



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by
NAAC with "A" Grade)
(An Autonomous Institution)
(As per UGC Regulations 2018)



Madagadipet, Puducherry - 605 107

28.08.2020

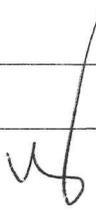
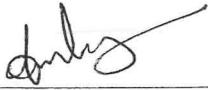
Department of BCA

Minutes of Board of Studies

The first Board of Studies meeting of Department of BCA was held on 28th August 2020 at 02:00 P.M in the BCA Department Lab, Sri Manakula Vinayagar Engineering College with Head of the Department in the Chair.

The following members were present for the BoS meeting

Sl.No	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	Dr. C.Punitha Devi , M.C.A. M.Tech., Ph.D. Professor / Head Department of Bachelor of Computer Applications	Chairman	
External Members			
2	Dr. N. Vijayalakshmi , MCA, Ph.D Associate Professor, Department of Computer Science, SRM Institute of Science and Technology (Autonomous)	Subject Expert Pondicherry University Nominee	 31/8/2020
3	Dr. A. Martin , MCA, M.Phil, ME, Ph.D Assistant. Professor, Department of Computer Science, School of Mathematics and Computer Science, Central University of Tamil Nadu, Thiruvavur.	Subject Expert Academic Council Nominee	 31/8/2020 (BoS, BCA-SMVEL)
4	Dr. S. Behin Sam , MCA, Ph.D Associate Professor, Department of Computer Science, Dr. Ambedkar Arts and Science College Viyasarpadi, Chennai	Subject Expert Academic Council Nominee	
5	Dr.J.Udayakumar , MCA, Ph.D Proprietor, Genesys Academy of Computer Science. Pondicherry	Industry Member	

Internal Members			
6	Dr.R.Raju MCA, M.Tech, PhD Professor and Head Department of Information Technology	Member	
7	Dr. T. Amalraj Victoire , MCA, Ph.D, Professor Department of Computer Applications	Member	
8	Mr.R. Ramakrishnan , MCA, M.Phil, M.Tech, (Ph.D), Associate Professor Department of Computer Applications	Member	
Co-opted Members			
9	Dr. B. Elamurugan , MBA, Ph.D, Associate Professor Department of Management Studies	Member	
10	Dr.G. Suresh , Ph.D. Professor Department of Mathematics	Member	
11	Mrs. P. Rajeswari M.Phil, (Ph.D.) Assistant Professor Department of English	Member	

Agenda of the Meeting

- 1.1 To discuss and approve the vision and mission of the Department
- 1.2 To discuss and recommend the B.C.A. Degree Regulations 2020 (R-2020),
- 1.3 To discuss and approve about the curriculum Structure under the regulations 2020
- 1.4 To discuss and approve the syllabi of I and II Semesters of B.C.A Programme
- 1.5 To discuss the uniqueness of the curriculum.
- 1.6 To discuss and approve Evaluation Systems
- 1.7 To discuss about the Innovative Blended Teaching / Practices Methodology adopted to handle the emerging technological concept courses and dynamic teaching learning environment
- 1.8 To discuss approve Panel of Examiners
- 1.9 Any other item with the permission of chair

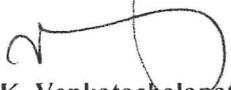
Minutes of the Meeting

Dr. C.Punitha Devi, Chairman, BoS opened the meeting, the Director cum Principal welcomed and introduced the external members, to the internal and co-opted members and thanked them for accepting to become the member of the Board of Studies. The meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item:1.1	The Department vision and mission was approved and BoS members recommended the same to academic council
Item:1.2	The Autonomous Regulations R2020 was discussed and the members recommended the same to the Academic Council
Item:1.3	The BoS Members approved the curriculum for I to VI semesters with minor corrections and recommended the same to Academic Council <ul style="list-style-type: none">• Swapping of course: Cloud Computing in semester IV and .Net framework in Semester VI may be swapped and this suggestion was made in the curriculum• Skill Enhancement Course - Office Automation may be moved to Semester I or II. This course was moved to II semester as employability enhancement course.
Item:1.4	The syllabi for I and II semesters was briefed and recommended the same to the Academic council with the following suggestions <ul style="list-style-type: none">• In Data structures and Algorithm course - Include only essential concepts in each unit and some portions may be removed• Include OOPs concepts as separate unit in Java Programming The suggestions were considered and has been carried out in the syllabus
Item:1.5	Uniqueness of the Curriculum (R-2020) has been discussed. <ul style="list-style-type: none">• The organization of courses and the inclusion of advanced technological concepts in the sixth semester was appreciated by the members
Item:1.6	Discussed on the Evaluation System in regulations 2020 and recommended the same to academic council
Item:1.7	Discussed about the Innovative Teaching / Practices Methodology adopted to handle the emerging / Advanced Technological concept courses and found satisfactory
Item:1.8	The BoS members approved the panel of examiners

The meeting was concluded at 3:30 PM with vote of thanks by Dr. C. Punitha Devi, Professor, Department of BCA.


Dr. C. Punitha Devi
Professor / B.C.A.
Chairman –BoS (B.C.A.)


Dr. V.S.K. Venkatachalapathy
Director cum Principal
Chairman – Academic council



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
Madagadipet, Puducherry– 605107

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

CURRICULUM AND SYLLABUS

(For students admitted from academic year 2020-2021 onwards)

SEMESTER – I										
Sl.N	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT101	Language - I	LANG	3		-	3	25	75	100
2	A20GET01	English – I	ENG	3		-	3	25	75	100
3	A20CAT101	Problem Solving using C	DSC	4	-	-	4	25	75	100
4	A20CAT102	Digital Fundamentals and computer Organization	DSC	4	-	-	4	25	75	100
5	A20MAT1XX	Mathematics for Computer Science	ALLIED	3	1		4	25	75	100
6	A20AEC101	Environmental Studies	AEC	2	-	-	2	100	-	100
Practical										
7	A20CAP101	Programming in C Lab	DSCP	-	-	4	2	50	50	100
8	A20CAP102	Digital system design Lab	DSCP	-	-	4	2	50	50	100
9	A20EEP101	Communication Skills	EEC	-	-	4	2	100	-	100
I Semester Total Credits/Marks							26	425	475	900

SEMESTER – II

Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT2XX	Language-II	LANG	3	-	-	3	25	75	100
2	A20GET202	English-II	ENG	3	-	-	3	25	75	100
3	A20CAT203	Data Structure and Algorithm	DSC	4	-	-	4	25	75	100
4	A20CAT204	Java Programming	DSC	4	-	-	4	25	75	100
5	A20MAT2XX	Numerical Methods and Statistics	ALLIED	3	1	-	4	25	75	100
6	A20AET201	Value Education	AEC	2	-	-	2	100	-	100
Practical										
7	A20CAP203	Data Structures LAB	DSCP	-	-	4	2	50	50	100
8	A20CAP204	Java Programming Lab	DSCP	-	-	4	2	50	50	100
9	EA 201	NSS/NCC/Yoga	Ext Act	-	-	2	1	50		
10	A20EEP202	Certification Course-1	EEC	-	-	4	2	100	-	100
II Semester Total Credits/Marks							27	475	475	950

SEMESTER – III

Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT305	Operating Systems	DSC	4	-	-	4	25	75	100
2	A20CAT306	Python Programming	DSC	4	-	-	4	25	75	100
3	A20CAT307	Software Engineering	DSC	4	-	-	4	25	75	100
4	A20MAT3XX	Operation Research	ALLIED	3	1	-	4	25	75	100
5	A20BBT3XX	Enterprise Resource Planning	OE	3	-	-	3	25	75	100
Practical										
6	A20CAP305	Python Programming LAB	DSCP	-	-	4	2	50	50	100
7	A20CAP306	Operating Systems LAB	DSCP	-	-	4	2	50	50	100
8	A20SEP301	Office Automation Tools	SEC	-	-	4	2	100	-	100
9	A20EEP303	Qualitative & Quantitative Aptitude	EEC	-	-	4	2	100	-	100
III Semester Total Credits/Marks							27	425	475	900

SEMESTER – IV										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT408	Data Base Management Systems	DSC	4	-	-	4	25	75	100
2	A20CAT409	.Net Framework	DSC	3	1	-	4	25	75	100
3	A20CAT410	Computer Networks	DSC	4	-	-	4	25	75	100
4	A20CAT411	Computer Graphics	DSC	3	1	-	4	25	75	100
5	A20BBT405	Fundamentals of Accounting	OE	3	-	-	3	25	75	100
Practical										
6	A20CAP407	Software Application LAB	DSCP	-	-	4	2	50	50	100
7	A20CAP408	Computer Networks Lab	DSCP	-	-	4	2	50	50	100
8	A20SEP402	Statistical Package for Social Sciences (SPSS)	SEC	-	-	2	2	100	-	100
9	A20EEP402	Certification Course-2	EEC	-	-	4	2	100	-	100
IV Semester Total Credits/Marks							27	475	475	950

SEMESTER – V										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT512	Web Technology	DSC	4	-	-	4	25	75	100
2	A20CAT513	Data Warehousing and Mining	DSC	3	1	-	4	25	75	100
3	A20CAE5XX	Stream-1: Software Management	DSE	3	-	-	3	25	75	100
4	A20CAE5XX	Stream-2: Artificial Intelligence	DSE	3	-	-	3	25	75	100
5	A20CAE5XX	Stream 3: Information Security	DSE	3	-	-	3	25	75	100
Practical										
6	A20CAP509	Web Technology Lab	DSCP	-	-	4	2	50	50	100
7	A20SEP503	Internship (2-weeks) / In-plant Training (4 -weeks) / Mini Project Any one from the above list	SEC	-	-	4	2	100	-	100
8	A20EEP503	Certification Course-3	EEC	-	-	4	2	100	-	100
V Semester Total Credits/Marks							23	425	425	950

SEMESTER – VI										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CAT614	Cloud Computing	DSC	3	1	-	4	25	75	100
2	A20CAT615	Blockchain Technology	DSC	3	1	-	4	25	75	100
3	A20CAT616	Internet of Things and Data Analytics	DSC	3	1	-	4	25	75	100
4	A20CAR601	Project Work & Viva-voce	DSCP	-	-	10	5	40	60	100
5	A20SEP604	Technical Seminar and Report Writing	SEC	-	-	4	2	100	-	100
VI Semester Total Credits/Marks							19	215	275	500

Abbreviation for short code:

DSC-Domain Specific Core

DSCP- Domain Specific Core Practical

DSE -Domain specific Elective

ALL- Allied / Generic Elective

OE –Open Elective

AEC –Ability Enhancement Compulsory Course

SEC –Skill Enhancement Course

EA- Extra Curricular Activities

EEC - Employability Enhancement Course

L- Number of lecture hours per week

T - Number of tutorial hours per week

P - Number of practical hours per week

CAM – Continuous Assessment Marks

ESM– End Semester Marks

Head of the Department

Director cum Principal

SEMESTER WISE CREDIT DISTRIBUTION

Semester	I	II	III	IV	V	VI	Total
Credits	26	27	27	27	23	19	149

CREDIT DISTRIBUTION

Semester	MIL	ENG	DSC (T &P)	DSE	Allied	OE	SEC	AEC	EE C	EA	Total credits
I	3	3	12	-	4	-	-	2	2	-	26
II	3	3	12	-	4	-	-	2	2	1	27
III	-	-	16	-	4	3	2	-	2	-	27
IV	-	-	20	-	-	3	2	-	2	-	27
V	-	-	10	9	-	-	2	-	2	-	23
VI	-	-	17	-	-	-	2	-	-	-	19
Total	6	6	87	9	12	6	8	4	10	1	149

Total credits for Part I & II (Language and English): 12 Credits

LANGUAGE AND ENGLISH										
Part	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT101	Language - I	LANG	3		-	3	25	75	100
2	A20GET101	English – I	ENG	3		-	3	25	75	100
3	A20TAT202	Language-II	LANG	3	-	-	3	25	75	100
4	A20GET202	English-II	ENG	3	-	-	3	25	75	100

Part-II: DISCIPLINE SPECIFIC Core - Theory

Total credits for DSC Papers (Theory): 64 Credits

DSC PAPERS										
Sl. no	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A20CAT101	Problem Solving using C	DSC	4	-	-	4	25	75	100
2	A20CAT 102	Digital Fundamentals and computer Organization	DSC	4	-	-	4	25	75	100
3	A20CAT 203	Data Structure and Algorithm	DSC	4	-	-	4	25	75	100
4	A20CAT 204	Java Programming	DSC	4	-	-	4	25	75	100
5	A20CAT 305	Operating Systems	DSC	4	-	-	4	25	75	100
6	A20CAT 306	Python Programming	DSC	4	-	-	4	25	75	100
7	A20CAT 307	Software Engineering	DSC	4	-	-	4	25	75	100
8	A20CAT 408	Data Base Management Systems	DSC	4	-	-	4	25	75	100
9	A20CAT 409	Cloud Computing	DSC	3	1	-	4	25	75	100
10	A20CAT 410	Computer Networks	DSC	4	-	-	4	25	75	100
11	A20CAT 411	Computer Graphics	DSC	3	1	-	4	25	75	100
12	A20CAT 512	Web Technology	DSC	4	-	-	4	25	75	100
13	A20CAT 513	Data Warehousing and Mining	DSC	3	1	-	4	25	75	100
14	A20CAT 614	.NET Framework	DSC	4	-	-	4	25	75	100
15	A20CAT 615	Blockchain Technology	DSC	4	-	-	4	25	75	100
16	A20CAT 616	Internet of Things and Data Analytics	DSC	4	-		4	25	75	100

Part-III: DISCIPLINE SPECIFIC Core – Practical / Project

Total credits for DSC Papers (Practical / Projects): 23 Credits

DSC PAPERS										
Sl. no	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A20CAP101	Programming in C Lab	DSCP	-	-	4	2	50	50	100
2	A20CAP102	Digital System Design Lab	DSCP	-	-	4	2	50	50	100
3	A20CAP203	Data Structures LAB	DSCP	-	-	4	2	50	50	100
4	A20CAP204	Java Programming Lab	DSCP	-	-	4	2	50	50	100
5	A20CAP305	Operating Systems LAB	DSCP	-	-	4	2	50	50	100
6	A20CAP306	Python Programming LAB	DSCP	-	-	4	2	50	50	100
7	A20CAP407	DBMS LAB	DSCP	-	-	4	2	50	50	100
8	A20CAP408	Networks LAB	DSCP	-	-	4	2	50	50	100
9	A20CAP509	Web Technology Lab	DSCP	-	-	4	2	50	50	100
10	A20CAR601	Project Work & Viva-Voce	DSCP	-	-	10	5	40	60	100

Part-III: DISCIPLINE SPECIFIC ELECTIVES

Total credits for Elective Papers (Theory): 09 Credits

ELECTIVES										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Stream-1 (Software Management)										
1	A20CAE501	Object Oriented Analysis and Design	DSE	3	-	-	3	25	75	100
2	A20CAE502	Software Project Management	DSE	3	-	-	3	25	75	100
3	A20CAE503	Software Quality Assurance	DSE	3	-	-	3	25	75	100
4	A20CAE504	Software Testing and Tools	DSE	3	-	-	3	25	75	100
5	A20CAE505	IT Assessment and Risk Analysis	DSE	3	-	-	3	25	75	100
Stream-2 (Artificial Intelligence)										
1	A20CAE506	Artificial Intelligence	DSE	3	-	-	3	25	75	100
2	A20CAE507	AI in Health Care	DSE	3	-	-	3	25	75	100
3	A20CAE508	Introduction to Robotics	DSE	3	-	-	3	25	75	100
4	A20CAE509	Recommender Systems	DSE	3	-	-	3	25	75	100
5	A20CAE510	Reinforcement learning	DSE	3	-	-	3	25	75	100
Stream-2 (Information Security)										
1	A20CAE511	Information Security	DSE	3	-	-	3	25	75	100
2	A20CAE512	Network Security	DSE	3	-	-	3	25	75	100
3	A20CAE513	Ethical Hacking	DSE	3	-	-	3	25	75	100
4	A20CAE514	Cyber Security	DSE	3	-	-	3	25	75	100
5	A20CAE515	Intrusion Detection System and Prevention	DSE	3	-	-	3	25	75	100

Part-III: ALLIED / General Elective

Total credits for ALLIED Papers (Theory): 12 Credits

ALLIED										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20MAT1XX	Mathematical Foundations	ALLIED	3	1		4	25	75	100
2	A20MAT2XX	Numerical Methods	ALLIED	3	1	-	4	25	75	100
3	A20MAT3XX	Operation Research	ALLIED	3	1	-	4	25	75	100

Part-IV: OPEN ELECTIVES

Total credits for Open Elective Papers (Theory): 06 Credits

ELECTIVES										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20BBT3XX	Enterprise Resource Planning	OE	3	-	-	3	25	75	100
2	A20BBT4XX	Fundamentals of Accounting	OE	3	-	-	3	25	75	100

Part-IV: SKILL ENHANCEMENT COURSES

Total credits for SEC: 08 Credits

SKILL ENHANCEMENT COURSES										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A20SEP301	Computer Hardware and Software Installation & Troubleshooting	SEC	-	-	4	2	100	-	100
2	A20SEP402	Statistical Package for Social Sciences (SPSS)	SEC	-	-	4	2	100	-	100
3	A20SEP503	Online Course (30 hrs - Minimum) / Internship (2-weeks) / In-plant Training (4-weeks) Any one from the above list	SEC	-	-	4	2	100	-	100
4	A20SEP604	Technical Seminar and Report Writing	SEC	-	-	4	2	100	-	100

Part-IV: ONLINE CERTIFICATION COURSES / EXTRA-CURRICULAR ACTIVITIES**Total credits for OCC/ECA: 12 Credits**

Employability Enhancement Courses										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A20EEP101	Communication Skills	EEC	-	-	4	2	100	-	100
3	A20EEP202	Certification Course-1 Desktop Publishing	EEC	-	-	4	2	100	-	100
4	A20EEP303	Qualitative & Quantitative Aptitude	EEC	-	-	2	2	100	-	100
5	A20EEP404	Certification Course-2 Mobile App Development	EEC	-	-	4	2	100	-	100
6	A20EEP505	Certification Course-3 Graphics Design	EEC	-	-	2	2	100	-	100
8	EA402	NSS / NCC / Yoga	Ext Act	-	-	2	1	100	-	100

Head of the Department**Director cum Principal**

SEMESTER – I

Part	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT101	Language - I	LANG	3		-	3	25	75	100
2	A20GET01	English – I	ENG	3		-	3	25	75	100
3	A20CAT101	Problem Solving using C	DSC	4	-	-	4	25	75	100
4	A20CAT102	Digital Fundamentals and computer Organization	DSC	4	-	-	4	25	75	100
5	A20MAT1XX	Mathematics for ComputerScience	ALLIED	3	1		4	25	75	100
6	A20AEC101	Environmental Studies	AEC	2	-	-	2	100	-	100
Practical										
7	A20CAP101	Programming in C Lab	DSCP	-	-	4	2	50	50	100
8	A20CAP102	Digital system design Lab	DSCP	-	-	4	2	50	50	100
9	A20EEP101	Communication Skills	EEC	-	-	4	2	100	-	100
I Semester Total Credits/Marks							26	425	475	900

தமிழ் - I

பாடத்திட்டத்தின் நோக்கம்

- இரண்டாயிரம் ஆண்டுகாலத் தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
- காலந்தோறும் தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள், அடையாளங்கள் ஆகியவற்றை காலந்தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதாகவும், மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாகவும் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.
- வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

அலகு - 1

இக்காலக் கவிதைகள் - 1

1. பாரதியார் - கண்ணன் என் சேவகன்
2. பாரதிதாசன் - தமிழ்ப்பேறு
3. அப்துல் ரகுமான் - அவதாரம்
4. மீரா - கனவுகள் + கற்பனைகள் = காகிதங்கள்
5. து. நரசிம்மன் - மன்னித்துவிடு மகனே

அலகு - 2

இக்காலக் கவிதைகள் - 2

1. ராஜா சந்திரசேகர் - கைவிடப்பட்ட குழந்தை
2. அனார் - மேலும் சில இரத்தக் குறிப்புகள்
3. சுகிர்தராணி - அம்மா
4. நா.முத்துக்குமார் - தூர்

அலகு - 3

சிற்றிலக்கியம்

1. கலிங்கத்துப் பரணி - பொருதடக்கை வாள் எங்கே... (பாடல் - 485)
2. அழகர்கிள்ளை விடு தூது - இதமாய் மனிதருடனே... (கண்ணி - 45)
3. நந்திக் கலம்பகம் - அம்பொன்று வில்லொடிதல்... (பாடல் - 77)
4. முக்கூடற் பள்ளு - பாயும் மருதஞ் செழிக்கவே... (பாடல் - 47)
5. குற்றாலக் குறவஞ்சி - ஓடக் காண்பதுமே... (பாடல் - 9)

காப்பியங்கள்

மணிமேகலை - உலகவறவி புக்க காதை - "மாசுஇல் வால்ஒளி! - இந்நாள் போலும் இளங்கொடி கெடுத்தனை". (28 அடிகள்)

அலகு - 4 - தமிழ் இலக்கிய வரலாறு

1) சிற்றிலக்கியம் - தோற்றமும் வளர்ச்சியும், 2) புதுக்கவிதை - தோற்றமும் வளர்ச்சியும், 3) சிறுகதை - தோற்றமும் வளர்ச்சியும், 4) புதினம் - தோற்றமும் வளர்ச்சியும், 5) உரைநடை - தோற்றமும் வளர்ச்சியும்

அலகு - 5

மொழிப்பயிற்சி:

1. கலைச்சொல்லாக்கம், 2. அகரவரிசைப்படுத்துதல், 3. மரபுத்தொடர் / பழமொழி, 4. கலை விமர்சனம், 5. நேர்காணல்

உரைநடைப் பகுதி :

1. உ.வே.சாமிநாதையர் - சிவதருமோத்திரச் சுவடி பெற்ற வரலாறு,
2. தஞ்சாவூர்க் கவிராயர் - கூஜாவின் கோபம்,
3. இரா.பச்சியப்பன் - மாடல்ல மற்றையவை

பார்வை நூல்கள்

1. கைலாபதி, க., தமிழ் நாவல் இலக்கியம், குமரன் பதிப்பகம், வடபழனி, 1968.
 2. சுந்தரராஜன், பெ. கோ., சிவபாதசுந்தரம், சோ., தமிழில் சிறுகதை வரலாறும் வளர்ச்சியும், க்ரியா, சென்னை, 1989.
 3. பரந்தாமனார், அ.கி., நல்ல தமிழ் எழுத வேண்டுமா, பாரி நிலையம், சென்னை, 1998,
 4. பாக்யமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, என்.சி.பி. எச். பதிப்பகம், சென்னை, 2011
- வல்லிக்கண்ணன், புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும், அன்னம், சிவகங்கை, 1992.

A20ENT1XX

ENGLISH - I

L	P	T	C	Hrs
3	0	0	3	45

COURSE OBJECTIVES:

- To recognize the rhythms, metrics and other musical aspects of poetry
- To read a variety of texts critically and proficiently
- To enable the students to enjoy the flair of literature through the work of great writer
- To make the students to know the functions of basic grammar and frame sentences without grammatical error.
- To enable them understanding the intrinsic nuances of writing in English language

COURSE OUTCOMES:

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

- Comprehend and discuss the various facets of selected poems
- Analyze and interpret texts written in English
- Read drama with graduate-level interpretive and analytical proficiency
- Improve the fluency and formation of grammatically correct sentences
- Enhance the writing skills for specific purposes

UNIT I: POETRY

(9 hrs)

1. John Milton: On His Blindness
2. William Wordsworth: Daffodils
3. Percy Byshe Shelley: Ozymandias
4. Emily Dickinson: Because I could not stop for Death
5. Sarojini Naidu: The Queen's Rival

UNIT II: PROSE

(9 hrs)

1. Francis Bacon: Of Love
2. Charles Lamb: A Dissertation upon Roast Pig
3. Katherine Mansfield: A Doll's House
4. R. K. Narayan: An Astrologer's Day
5. Abdul Kalam: The Power of Prayer

UNIT III: DRAMA

(9 hrs)

1. Oscar Wilde: *Lady Windermere's Fan*

UNIT IV: GRAMMAR

(9 hrs)

1. Parts of Speech
2. Tenses
3. Subject-Verb Agreement

UNIT V: COMPOSITION

(9 hrs)

1. Essay Writing
2. Email

TEXT BOOKS:

1. Brookside Musings: A Selection of Poems and Short Stories: Board of Editors, Orient Longman Limited, 2009
2. Wilde, Oscar. *Lady Windermere's Fan*. published in *The Importance of Being Earnest and Other Plays*. London: Penguin, 1940. ISBN 0-14-048209-1.
3. Wilde, Oscar. *Lady Windermere's Fan*. London: Nick Hern Books, 2005. ISBN 978-1-85459-771-7
4. Lamb, Charles, *A Dissertation Upon Roast Pig & Other Essays*, Penguin; UK ed. edition (7 April 2011)
5. Gale, Emily Dickinson's *Because I could not stop for Death*, Cengage Learning, 2015

REFERENCE BOOKS:

1. Lalitha Natarajan & Sasikala Natesan English for Excellence: Poetry Anuradha Publications
Literary Pursuits: Board of Editors, Orient Longman Limited, 2015
2. Literary Pinnacles: An Anthology of Prose and Poetry. Board of Editors, Orient Longman Limited, 2015
3. The Approach to Life: A Selection of English Prose: Orient Longman Limited, 2009
4. Jeet Thayil, 60 Indian Poets, Penguin Books, 2008

WEB REFERENCES:

1. <https://poets.org/poem/because-i-could-not-stop-death-479>
2. <https://www.enotes.com/topics/an-astrologers-day>
3. <https://www.poetryfoundation.org/poems/46565/ozymandias>
4. <https://www.dltk-holidays.com/spring/poem/daffodils.htm>
5. <https://www.bartleby.com/4/313.html>

A20MAT1XX

MATHEMATICS FOR COMPUTER SCIENCE

L	T	P	C	Hrs
4	0	0	4	60

Course objectives:

- To develop the use of matrix algebra techniques for practical applications.
- To introduce effective mathematical tools for the solutions of differential equations that model physical processes
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.
- To learn the different concepts of topics in Probability.
- To learn the different concepts of topics in statistics.

Course Outcomes

After completion of the course students will be able to:

CO1 - Acquire the knowledge about matrices and able to compute Eigen values and Eigen

CO2 - Analyse and solve Differential Equations

CO3 - Understand the use of Integrals and able to apply it.

CO4 - Understand the use probability.

CO5 - Understand the use Statistics.

UNIT I – MATRICES

(12 Hrs)

Rank of a Matrix- Consistency of system of equations. Eigen values and Eigen vectors of a real matrix - Characteristic equation -Properties of Eigen values and Eigenvectors. Cayley-Hamilton Theorem - Diagonalization of matrices- Reduction of a quadratic form to canonical form by orthogonal transformation - Nature of quadratic forms.

UNIT II – – DIFFERENTIAL EQUATIONS

(12 Hrs)

Linear differential equations of higher order - with constant coefficients, the operator D, Euler's linear equation of higher order with variable coefficients, simultaneous linear differential equations, solution by variation of parameters method

UNIT III – INTEGRALS AND APPLICATIONS

(12 Hrs)

Double integrals and Triple Integrals. Applications: Areas by double integration and volumes by triple integration.

UNIT IV – PROBABILITY

(12 Hrs)

Discrete Random variable: Introduction Random variables and their event spaces -The probability Mass function- Distribution functions- Special discrete distributions: The Bernoulli PMF. Bernoulli Poisson, continuous random variable normal distribution.

UNIT V-STATISTICS

(12 Hrs)

Measures of central tendency Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean. Skewness and Kurtosis - Simple correlation Karl Pearson s coefficient. of correlation Rank correlation Regression lines of regression properties of regression coefficient.

TEXT BOOKS:

1. M.K. Venkataraman, Engineering Mathematics (First Year), Second Edition, The National Publishing Company, Madras, 2001.
2. M.K. Venkataraman, Engineering Mathematics (Third Year-Part A), The National Publishing Company, Madras, 2001.
3. T. Veerarajan, —Probability, statistics and Random Processes,|| Tata Mc.Graw-Hill Publishing Company Ltd.,3rd Edition, 2008.

REFERENCE BOOKS:

1. N.P. Bali and Manish Goyal, A Text Book of Engineering Mathematics, Lakshmi Publications, New Delhi, 2007.
2. Grewal B.S., Higher Engineering Mathematics, Khanna Publishers, New Delhi, 41st Edition, 2011.
3. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008
4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

5. Erwin Kreyszig Advanced Engineering Mathematics, John Wiley & Sons, New Delhi.

WEB REFERENCES:

1. <https://www.youtube.com/watch?v=xyAuNHPsq-g>
2. https://link.springer.com/chapter/10.1007/978-1-4757-2024-2_1
3. <https://ncert.nic.in/ncerts/l/lemh203.pdf>
4. <https://users.math.msu.edu/users/gnagy/teaching/ode.pdf>
5. https://www.stat.pitt.edu/stoffer/tsa4/intro_prob.pdf
6. <https://www.math.arizona.edu/~jwatkins/statbook.pdf>
7. <http://www.utstat.toronto.edu/mikevans/jeffrosenthal/book.pdf>
8. https://homepage.divms.uiowa.edu/~rdecook/stat2020/notes/ch3_pt1.pdf

A20CAT101

PROBLEM SOLVING USING C

L	T	P	C	Hrs
4	0	0	4	60

COURSE OBJECTIVES

- To understand the Fundamentals of Computers and introduction to C language.
- To study the basic terminologies of C language and arrays
- To understand the Functions, Structures and Unions.
- To understand the concepts of Pointers.
- To study about File Management Operations in C.

COURSE OUTCOMES

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

CO1 - Develop simple applications in C using basic constructs.

CO2 - Incorporating the use of sequential, selection and repetition control structures into a program.

CO3 - Develop simple programs using functions, structures and unions.

CO4 - Design and develop programs using Pointers.

CO5 - Understand the File management Operations and Pre-processor Directives.

UNIT I INTRODUCTION TO C

(12 Hrs)

C programming: Overview of C- Constants- Compiling a C Program -Variables and Data Types- Technical Difference between Keywords and Identifiers- - Types of C Qualifiers and format specifiers - Operators and Expressions-Operators Precedence-Type conversion-Input-Output Statements.

UNIT II DECISION MAKING AND LOOPING

(12 Hrs)

Decision making and branching- Relational operators – Logical operators- if – if else-if else if –nested if. Looping: while - do while – for – break – continue - nested loop.

UNIT III ARRAYS AND FUNCTIONS

(12 Hrs)

Arrays: One Dimensional Arrays-Two-Dimensional Arrays-Multi-Dimensional Array-Dynamic arrays- Character Arrays and String-Sorting - Searching. Functions: Introduction - Definition – Declaration – Categories of Functions - Nesting of Functions, Recursive functions - Passing Arrays to Functions - Strings – String library function.

UNIT IV STRUCTURES AND UNIONS, POINTERS IN C

(12 Hrs)

User defined data types, Introduction – Structure, definition - declaration - Arrays of Structures – Nested structures – Passing structures to functions — Union - Enumeration and Typedef. Pointers: Introduction - Declaring Pointer Variables - Initialization of Pointer Variables - Accessing the address of a variable - Accessing a variable thorough Pointer - Chain of Pointers - Pointer Expressions - Pointers and arrays – Pointers and functions – Call by Reference - Pointers and character strings - Array of Pointers - Pointers and Structures.

UNIT V FILE MANAGEMENT IN C

(12 Hrs)

Introduction to File Handling in C, Input and Output operations on a file – Error Handling - Random access to files – command line arguments. Introduction to preprocessor – Macro substitution directives – File inclusion directives – conditional compilation directives – Miscellaneous directives.

TEXT BOOKS

1. Balagurusamy. E, “Programming in ANSI C”, Tata McGraw Hill, 8th Edition, 2019.
2. Byron S Gottfried and Jitendar Kumar Chhabra, “Programming with C”, Tata McGraw Hill Publishing Company, Fourth Edition, New Delhi, 2015.
3. Herbert Schildt, “C: The Complete Reference”, McGraw Hill, Fourth Edition, 2014.
4. Yashwant Kanetkar, “Let us C”, BPB Publications, 16th Edition, 2017.
5. Archana Kumar, “Computer Basics with Office Automation”, Dreamtech Press – Wiley Publisher, 2019.
6. Reema Thareja, “Fundamentals of Computing & C Programming” Oxford University Press, 2012.

REFERENCE BOOKS

1. Ashok N Kamthane, "Computer Programming", Pearson education, Second Impression, 2012.
2. Vikas Verma, "A Workbook on C ", Cengage Learning, Second Edition, 2012.
3. Dr. P. Rizwan Ahmed, "Office Automation", Margham Publications, 2016.
4. P.Visu, R.Srinivasan and S.Koteeswaran, "Fundamentals of Computing and Programming", Fourth Edition, Sri Krishna Publications, 2012.
5. Pradip Dev, Manas Ghoush, "Programming in C", Second Edition, Oxford University Press, 2011.
6. Stephen G.Kochan, "Programming in C", Third Edition, Pearson Education India, 2005.
7. Kernighan,B.W and Ritchie,D.M, "The C Programming language", 2nd Edition, Pearson Education, 2006.

Web Resources

1. <https://www.programiz.com/c-programming>
2. <https://www.geeksforgeeks.org/c-language-set-1-introduction/>
3. <https://www.tutorialspoint.com/cprogramming>
4. <https://www.assignment2do.wordpress.com/.../solution-programming-in-ansi-c>
5. <https://nptel.ac.in/courses/106/104/106104128/>
6. <https://www.coursera.org/courses?query=c%20programming>
7. <https://www.udemy.com/course/c-programming-for-beginners-/>

A20CAT102

DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

L P T C Hrs
4 0 0 4 60

Course Objectives:

- To understand the basic concepts of Digital design and number systems.
- To expose with the Combinational circuits
- To expose with the Sequential circuits
- To study the fundamentals of Computer systems.
- To be familiar with the memory organization and CPU in a computer systems.

Course Outcomes:

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

CO1 - Explain the concepts of Digital design and number systems

CO2 - design the digital system using combinational system design.

CO3 - design the digital system using Sequential system design

CO4 - Explain fundamentals of Computer systems

CO5 - Explain memory organization and CPU in a computer systems.

UNIT I INTRODUCTION TO DIGITAL DESIGN (12 Hrs)

Data Representation - Data Types - Number Systems - Complements - Arithmetic Operations - Representations - Fixed Point, Floating Point - Error detection codes - Binary Codes- Logic Gates - Boolean Algebra - Map Simplification- Karnaugh maps: SOP and POS forms -Quine McClusky method

UNIT II COMBINATIONAL CIRCUIT DESIGN (12 Hrs)

Combinational Circuits, Half adder - full adder - code converters - combinational circuit design - Multiplexers and demultiplexers – encoders – decoders - Combinational design using mux and demux.

UNIT III SEQUENTIAL CIRCUIT DESIGN (12 Hrs)

Sequential Circuit Design, Flip flops (RS, Clocked RS, D, JK, JK Master Slave, T) - Counters - Shift registers and their types - Counters: Synchronous and Asynchronous counters.

UNIT IV COMPUTER ORGANIZATION (12 Hrs)

Instruction Codes - Computer Registers - Computer Instructions - Timing And Control - Instruction Cycle - Memory Reference Instructions - I/O And Interrupt – Machine Language – Assembly Language - Assembler - Peripheral Devices - Input-Output Interface - Asynchronous Data Transfer - Modes Of Transfer - Priority Interrupt - DMA - IOP - Serial Communication

UNIT V MEMORY ORGANIZATION AND CPU (12 Hrs)

Memory Hierarchy - Main Memory - Auxiliary Memory - Associative Memory - Cache Memory - Virtual Memory - Memory Management Hardware - CPU: General Register Organization - Control Word - Stack Organization - Instruction Format - Addressing Modes - Data Transfer And Manipulation - Program Control.

TEXT BOOKS

1. Morris Mano M, "Digital Logic and Computer Design", Pearson Education, 4th edition, 2014
2. Carl Hamacher, ZvonkoVranesic, SafwatZaky, "Computer Organization", 5 th edition, McGraw Hill, 2002.

REFERENCE BOOKS

1. Computer Fundamentals: Architecture and Organization (TWO COLOUR EDITION) 6th Edition 2020 by B Ram, New Age International (P) Ltd Publishers
2. Digital Fundamentals 11th Edition by FLOYD, PEARSON INDIA
3. Alan B.Marcovitz, "Introduction to Logic design", Tata McgrawHill, Second edition, 2005

WEB REFERENCES

1. <https://www.sanfoundry.com/best-reference-books-computer-organization-architecture/>
2. <http://www.cuc.ucc.ie/CS1101/David%20Tarnoff.pdf>
3. https://www.tutorialspoint.com/computer_logical_organization/index.htm

A20CAP101

PROGRAMMING IN C LAB

L	T	P	C	Hrs
0	0	4	2	60

COURSE OBJECTIVES

- To practice the fundamental programming methodologies in the C programming language.
- To apply logical skills for problem solving using control structures and arrays.
- To design, implement, test and debug programs that use different data types, variables, strings, arrays, pointers and structures.
- To design modular programming and provide recursive solution to problems.
- To understand the miscellaneous aspects of C and comprehension of file operations.

COURSE OUTCOMES

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

CO1 - Apply and practice logical formulations to solve simple problems leading to specific applications.

CO2 - Develop C programs for simple applications making use of basic constructs, arrays and strings.

CO3 - Develop C programs involving functions, recursion, pointers, and structures.

CO4 - Design applications using sequential and random access file processing

CO5 - Build solutions for online coding challenges.

LIST OF EXERCISES

1. Simple programming exercises to familiarize the basic C language constructs.
2. Develop programs using identifiers and operators.
3. Develop programs using decision-making and looping constructs.
4. Develop programs using functions as mathematical functions.
5. Develop programs with user defined functions – includes parameter passing.
6. Develop program for one dimensional and two dimensional arrays.
7. Develop program for sorting and searching elements.
8. Develop program to illustrate pointers.
9. Develop program with arrays and pointers.
10. Develop program for dynamic memory allocation.
11. Develop programs for file operations.

REFERENCE BOOKS

1. Zed A Shaw, "Learn C the Hard Way: Practical Exercises on the Computational subjects You Keep Avoiding (Like C)", Addison Wesley, 2016.
2. Anita Goel and Ajay Mittal, "Computer Fundamentals and programming in C", First edition, Pearson Education, 2011
3. Yashwanth Kanethkar, "Let us C", 13th Edition, BPB Publications, 2008.
4. Maureen Sprankle, Jim Hubbard, "Problem Solving and Programming Concepts," 9th Edition, Pearson, 2011

A20CAP102

DIGITAL LAB

L T P C Hrs

0 0 4 2 60

COURSE OBJECTIVES:

- To understand the various basic logic gates
- To design and implement the various combinational circuits
- To design and implement sequential circuits

COURSE OUTCOMES:

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

CO1: Implement simplified combinational circuits using basic logic gates

CO2: Implement combinational circuits using MSI devices

CO3: Implement sequential circuits like registers and counters

LIST OF EXPERIMENTS

1. Verification of Boolean Theorems using basic gates.
2. Design and implementation of combinational circuits using basic gates for arbitrary functions, code converters.
3. Design and implement Half/Full Adder and Subtractor.
4. binary adder / Subtractor
5. Design and implement shift-registers.
6. Magnitude Comparator.
7. Parity generator / checks.
8. Design and implement shift-registers.
9. Design and implement synchronous counters.
10. Design and implement asynchronous counters.

Reference Books

1. M.Morris Mano, "Digital Logic & Computer Design" PHI 2006.

A20AET101

ENVIRONMENTAL STUDIES

L P T C Hrs
2 0 0 2 30

COURSE OBJECTIVES

- To creating the awareness about environmental problems among people.
- To developing an attitude of concern for the environment.

COURSE OUTCOMES

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

CO1: Major will be able to apply lessons from various courses through field experiences.

CO2: Major will be able to recognize the physical, chemical, and biological components of the earth's systems and show how they function.

UNIT 1

(6 Hrs)

Introduction to environmental studies - Multidisciplinary nature of environmental studies, -Scope and importance, Concept of sustainability and sustainable development. - Ecosystems -What is an ecosystem - Structure and function of ecosystem, Energy flow in an ecosystem: food chains, food webs and ecological succession? Case studies of the following ecosystems, a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT 2

(6 Hrs)

Natural Resources, Renewable and Non-renewable Resources - Land resources and land use change; Land degradation, soil erosion and desertification. - Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. -Water, Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). - Energy resources, Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies

UNIT 3

(6 Hrs)

Biodiversity and Conservation - Levels of biological diversity , genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots - India as a mega-biodiversity nation; Endangered and endemic species of India - Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity , In-situ and Ex-situ conservation of biodiversity. - Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.- Environmental Pollution - Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution - Nuclear hazards and human health risks - Solid waste management : Control measures of urban and industrial waste. - Pollution case studies.

UNIT 4

(6 Hrs)

Environmental Policies & Practices - Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture- - Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). - Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context. - Human Communities and the Environment - Human population growth: Impacts on environment, human health and welfare. - Resettlement and rehabilitation of project affected persons; case studies. - Disaster management: floods, earthquake, cyclones and landslides. - Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.

UNIT 5

(6 Hrs)

Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. - Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi). Field work - Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc. - Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. - Study of common plants, insects, birds and basic principles of identification. - Study of simple ecosystems-pond, river, Delhi Ridge, etc.

TEXT BOOKS

1. Textbook of Environmental studies, Erach Bharucha, UGC
2. Fundamental concepts in Environmental Studies, D D Mishra, S Chand & Co Ltd

REFERENCE BOOKS

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
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17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
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20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University press

SEMESTER – II										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT2XX	Language-II	LANG	3	-	-	3	25	75	100
2	A20GET202	English-II	ENG	3	-	-	3	25	75	100
3	A20CAT203	Data Structure and Algorithm	DSC	4	-	-	4	25	75	100
4	A20CAT204	Java Programming	DSC	4	-	-	4	25	75	100
5	A20MAT2XX	Numerical Methods and Statistics	ALLIED	3	1	-	4	25	75	100
6	A20AET201	Value Education	AEC	2	-	-	2	100	-	100
Practical										
7	A20CAP203	Data Structures LAB	DSCP	-	-	4	2	50	50	100
8	A20CAP204	Java Programming Lab	DSCP	-	-	4	2	50	50	100
9	A20EAP201	NSS/NCC/Yoga	Ext Act	-	-	2	1	50		
10	A20EEO202	Certification Course-1	EEC	-	-	4	2	100	-	100
II Semester Total Credits/Marks							27	475	475	950

பாடத்திட்டத்தின் நோக்கம்

- இரண்டாயிரம் ஆண்டுகாலத் தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
- காலந்தோறும் தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள், அடையாளங்கள் ஆகியவற்றை காலந்தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதாகவும், மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாகவும் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.
- வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

அலகு - 1

1. **எட்டுத்தொகை** : 1. குறுந்தொகை (பாடல் - 130), 2. நற்றிணை (பாடல் - 27), 3. அகநானூறு (பாடல் - 86)
2. **பத்துப்பாட்டு** - சிறுபாணாற்றுப்படை (அடிகள் - 126-143)
3. **பதினெண் கீழ்க்கணக்கு** : திருக்குறள் - வெகுளாமை (அதிகாரம் 31), காநல் சிறப்புரைத்தல் (அதிகாரம் 113)

அலகு - 2

1. **எட்டுத்தொகை** : 1. ஐய்குறுநூறு (பாடல் - 203), 2. கலித்தொகை - பாலைத்திணை (பாடல் - 9), 3. புறநானூறு (பாடல் - 235)
2. **பத்துப்பாட்டு** - முல்லைப்பாட்டு (அடிகள் - 6 - 21)
3. **பதினெண் கீழ்க்கணக்கு** - 1. நாலடியார் - நல்லர் எனத்தான் (221), 2. திரிகடுகம் - கோலஞ்சி வாழும் குடியும் (33), இனியவை நாற்பது - குழவி தன்நடை (14), கர் நாற்பது - நலயிகு கர்த்திகை (26), 5. களவழி நாற்பது - கவளங்கொள் யானை (14)

அலகு - 3**வைவம் - பன்னிரு திருமுறைகள்**

1. திருஞானசம்பந்தர் - வேயறு தோனிபங்கள் (இரண்டாம் திருமுறை)
2. திருநாவுக்கரசர் - மனமெனும் தோணி (நான்காம் திருமுறை)
3. சுந்தரர் - ஏழிசையாய் இசைப்பயனாய் (ஏழாம் திருமுறை)
4. மாணிக்கவாசகர் - ஆதியும் அந்தமும் இல்லா (திருவெம்பாவை)
5. திருமூலர் - அன்பு சிவம் இரண்டு (திருமந்திரம்)

வைவம் - நாலாயிரத் திவ்யப் பிரபந்தம்

1. பேயாழ்வார் - திருக்கண்டேன் பொன்மேனி ...
2. பெரியாழ்வார் - கருக்கண் தோகை மயிற் பீலி...
3. தொண்டரடிப்பொடி ஆழ்வார் - பச்சையாமலை போல்...
4. ஆண்டார் - கருப்பூரம் நாறுமோ? கமலப்பூ ...
5. திருமயங்கையாழ்வார் - வாடினேன் வாடி வருந்தினேன்

இல்லறவியல்

சிறப்புரணம் - படலம் நின்ற பிணை மாணுக்கும் - - 5 பாடல்கள் (பாடல் எண்கள் : 61 - 65)

கிரித்துவம்

இரட்சண யாத்திரை - கடைதிறப்பும் படலம் - 5 பாடல்கள் (பாடல் எண்கள் : 3,9,10,15,16)

A20ENT2XX

ENGLISH-II

L	P	T	C	Hrs
3	0	0	3	45

COURSE OBJECTIVES:

- To recognize poetry from a variety of cultures, languages and historic periods
- To develop the intensive study of language by critical reading
- To identify the various genres and analyse the works of writers in English
- To expand the basic understanding of targeted grammatical structures
- To understand the conventions of writing in English

COURSE OUTCOMES:

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

- Understand and appreciate poetry as a literary art form
- Comprehend and recognize relationship between ideas , events and facts
- Learn to explore characters and their conflicts , dilemmas and extend their response to stories
- Apply grammatical structures meaningfully and appropriately in oral and written form
- Write effectively and coherently

UNIT I: POETRY

(9 hrs)

1. John Donne: The Flea
2. Lord Byron: She Walks in Beauty
3. Robert Frost: Stopping by Woods on a Snowy Evening
4. Rabindranath Tagore: Where the Mind is Without Fear
5. Nissim Ezekiel: Night of the Scorpion

UNIT II: PROSE

(9 hrs)

1. A.G. Gardiner: All about a Dog
2. Ernest Hemingway: A Day's Wait
3. Anton Chekhov: The Lottery Ticket
4. Swami Vivekananda: Chicago Address 1893
5. Ruskin Bond: The Thief

UNIT III: FICTION

(9 hrs)

1. Jane Austen: *Pride and Prejudice*

UNIT IV: GRAMMAR

(9 hrs)

1. Voice
2. Conditionals
3. Intensifiers
4. Coherence

UNIT V: COMPOSITION

(9 hrs)

1. Letter Writing
2. Report Writing

TEXT BOOKS:

1. Wisdom and Experience: An Anthology for Degree Classes. Board of Editors, Orient Longman Limited, 2007
2. The Approach to Life: A Selection of English Prose: Orient Longman Limited, 2009
3. Brookside Musings: A Selection of Poems and Short Stories: Board of Editors, Orient, Longman Limited, 2009

REFERENCE BOOKS:

1. Lalitha Natarajan & Sasikala Natesan English for Excellence: Poetry Anuradha Publications Literary Pursuits: Board of Editors, Orient Longman Limited, 2015
2. Literary Pinnacles: An Anthology of Prose and Poetry. Board of Editors, Orient Longman, Limited, 2015
3. Raymond Murphy and Surai Pongtongcharoen, English Grammar in Use, Cambridge University, 1985

WEB REFERENCES:

1. <https://poets.org/poem/she-walks-beauty>
2. <https://www.poetryfoundation.org/poems/46467/the-flea>
3. <https://www.classicshorts.com/stories/lottery.html>
4. <http://short-storylovers.blogspot.com/2012/07/thief-by-ruskin-bond.html>
5. <http://www.gutenberg.org/files/1342/1342-h/1342-h.htm>

A20MAT2XX NUMERICAL METHODS AND STATISTICS

L	T	P	C	Hrs
3	1	0	4	60

COURSE OBJECTIVES

- Learn the techniques of solving algebraic and transcendental equations.
- To introduce the numerical techniques of differentiation and integration.
- To know the basic concepts of statistical parameters like mean, median, mode etc.
- To understand the concept of testing of hypothesis using statistical analysis
- Identify the direction and strength of a linear correlation between two factors.

COURSE OUTCOMES

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

CO1- Solve algebraic and transcendental equations.

CO2 - Analyze and apply the knowledge of interpolation by using the numerical methods.

CO3 - Understand the basic concepts of Statistics

CO4 - Apply the concept of testing of hypothesis for small and large samples.

CO5 – Know the applications of linear regression and correlation.

UNIT-I SOLUTION OF EQUATIONS AND EIGEN VALUE PROBLEMS (12 Hrs)

Solution of algebraic and transcendental equations - Newton Raphson method - Gauss elimination method - Gauss Jordan method – Iterative methods of Gauss Jacobi and Gauss Seidel.

UNIT – II NUMERICAL DIFFERENTIATION AND INTEGRATION (12 Hrs)

Interpolation: Interpolation by Newton's forward and backward difference formulae for equal intervals- Solution of Ordinary Differential Equations- Single step methods: Taylor series method - Euler methods - Integration by Trapezoidal and Simpson's rules-Lagrange's method for unequal intervals.

UNIT – III MEASURES OF DISPERSION (12 Hrs)

Standard Deviation - Mean Deviation - Quartile Deviation - Range. Measures of Skewness and Pearson's coefficient of skewness - Moments about the arbitrary origin and moments based on measures of skewness and kurtosis.

UNIT IV TESTING OF HYPOTHESIS (12 Hrs)

Sampling distributions - Small and large samples -Tests based on Normal, t, Chi square, and F distributions for testing of means, variance and proportions - Contingency table (test for independent) Goodness of fit.

UNIT V CORRELATION AND REGRESSION (12 Hrs)

Curve fitting - Method of least squares - Correlation - Rank correlation - Regression - Multiple and partial correlation – Plane of regression - Coefficient of multiple correlation – Coefficient of partial correlation.

TEXT BOOKS

1. Grewal. B.S. "Numerical Methods in Engineering and Science ", Mercury learning & Information, kindle Edition, 2018.
2. Richard A.Johnson, Irwin Miller and John E. Freund, "Probability and Statistics for Engineers", Pearson Education, Asia, 9th Edition, 2018.
3. Bali N.P. and Dr. Manish Goyal, "Engineering Mathematics", Lakshmi Publications Pvt. Ltd., New Delhi, 9th Edition, 2015

REFERENCE BOOKS

1. Gupta .C.B, Shree Ram Singh, M. Kumar, "Engineering Mathematics for semester I & II", Tata McGraw Hill, New Delhi, 2015
2. Ramesh Kumar Gupta, "Numerical Methods, Fundamental and its Applications", Cambridge University, 2019
3. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, New Delhi, 10th Edition. 2019

4. Dass .H.K &Dr. Rama Verma, "Introduction to Engineering Mathematics", S. Chand & co, New Delhi, 2019.
5. Timothy Sauer, "Numerical Analysis", 3rd Edition, Pearson Education, 2017.
6. Arvind PragatiGautam, "Numerical Methods", Alpha Science International Limited 2019.

WEB REFERENCES

1. <http://nptel.ac.in/courses/111107063/>
2. <https://nptel.ac.in/courses/111107119/>
3. <https://nptel.ac.in/courses/110/105/110105087/>
4. <https://nptel.ac.in/courses/111/105/111105077/>
5. <https://www.coursera.org/learn/basic-statistics>

A20CAT203	DATA STRUCTURES AND ALGORITHM	L	P	T	C	Hrs
		4	0	0	4	60

Course Objectives

- To introduce the primary data structures and algorithms for their associated operations
- To understand the applications of data structures
- To learn the implementation issues of the data structures introduced

Course Outcomes

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

CO1 – Analyze algorithms based on time and space complexity

CO2 - Implement and Apply linear data structures to solve simple problems

CO3 - Represent and Apply Non-linear data structures to solve complex problems

CO4 - Use Divide and conquer method to solve various problems

CO5 - Use Greedy techniques to solve real time problem

UNIT I DATA STRUCTURE AND ALGORITHM

(12 Hrs)

Types of data structures – Abstract Data Type (ADT) - Analysis of algorithm –Time and space complexity – Recurrence relation-Asymptotic notation. Sorting – Searching.

UNIT II – LIST AND ADT

(12 Hrs)

Static and dynamic Representation – Types -Single Linked List-Doubly Linked List – Circular Linked List – Operations and Applications

UNIT III STACK ADT

(12 Hrs)

Static and Dynamic Representation – Operations - Applications- Balancing Parenthesis- Evaluation of Arithmetic Expression- Infix to Postfix conversion. Queue ADT: Static and dynamic Representation –Linear queue – circular queue

UNIT IV TREE ADT

(12 Hrs)

Representation – Types - Binary Tree- Threaded Binary Tree -Binary Search Tree -Operation and Application. Graph: Representation – Types -Graph Traversal– Depth First Search - Breadth First Search – Application - Minimum cost spanning tree-Topological Sorting.

UNIT V ALGORITHM DESIGN TECHNIQUES

(12 Hrs)

Divide and Conquer - General method –Finding Minimum Maximum - Greedy Method: General Method– knapsack problem- Single source shortest path –Dijkstras: Job sequencing.

TEXT BOOKS

1. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, 4th Edition, Pearson Education, 2013.
2. E. Horowitz, S. Sahni and S. Rajasekaran, “Computer Algorithms/C++”, Second Edition, The Orient Blackswan, 2019
3. A Puntambekar, ”Data Structures”, Third Revised Edition, Technical Publications Pune,2008

REFERENCE BOOKS

1. Reema Thareja, “Data Structures Using C”, Edition , Oxford University Press, 2017
2. Gilles Brassard, “Fundamentals of Algorithms”, Pearson Education, 2015
3. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, “Data Structures and Algorithms”, Pearson Education, Reprint, 2006
4. Ellis Horowitz, SartajSahni, Susan Anderson-Freed, “Fundamentals of Data Structures in C”, Second Edition, University Press, 2008

WEB REFERENCES

1. <https://www.geeksforgeeks.org/>
2. <http://opendatastructures.org/>
3. <https://nptel.ac.in/courses/106/106/106106127>

A20CAT204

JAVA PROGRAMMING

L	P	T	C	Hrs
4	0	0	4	60

COURSE OBJECTIVES

- Gain and explore the knowledge of java programming
- To know the principles of inheritances, packages, interfaces
- To get familiarized to generic programming, multithreading concepts.
- Gain and explore the advanced concepts in Java.

COURSE OUTCOMES

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

CO1 - Write a maintainable Java Program for a given algorithm and implement the same.

CO2 - Demonstrate the use of inheritance, interface and package in relevant applications.

CO3 - Create java applications using exception handling, thread and generic programming.

CO4 - Build java distributed applications using Collections and IO streams.

CO5 - Develop simple graphical user interfaces using GUI components.

UNIT I INTRODUCTION TO OBJECT ORIENTED PROGRAMMING (12 Hrs)

Introduction to classes and objects: Basic Concepts of OOPs - The History and Evolution of Java - byte code - Java buzzwords - data types – variables – arrays – operators - control statements - type conversion and casting - garbage collection - String class.

UNIT II INHERITANCE, PACKAGES AND INTERFACES (12 Hrs)

Inheritance: Basic concepts and its types - access control - constructors- static keyword- final - this and super key word – method overriding, abstract classes- Packages - Interfaces

UNIT III EXCEPTION HANDLING, MULTITHREADING (12 Hrs)

Concepts of Exception handling, types of exceptions, creating own exception - Concepts of Multithreading - creating multiple threads.

UNIT IV COLLECTIONS, I/O STREAMS (12 Hrs)

Collections: List –Vector – Stack - Queue. **Input / Output Basics** – Streams – Byte streams and Character streams – Reading and Writing Console – Reading and Writing Files.

UNIT V EVENT DRIVEN PROGRAMMING AND JDBC (12 Hrs)

Events - Delegation event model - Event handling - Adapter classes. **AWT:** Concepts of components **SWING-** Swing Components. **Java Database Connectivity-** Programming Example.

TEXT BOOKS

1. Java: The Complete Reference 11th Edition, 2018, Herbert Schildt, TMH Publishing Company Ltd, New Delhi, ISBN: 9781260440249.

REFERENCE BOOKS

1. Cay S. Horstmann, Gary cornell, —Core Java Volume –I FundamentalsII, 9th Edition, Prentice Hall, 2013.
2. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI

WEB REFERENCES

1. <http://www.ibm.com/developerworks/java/>
2. <http://docs.oracle.com/javase/tutorial/rmi/>.
3. IBM's tutorials on Swings, AWT controls and JDBC.
4. <https://www.edureka.co/blog>
5. <https://www.geeksforgeeks.org>

COURSE OBJECTIVES

- To learn the basic concepts of Data Structures.
- To learn about the concepts of Searching and Sorting.
- To study about the linear and non-linear Data Structures.

COURSE OUTCOMES

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

CO1 - Analyze the algorithm's / program's efficiency in terms of time and space complexity.

CO2 - Solve the given problem by identifying the appropriate Data Structure.

CO3 - Solve problems in linear and non-linear Data Structures.

LIST OF EXERCISES

1. Write a C program to implement recursive and non-recursive i) Linear search ii) Binary Search.
2. Write a C program to implement
 - i) Bubble sort
 - ii) Selection sort
 - iii) Insertion sort
 - iv) Shell sort
 - v) Heap sort.
3. Write a C program to implement the following using an array. a) Stack ADT b) Queue ADT
4. Write a C program to implement list ADT to perform following operations
 - a) Insert an element into a list.
 - b) Delete an element from list
 - c) Search for a key element in list d) count number of nodes in list.
5. Write a C program to implement the following using a singly linked list.
 - a) Stack ADT
 - b) Queue ADT.
6. Write a C program to implement the dequeue (double ended queue) ADT using a doubly linked list and an array.
7. Write a C program to perform the following operations:
 - a) Insert an element into a binary search tree.
 - b) Delete an element from a binary search tree.
 - c) Search for a key element in a binary search tree.
8. Write a C program that use recursive functions to traverse the given binary tree in
 - a) Preorder
 - b) Inorder and
 - c) Postorder.
9. Write a C program to perform the AVL tree operations.
10. Write a C program to implement Graph Traversal Techniques.

REFERENCE BOOKS

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Illustrated Edition, Computer Science Press, 2018.

WEB REFERENCES

1. https://www.tutorialspoint.com/data_structures_algorithms/
2. <https://www.w3schools.in/data-structures-tutorial/intro/>
3. <https://nptel.ac.in/courses/106103069/>
4. https://swayam.gov.in/nd1_noc20_cs70/preview

Course Objectives

- To acquire programming skill in core java.
- To learn how to design java program and applications.
- To acquire object oriented skills in java.
- To develop the skill of designing applications.

Course Outcomes

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

CO1 - Apply and practice logical formulations to solve simple problems leading to specific applications.

CO2 - Demonstrate the use of inheritance, interface and package in relevant applications.

CO3 - Create java applications using exception handling, multithread.

CO4 - Build java distributed applications using Collections and IO streams.

CO5 - Develop simple graphical user interfaces using GUI components.

List of Experiments

1. Develop simple programs using java syntax and semantics.
2. Develop a java program that implements the interface.
3. Develop a java program that implements the Packages.
4. Write a java program to demonstrate inheritance.
5. Develop a simple real life application program to illustrate the use of Multi Threads.
6. Create java applications using Exception Handling for error handling.
7. Write programs in Java to demonstrate the use of following components Text fields, buttons, Scrollbar, Choice, List and Check box
8. Write Java programs to demonstrate the use of various Layouts like Flow Layout, Border Layout, Grid layout, Grid bag layout and card layout
9. Design an application using event-driven programming paradigm of Java.
10. Implement simple applications using Input and output streams.
11. Implement simple applications using Collections.
12. Develop a simple application and use JDBC to connect to a back-end database.

REFERENCE BOOKS

1. Java: The Complete Reference 11th Edition, 2018, Herbert Schildt, TMH Publishing Company Ltd, New Delhi, ISBN: 9781260440249.
2. Cay S. Horstmann, Gary cornell, —Core Java Volume –I FundamentalsII, 9th Edition, Prentice Hall, 2013.
3. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
4. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.

WEB REFERENCES

1. <http://www.ibm.com/developerworks/java/>
2. <http://docs.oracle.com/javase/tutorial/rmi/>.
3. IBM's tutorials on Swings, AWT controls and JDBC.
4. <https://www.edureka.co/blog>
5. <https://www.geeksforgeeks.org>

COURSE OUTCOMES:

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

CO1 - The purpose of values-based education is to make the **student** work with the right attitude and standards to face the outside world

CO2 - Main objective of value education is to include the essential values depending upon the objectives, they may be individual, social and national values

UNIT I**(6 Hrs)**

Value Education – Definition – relevance to present day – Concept of Human Values – self introspection – Self-esteem.

UNIT II**(6 Hrs)**

Family values – Components, structure and responsibilities of family – Neutralization of anger – Adjustability – Threats of family life – Status of women in family and society – Caring for needy and elderly – Time allotment for sharing ideas and concerns.

UNIT III**(6 Hrs)**

Ethical values – Professional ethics – Mass media ethics – Advertising ethics – Influence of ethics on family life – psychology of children and youth – Leadership qualities – Personality development.

UNIT IV**(6 Hrs)**

Social values – Faith, service and secularism – Social sense and commitment – Students and Politics – Social awareness – Consumer awareness – Consumer rights and responsibilities – Redressal mechanisms.

UNIT V**(6 Hrs)**

Effect of international affairs on values of life/ Issue of Globalization – Modern warfare – Terrorism. Environmental issues – mutual respect of different cultures, religions and their beliefs.

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