches.	K1
CO 3	Able to explain File system analysis.	K2
CO 4	Able to explain NTFS and UFS	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; **L** – Low; **M** – Medium

Semester VI

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6EA0	Elective – 2 Blockchain Technology	Concept	50	10	-	5

Preamble: This course aims at facilitating the student to learn the fundamentals of block chain technology and how it will power the economy of tomorrow.

Prerequisite: Programming and Data Structures

SYLLABUS

Unit	Course contents	Hours
I	**Introduction to Blockchain &Crypto currencies:** Blockchain- Public Ledgers, Blockchain as Public Ledgers -Bitcoin, Blockchain 2.0, Smart Contracts, Block in a Blockchain, Transactions-Distributed Consensus, The Chain and the Longest Chain -Cryptographic Hash Functions – Hash Pointers and Data Structures – Digital Signatures – Public Keys as Identities – A Simple Crypto currency. **(Chapter 1)**	12
II	**How Bitcoin Achieves Decentralization:** Centralization vs. Decentralization-Distributed consensus – Consensus without identity using a block chain-Incentives and proof of work. **(Chapter 2)**	12
III	**Mechanics of Bitcoin:** Bit coin transactions – Bit coin Scripts – Applications of Bit coin scripts – Bit coin blocks –The Bit coin network-Limitations and improvements. **(Chapter 3)**	12
IV	**How to Store and Use Bitcoins:** Simple Local Storage – Hot and Cold Storage – Splitting and Sharing Keys – Online Wallets and Exchanges – Payment Services – Transaction Fees – Currency Exchange Markets.**(Chapter 4)**	12
V	**Community, Politics, and Regulation:** Consensus in Bit coin – Bitcoin Core Software – Stakeholders: Who's in Charge? – Roots of Bitcoin – Governments Notice Bitcoin – Anti Money Laundering – Regulation – New York's Bit License Proposal. **(Chapter 7)**	12
	Total	**60**

Text Book(s):

I Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder. "Bitcoin and cryptocurrency technologies: a comprehensive introduction". Princeton University Press, 2016. **(Units I, II, III, IV & V)**

Focus of Course: Employability

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)		
On successful completion of this course the students will be able to:		
CO Number	**Course Outcome (CO) Statement**	**Blooms Taxonomy Knowledge Level**
CO 1	Understand emerging abstract models for Blockchain Technology	K1
CO 2	To understand the Cryptocurrency and Bitcoin	K1
CO 3	It provides conceptual understanding of the function of storing and using Bitcoin	K2
CO 4	To understand and analyze the Community and Regulations of Blockchain	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; **L** – Low; **M** – Medium

Semester VI

Course Code	Course Name	Category	Lecture (L)	Tutorial (T)	Practical (P)	Credit
19BFS6EB0	Elective 3: Cloud Security	Concept	50	10	-	5

Preamble: The course provides knowledge on cloud computing and its security aspects.

Prerequisite: Basics of security

SYLLABUS

Unit	Course contents	Hours
I	**CLOUD COMPUTING FUNDAMENTALS**: Cloud Computing definition, private, public and hybrid cloud. Cloud types; IaaS, PaaS, SaaS. Benefits and challenges of cloud computing, public vs private clouds, role of virtualization in enabling the cloud; Business Agility: Benefits and challenges to Cloud architecture.	12
II	**CLOUD APPLICATIONS** : Technologies and the processes required when deploying web services-Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages- Development environments for service development; Amazon, Azure, Google App.	12
III	**SECURING THE CLOUD**: Security Concepts - Confidentiality, privacy, integrity, authentication, nonrepudiation, availability, access control, defence in depth, least privilege- how these concepts apply in the cloud and their importance in PaaS, IaaS and SaaS.e.g. User authentication in the cloud.	12
IV	**VIRTUALIZATION SECURITY** : Multi-tenancy Issues: Isolation of users/VMs from each other- How the cloud provider can provide this- Virtualization System Security Issues: e.g. ESX and ESXi Security, ESX file system security- storage considerations, backup and recovery- Virtualization System Vulnerabilities.	12
V	**CLOUD SECURITY MANAGEMENT**: Security management in the cloud – security management standards- SaaS, PaaS, IaaS availability management- access control- Data security and storage in cloud.	12
	Total	**60**

Text Books

1.Unix and Linux Forensic Analysis DVD ToolKit - Chris Pogue, Cory Altheide, Todd Haverkos, Syngress Inc. , 2008

2.Windows Forensic Analysis DVD Toolkit- Harlan Carvey, Edition 2, Syngress Inc. , 2009 Text Books

1. GautamShroff, "Enterprise Cloud Computing Technology Architecture Applications", Cambridge University Press; 1 edition [ISBN: 978-0521137355], 2010.

2. A Comprehensive Guide to Secure Cloud Computing Ronald L. Krutz, Russell Dean Vines, India 2010

3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", Tata McGraw-Hill Osborne Media; 1 edition 22, [ISBN:0071626948], 2009

Focus of Course: Employability

Course Designer :
Ms. Anjana K S
Assistant Professor , Dept. of DCFS,

BoS Chairman
Prof. D Geetha
HOD, CS

Course Outcomes (COs)
On successful completion of this course the students will be able to:

CO Number	Course Outcome (CO) Statement	Blooms Taxonomy Knowledge Level
CO 1	Understand the fundamentals of Cloud and Web security.	K1
CO 2	Explore the knowledge on cloud applications.	K1
CO 3	Acquire knowledge on Virtualization Techniques	K2
CO 4	Apply the concepts in Cloud security management	K3

Mapping with Program Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	L	M	L	L	L	L	L
CO2	L	L	L	L	L	M	M
CO3	M	M	M	M	M	S	L
CO4	L	L	M	M	S	S	L
CO5	L	M	L	L	L	L	L

S – Strong; L – Low; M – Medium