

# **VIVEKANANDA COLLEGE**

**College with Potential for Excellence**

(Residential & Autonomous-A Gurkula Institute of Life-Training)

(Affiliated to Madurai Kamaraj University)

Re-accredited with 'A' Grade (CGPA 3.59 out of 4.00) by NAAC

**TIRUVEDAKAM WEST  
MADURAI DISTRICT – 625 234**



**DEPARTMENT OF COMPUTER SCIENCE**

**B.Sc. Computer Science**

**SYLLABUS**

**Choice Based Credit System**

**(For those who join in June 2015 and After)**

**(2017 – 2020 Batch)**

## **ABOUT THE COLLEGE**

Vivekananda College was started by Founder-President Swamiji Chidhbhavanandhaji Maharaj of Sri Ramakrishna Tapovanam, Tirupparaithurai, Trichy in 1971 on the banks of the river Vaigai which is blissfully free from the noise and hurry, the crowds and distraction of the city.

Vivekananda College is a residential college functioning under Gurukula pattern. It is Man-making education, that is imparted in this institution, Culture, character and curriculum are the three facets of ideal education that make man a better man. This is possible only when the teacher and taught live together, The Gurukula system of Training is therefore a humble and systematic attempt in reviving the age old GURUGRIHAVASA for wholesome education, Attention to physical culture, devotion to duty, obedience to teachers, hospitality to guests, zest for life, love for the nation, and above all, humility and faith in the presence of God etc. are the values sought to be inculcated. All steps are taken to ensure the required atmosphere for the ideal life training.

Vivekananda College, Tiruvedakam West, Madurai District-625 234 is an aided college established in 1971 and offers UG and PG courses. This College is affiliated to the Madurai Kamaraj University, Madurai. The College was reaccredited with 'A' grade (CGPA 3.59 out of 4.00) by NAAC in September 2015. The college was awarded College with Potential for Excellence by UGC in 2016.

### **VISION AND MISSION**

**Our Vision:** To raise an army of neo-graduates steeped in the hoary culture of the motherland and dedicated to serving her as potential leaders in the manifold spheres of national effort.

**Our Mission:** A harmonious enrichment of physical, emotional and intellectual facets of a student's personality to bring out his inherent PERFECTION.

### **OBJECTIVES OF THE INSTITUTION**

1. To inculcate spiritual, ethical, moral and social values in all disciplines of study.
2. Simultaneous education of the Hand, Heart and Head. Only a sound body can hold a sound mind.
3. Provide opportunities for all round development of the students and excellence in higher education, research and extension in different disciplines.
4. Disseminate the findings of research to the community to facilitate its development.
5. To provide society citizens of sterling character.
6. To cater to the needs of the educationally backward people – the most backward, scheduled caste and tribe.

### ***I. Eligibility For Admission***

Admission to B.Sc. – Computer Science Programme is open to candidates with +2 pass with Maths, Physics, Chemistry and Computer Science as major subjects.

For B.Sc.- Computer Science course offered in the college, a pass in the Higher Secondary Examination conducted by the Government of Tamil Nadu or an examination accepted as equivalent there to by the Syndicate of the MKU, subject to such conditions as may be prescribed therefore.

### ***II. Duration***

The course is for a period of three years. Each academic year shall comprise of two semesters viz. Odd and Even semesters. Odd semesters shall be from June to November and Even Semesters shall be from December to April. There shall be not less than 90 working days which shall comprise 450 teaching clock hours for each semester (Exclusive of the days for the conduct of university end-semester examinations) for each semester.

### ***III. CBCS System***

All Programmes offered in the college are run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students to keep pace with developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

### ***IV. Semesters:***

An academic year is divided into two semesters. In each semester, courses are offered in 15 teaching weeks. Each week has 30 working hours spread over 6 days a week.

### ***V. Credits:***

The term 'Credit' refers to the weightage given to a course, usually in relation to the instructional hours assigned to it. The total minimum credits, required for completing the B.Sc. Programme is 140. The details of credits for individual components and individual courses are given in the above table.

### ***VI. Course:***

Each Course is to be designed variously under lectures / laboratory / seminar / practical training / assignments to meet effective teaching and learning needs.

### ***VII. Examinations:***

i). There shall be examinations at the end of each semester, for odd semesters in the month of October / November; for even semesters in April/May. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed course (s) in the subsequent examinations to be held in October / November or April/May.

ii). A candidate should get registered for the first semester examination. If registration is not possible owing to shortage of attendance beyond condonation limit / regulations prescribed or belated joining or on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after the completion of the programme.

### ***VIII. Condonation***

Students must have 75% of attendance in each paper for appearing the examination. Students who have 65% to 74% of attendance shall apply for condonation in the prescribed form with the prescribed fee. Students who have 50%

to 64% of attendance shall apply for condonation in prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 50% of attendance are not eligible to appear for the examination. They shall compensate the shortage after the completion of the programme.

### ***IX. Question Paper Pattern***

Time: 3 Hours

Maximum Marks: 75

#### **SECTION-A (10 X 1 =10 Marks)**

**Answer All Questions**

(1-5) Multiple Choice

(6-10) Fill in the blanks

Two questions from each unit

#### **SECTION-B (5 X 7 = 35 Marks)**

**Answer All Questions**

(11-15) Questions shall be in the format of either (a) or (b)

One question from each unit

#### **SECTION-C (3 X 10 = 30 Marks)**

**Answer any THREE Questions**

(16-20) One question from each unit.

### ***X. Evaluation:***

Performance of the students are evaluated objectively. Evaluation is done both internally and externally. They will be assessed continuously through Internal Assessment System and finally through summative (end) semester examination. To assess internally, there will be three examinations conducted centrally with a duration of two hours for each paper. In addition to continuous evaluation, the summative semester examination, which will be a written examination of three hours duration, would also form an integral component of the evaluation. The ratio of marks to be allotted to continuous internal assessment and to end semester examination is 25: 75.

The pattern of internal valuation shall be:

Test: 20 Marks (the average of best two tests out of three tests)

Assignment: 5 marks

*Total: 25 marks.*

In respect of practical papers, the ratio of marks to be allotted to internal assessment and to summative (end) semester examination is 40: 60. The internal marks will be calculated on the basis of marks secured at the model examination and marks awarded for the preparation of practical note book. The external marks will be calculated on the basis of the marks awarded by the internal examiner and the external examiner at the summative semester examination.

### ***XI. Passing Minimum:***

There is no passing minimum for Internal Assessment. The passing minimum for external Examinations shall be 27 out of 75 marks and passing minimum for a paper is 40%.

### ***XII. Classification of Students:***

Candidates who have secured not less than 40% of marks in each paper shall be declared to have passed in that paper. Candidates who obtain 40% and above but below 50% shall be declared to have passed in Third Class. Candidates who obtain 50% and above but below 60% of the aggregate marks in Part-III shall be declared

to have passed in Second Class and those who obtain 60% of marks and above shall be placed in the First Class. Candidates who obtain 75% and above shall be declared to have passed in Distinction provided he has not re-appeared for any paper during the course of the study.

***XIII. Failed Candidates:***

A candidate who has arrears in any paper in a semester examination will be permitted to proceed to the next semester classes. A candidate who has arrears may appear again in these failed papers at the November/April examinations. The internal assessment marks already obtained by him shall be carried over for the subsequent appearance also.

***XIV. Improvement of Internal Marks:***

The student desirous of improving the internal assessment marks may request the Head of the Department. After obtaining permission from the Staff Council Meeting by the Head, the student may write improvement examinations in consultation with the course teacher. The marks obtained (when it is more than the previous marks) will be submitted to the Controller of Examinations for further adoption.

***XV. Study Tour***

Students are expected to participate in the field visit and the study tours organized by the department. Though study tour/field trip carries no credit, it is compulsory for the students to attend whereby the students can get an opportunity to gain practical knowledge. As such, observational visit to selected social welfare organizations, industries, trade centres, exhibitions, places of historical importance and the like will be considered as extra-curricular activities.

**BRIEF HISTORY OF THE DEPARTMENT**

B.Sc., Computer Science Major Course was started during the academic year 1994–1995. M.Sc., Computer Science was taught during 1998– 2005. Prof. R. Jayabalan was the first Coordinator of this department (1994–1997) followed by Dr. S. Raja (1997–2007), Prof. T. Venkatesan (2007–2010), Prof. G.Venkateswaran (2010–2011), Prof. N.S. Lakshmikanthan (2011–Till date).

This department offers high quality education in under graduate level. In addition to regular subjects various certificate courses are being taught to students. Every week Software Skill Development Programmes are conducted to prepare students for career opportunities in IT industry and for higher education. Computer Learning Programme for school children is conducted frequently under extension activities.

**VISION:**

The vision of the department is to become a leading college in offering high-quality undergraduate programs in computing sciences to a large number of talented students

**MISSION:**

The mission of the department is to offer a high-quality education in the art and science of computing, as well as to prepare students for career opportunities in this area requiring a high level of technical knowledge and skill.

- Our programs have a central core of requirements covering the fundamental areas of computing sciences.
- Our programs have co-requirements to assure that our graduates have thorough training in logical and critical reasoning needed for continuing intellectual growth.
- Our programs meet the needs of adult students with interest in skill enhancement for current jobs or retraining in the computing sciences.
- Our department provides support to the general education and other academic programs in the college.
- Our department engages in outreach activities that promote a spirit of cooperation between college and community.
- Contribution to welfare of the society through services

**OBJECTIVES:**

In pursuit of its mission, the strategic objectives of Computer Science Department are: Graduate competent professionals in computing sciences who can succeed as future leaders and practitioners in their profession.

- Develop accredited educational programs in computing sciences in order to serve the current and future market needs in IT industry
- Provide a student-centred educational experience that attracts talented students and enables them to realise their potentials.

**SCHEME OF EXAMINATION**  
(For those who join in June 2017 and after)

**FIRST SEMESTER**

Part	Study Component	Subject Code	Title of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1CT11	Tamil: Ikkalak Kavithaiyum Urainadaium	6	3	25	75	100
II	English	P2CE11	Communicative English - Spoken English - 1	3+1	2	25	75	100
III	Core	10CT11	Programing in C	4	4	25	75	100
	Core	10CT12	Digital Electronics	4	4	25	75	100
	Core	10CP13	Lab I: C & Digital Electronics	6	4	40	60	100
	Allied	10AT11	Discrete Mathematics	4	4	25	75	100
IV	Non Major	10NE11	Introduction to Information Technology	2	2	25	75	100
			<b>TOTAL</b>	<b>30</b>	<b>23</b>			

**SECOND SEMESTER**

Part	Study Component	Subject Code	Title of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1CT21	Tamil: Ikala Kadhai Ilakkiyamum Makkal Thagavaliyalum.	6	3	25	75	100
II	English	P2CE21	Functional English	3	1	25	75	100
	English	P2CE22	Spoken English – I	1	1	100	--	100
III	Core	10CT21	Computer Graphics	4	4	25	75	100
	Core	10CT22	Microprocessor & Interfacing Techniques	4	4	25	75	100
	Core	10CP23	Lab II: Computer Graphics & Microprocessor	6	4	40	60	100
	Allied	10AT21	Statistics & Probability	4	4	25	75	100
IV	Non Major	10NE21	Web Programming	2	2	25	75	100
			<b>TOTAL</b>	<b>30</b>	<b>23</b>			

### THIRD SEMESTER

Part	Study Component	Subject Code	Title of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English		Spoken English II	1	-	-	-	-
III	Core	10CT31	Computer Organisation	5	5	25	75	100
	Core	10CT32	Object Oriented Programming with C++	5	4	25	75	100
	Core	10CT33	Data Structure	5	4	25	75	100
	Core	10CP34	Lab III: OOPS & Data Structure	6	4	40	60	100
	Allied	10AT31	Operations Research	6	5	25	75	100
IV	Skill Based	10SB31	System Software	2	2	25	75	100
			<b>TOTAL</b>	<b>30</b>	<b>24</b>			

### FOURTH SEMESTER

Part	Study Component	Subject Code	Title of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2CE42	Spoken English II	1	1	100	--	100
III	Core	10CT41	Operating System	5	5	25	75	100
	Core	10CT42	Relational Database Management System	5	4	25	75	100
	Core	10CT43	Dot Net Programming	5	4	25	75	100
	Core	10CP44	Lab IV: Client Server Programming	6	4	40	60	100
	Allied	10AT41	Numerical Methods for Computer Science	6	5	25	75	100
IV	Skill Based	10SB41	Unix and Shell Programming	2	2	25	75	100
			<b>TOTAL</b>	<b>30</b>	<b>25</b>			



### FIFTH SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2CE51	English for career development	1	**	100	--	100
III	Core	10CT51	Computer Networks	5	4	25	75	100
	Core	10CT52	Java Programming	5	4	25	75	100
	Core	10CP53	Lab V: Java Programming	6	3	40	60	100
	Core	10CP54	Lab VI : Animation Lab	5	2	40	60	100
	Elective	10EP1A 10EP1B	Software Engineering / Mobile Computing	4	4	25	75	100
IV	ES	ESUG51	Environmental Studies	2	2	25	75	100
IV	SBS	10SB51	Competitive Examination for IT	2	2	25	75	100
			<b>TOTAL</b>	<b>30</b>	<b>21</b>			

### SIXTH SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2LE61	English for Professional Excellence	1	1	100	--	100
III	Core	10CT61	Web Programming	4	4	25	75	100
	Core	10CP62	Lab VII : Web Designing Lab	5	2	40	60	100
	Elective	10EP2A 10EP2B	Data Mining and Data Warehousing / Digital Image Processing	4	4	25	75	100
	PV	10PV61	Project and Viva-voce	8	4	--	100	100
IV	VE	VEUG61	Value Education	2	2	25	75	100
IV	SBS	10SB61	PC Hardware and Trouble shooting	2	2	25	75	100
	SBS	10SB62	DTP	2	2	25	75	100
	SBS	10SB63	Cryptography and Network Security	2	2	25	75	100
V	EA	EAUG61	Extension Activities		1		100	100
			<b>TOTAL</b>	<b>30</b>	<b>24</b>			
			<b>TOTAL NUMBER OF HOURS</b>	<b>180</b>				
			<b>TOTAL NUMBER OF CREDITS</b>		<b>140</b>			

**B.Sc. COMPUTER SCIENCE**  
(For those who joined in June 2015 and After)

Study Component	SEMESTER						Total Credit
	I	II	III	IV	V	VI	
<b>Tamil / Sans.</b>	3	3	-	-	-	-	<b>6</b>
<b>English</b>	2	1+1	-	+1	-	1	<b>6</b>
<b>Core Subject</b>	12	12	17	17	13	6	<b>77</b>
<b>Allied Subject</b>	4	4	5	5	-	-	<b>18</b>
<b>Non Major Elective</b>	2	2	-	-	-	-	<b>4</b>
<b>Skill Based Subject</b>	-	-	2	2	2	6	<b>12</b>
<b>Elective Subject</b>	-	-	-	-	4	8	<b>12</b>
<b>Environmental Study</b>	-	-	-	-	2	-	<b>2</b>
<b>Value Education</b>	-	-	-	-	-	2	<b>2</b>
<b>Extension Activity</b>	-	-	-	-	-	1	<b>1</b>
<b>TOTAL</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>21</b>	<b>24</b>	<b>140</b>

**பகுதி -1 – பொதுத்தமிழ்**  
**முதல் பருவம் - பாடத்திட்டம்**  
(2017-2018 ஆம் கல்வியாண்டு முதல் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

<b>PART-I: Language Tamil Subject</b>		
<b>Subject Title: இக்காலக் கவிதையும் உரைநடையும் - தாள்:1</b>		
<b>Subject Code: P1CT11</b>	<b>Hours per week: 6</b>	<b>Credit: 3</b>
<b>Seasonal Marks: 25</b>	<b>Summative marks: 75</b>	<b>Total Marks: 100</b>

**பாடப்பகுதி**

<b>அலகு : 1</b>	தமிழ்ச் செய்யுள்	:	மரபுக்கவிதைகள்
<b>அலகு : 2</b>	தமிழ்ச் செய்யுள்	:	புதுக்கவிதைகள்
<b>அலகு : 3</b>	தமிழ் உரைநடை இலக்கியம்	:	சுவாமி சித்பவானந்தரின் சிந்தனைகள்.
<b>அலகு : 4</b>	தமிழ் இலக்கணம்	:	எழுத்து இலக்கணம்
<b>அலகு : 5</b>	தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்		

**பாடப்பகுதியின் உட்பிரிவுகள்**

**அலகு: 1 தமிழ்ச் செய்யுள் : மரபுக்கவிதைகள்**

**1. பாரதியார் கவிதைகள்**

1. தமிழ் (கவிதை முழுவதும்)
2. நடிப்புச் சுதேசிகள் (கவிதை முழுவதும்)

**2. பாரதிதாசன் கவிதைகள்**

1. நீங்களே சொல்லுங்கள் (கவிதை முழுவதும்)
2. புதிய உலகு செய்வோம் (கவிதை முழுவதும்)

**3. குருதேவர் இராமகிருஷ்ணர்**

நாமக்கல் கவிஞர் வெ.இராமலிங்கம் பிள்ளை

**4. கோவில் வழிபாடு**

கவிமணி தேசிக விநாயகம் பிள்ளை

**5. மதுரை ஸ்ரீமீனாட்சியம்மை**

சோழவந்தான் அரசஞ்சண்முகனார்

**அலகு: 2 தமிழ்ச்செய்யுள் : புதுக்கவிதைகள்**

- 1 அன்னை – கவிஞர் கண்ணதாசன்
- 2 கிழக்கு விழிக்கும் நேரம் - கவிஞர் வைரமுத்து (கொடிமரத்தின் வேர்கள்)
- 3 அவர்கள் வருகிறார்கள் - மு.மேத்தா (சுதந்திர தாகம்)
- 4 புதுக்கவிதைகள் - க.நா.சுப்ரமண்யம் (கவிதை)
- 5 நாம் இருக்கும் நாடு - தமிழன்பன் (வாக்கு வரம் தரும் தெய்வம்)
- 6 தீர்த்தக்கரையினிலே - முருகு சுந்தரம் (ஒலிபெருக்கி)
- 7 ஹைக்கூ கவிதைகள் - க.ராமச்சந்திரன்

**அலகு: 3 தமிழ் உரைநடை இலக்கியம் - சுவாமி சித்பவானந்தரின் சிந்தனைகள் (தமிழ்த்துறை வெளியீடு)**

**அலகு: 4 தமிழ் இலக்கணம் - எழுத்து**

1. முதல் எழுத்துக்கள்
2. சார்பெழுத்துக்கள்
3. மொழி முதல் எழுத்துக்கள்
4. மொழி இறுதி எழுத்துக்கள்
5. வல்லெழுத்து மிகும் இடங்கள்
6. வல்லெழுத்து மிகா இடங்கள்

**அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத் தமிழும்**

- அ) 1. மரபுக்கவிதையின் தோற்றமும் வளர்ச்சியும்  
2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்

ஆ) மரபுப்பிழை நீக்குதல் - பிறமொழிச் சொற்களை நீக்குதல் - பிழையற்ற தொடரைத் தேர்ந்தெடுத்தல் - ஒருமை பன்மை மயக்கம் - ஓர் எழுத்து ஒரு மொழிக்குரிய பொருள் - ஒலி வேறுபாடுகளும் பொருள் வேறுபாடுகளும் - பொருத்தமான பொருள் - பொருத்தமான தொடர் அறிதல்.

**பாடநூல்கள்**

1. தமிழ்ச் செய்யுள் தொகுப்பு (தமிழ்த்துறை வெளியீடு)
2. சுவாமி சித்பவானந்தரின் சிந்தனைகள் (தமிழ்த்துறை வெளியீடு)

**பார்வை நூல்கள்**

1. பாரதியார் கவிதைகள் (குமரன் பதிப்பகம்)
2. பாரதிதாசன் கவிதைகள் (சுவாமிமலை பதிப்பகம்)
3. தமிழ் இலக்கிய வரலாறு - முனைவர். பாக்யமேரி
4. தமிழ் இலக்கிய வரலாறு - மு.வரதராசனார்

**B.Sc. Computer Science CBCS Syllabus - (Part II English) - SEMESTER I  
(For those who joined in June 2017 and after)**

<b>PART II – Paper I</b>		
<b>Subject Title : Communicative English</b>		
<b>Subject Code:P2CE11</b>	<b>Hours per week: 4</b>	<b>Credit: 2</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objectives:** Total number of hours per semester: **75 Hrs**

- ❖ *To develop listening and speaking skills*
- ❖ *To increase the vocabulary of students*
- ❖ *To improve reading skills*
- ❖ *To develop competency in grammar*
- ❖ *To develop continuous writing*

**Unit – I - Listening, Speaking and Reading Components** 15 Hrs

1. Rabindranath Tagore – Cabuliwallah
2. Khushwant Singh – Karma
3. R.K. Narayan – Sweets for Angels
4. K.A.Abbas – Sparrows

**Unit – II** 15 Hrs

- |                                      |                   |            |
|--------------------------------------|-------------------|------------|
| • Sentences, Clauses, and Phrases    | • Parts of Speech | • Nouns    |
| • Pronouns                           | • Determiners     | • Articles |
| • Adjectives                         | • Verbs           | • Adverbs  |
| • Some Common Adjectives and Adverbs |                   |            |

**Unit – III Composition** 15 Hrs

- Letter writing – Formal Letters & Informal Letters
- Descriptive Writing – General topics (Paragraph)

**Unit – IV - Extensive Reading: Short Stories** 15 Hrs

- Young Naren - by Brahamachari Amal.  
[From “A Simple life of Swami Vivekananda”  
Advaita Ashrama, Kolkata]
- A Story of Initiation - by Sri Aurobindo Society.  
From “Stories and Anecdotes from the Mother”  
Pondicherry.
- Glory At Twilight - Bhabani Bhattacharya
- The Martyr’s Corner - R.K. Narayan

**Unit – V - Translation** 15 Hrs

Translation of Sentences and Stories from Tamil to English / English to Tamil (Passages will be supplied)

**Reference Book:**

1. A Textbook of English Grammar and Usage by K.V.Joseph (Page. No.1-184) Second Edition (2012), TATA McGraw Hill Education Private Limited, New Delhi.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – I  
(For those who joined in June 2013 and after)**

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Programming in C</b>		
Subject Code: <b>10CT11</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sectional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To study about modular programming*
- ❖ *To know basics needs of a programming languages*
- ❖ *To define our own function and structures*
- ❖ *To Store data in secondary storage devices*

**Unit I**

Introduction to C -Importance -Basic Structure of C Programs - Programming Style and execution of a C Program -Character Set -Keywords and Identifiers -Constants, Variables and data types -Declaration of variables - Assigning values to variables -defining Symbolic Constants -Arithmetic Operators, Relational, Logical, Assignment Operators, Increment and decrement Operators - Conditional -Bitwise Logical Operators and all types of expressions -Operator Precedence and Associating -Managing *via* Operators. Decision making and Branching with IF Statement -IF ELSE, nesting of IFELSE statement -ELSE IF Ladder -Switch Statement -?: Operator -GOTO statement -I/O statement -Decision making and Looping -WHILE -FOR statement -jumps in Loops.

**Unit II**

Arrays: Introduction -One Dimensional Array -Two Dimensional Arrays - Initializing Two Dimensional Arrays -Multidimensional Arrays. Character String: declaring and initializing String Variables -reading and writing strings -Arithmetic Operations on characters -Other String Operations.

**Unit III**

User Defined Functions: Introduction -Need for User defined Functions -A Multifunction Program -The form of C functions -Returns values and their types - Calling a function -Category of functions -No arguments and no return values - Arguments but no return values -Arguments with return values -Handling of non-integer functions -Nesting of Functions -Recursion -Functions with arrays.

**Unit IV**

Structures & Unions: Introduction -Structure definition -giving values to members - Structure initialization -Comparison of Structure Variables -Arrays of Structures -Arrays within structures -structures within structures -structures and functions -unions -Size of structures -Bit Fields.

## **Unit V**

Pointers: Introduction -understanding Pointers -Accessing the address of a variable - declaring and initializing pointers -Pointers expressions -Pointers increment and scale factor- Pointers and arrays -Pointers and character strings - Pointers and functions -Pointers and structures -point on Pointers. File Management in C.

### **Text Book:**

1. Programming in ANSI C -E: Balagurusamy.

### **Units Chapters:**

I 1, 2, 3,4,5,6, II 7, 8, III 9, IV 10, V 11, 12

### **Reference Books:**

1. Theory and Problems of Programming with C - Byron S.Gottfried, Schaum's outline series.Let us C – Yashvanth Kaneethkar.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – I**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Digital Electronics</b>		
Subject Code: <b>10CT12</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Implement simple logical operations using combinational and logic circuits*
- ❖ *Determine the appropriateness of the choice of the ICs used in a given digital circuit.*
- ❖ *Modify a given digital circuit to change its performance as per specifications*
- ❖ *Determine the transition sequence of a given state in a state diagram for a given input sequence.*
- ❖ *Determine the function and performance of given combinational and sequential circuits*

**UNIT I: Number System and Discrete Logic:**

Why binary – Binary to Decimal – Decimal to Binary – Octal – Hexadecimal – ASCII code – Excess-3 code – Gray code – OR gates – AND gates – Boolean algebra – NOR gates – NAND gates – Exclusive OR gates.

**UNIT II: Circuit Analysis and Design:**

Boolean law and theorems – Sum of product method – K-Map truth tables – Pairs, Quads, and Octets – K-Map simplifications – Don't care – Product of method.

**UNIT III: Data Processing and Arithmetic Circuits:**

Multiplexers – Demultiplexers – Decoders – Encoders – Parity generators / Checkers – Binary Addition – Binary Subtraction – 1's & 2's complement representation.

**UNIT IV: Flip Flops, Clocks and Timers:**

Flip Flops – Types of Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – JK Master Slave Flip Flop – 555 Timer Astable – Monostable.



## **UNIT V: Shift Registers and Counters:**

Types of registers – Serial in-Serial out – Serial in-Parallel out – Parallel in-Serial out – Parallel in-Parallel out – Ring counter – Ripple counter

### **Text Book:**

Digital Principles and Applications - Albert Paul Malvino & Donald P. Leach 7<sup>th</sup> Edition, Tata McGraw Hill Book Company, New Delhi, 2011

### **Chapters:**

Unit I – 2.1, 2.2, 4.7, 5.1 to 5.8

Unit II – 3.1 to 3.7

Unit III – 4.1 to 4.3, 4.6, 4.8, 6.1, 6.2, 6.5

Unit IV – 7.4, 7.5, 8.1, 8.4, 8.5, 8.8

Unit V – 9.1 to 9.5, 9.7, 10.1

### **Reference Books:**

1. Digital Circuits and Design – S.Salivahanan & S.Arivazhagan, Vikas Publishing Pvt.Ltd, 2000.
2. Digital Logic and Computer Design – M.Morris Mano, Prentice Hall, 2006.
3. Computer Architecture and Logic Design – Thomas C.Bartee, McGraw Hill Editions, 1991

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – I**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject Lab</b>		
Subject Title : <b>Lab I: C &amp; Digital Electronics</b>		
Subject Code: <b>10CP13</b>	Hours per week: <b>6</b>	Credit: <b>4</b>
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

**C – Practical Lab List:**

1. Write a C program to arrange the strings in alphabetical order
2. Write a C program to print Pascal triangle.
3. Write a C program to add two matrices.
4. Write a C program to print n prime numbers.
5. Write a C program to subtract two matrices.
6. Write a C program to print Floyd's triangle with O's and 1's.
7. Write a C program to multiply two matrices.
8. Write a C program to print reverse of the string using recursion.
9. Write a C program to transpose a matrix.
10. Write a C program to find the NCR value using function.
11. Write a C program to create a student file consists of records of field members name, register
12. Number, and 5 marks. Calculate total and average.
13. Write a C program to find the sum of the digits of a given number
14. Write a C program to create an employee file consists of records of field members name, employee
15. Number and basic pay. Calculate gross pay and net pay.
16. Write a C program to print all Armstrong numbers
17. Write a C program to create an electricity file consists of records of field members name, customer
18. code, previous month reading, current month reading, customer status .Calculate no of units and
19. Amount if customer status is residential Rs 2/unit is commercial Rs 4/unit.
20. Write a C program to reverse the digits of a given number
21. Write a C program to create a Cricket file consists of records of field members player name, country, total runs, total matches. Calculate batting average and print results as country wise.
22. Write a C program to print Fibonacci series

23. Write a C program to create a text file and convert the text into upper case letters and write it into another file.
24. Write a C program to solve a quadratic equation.
25. Write a C program to solve Towers of Hanoi using recursion
26. Write a C program to imitate DOS COPY command using command line arguments.
27. Write a C program to arrange the numbers in ascending order (using arrays)
28. Write a C program to arrange the numbers in ascending order using pointers
29. Write a C program to search a number in an array and also find its position.

***DIGITAL ELECTRONICS - Practical Lab List***

1. Logic gates using discrete components AND, OR, NOT.
2. Logic gates using discrete components NAND, NOR.
3. Half adder
4. full adder
5. Decoder & Encoder.
6. Multiplexer & Demultiplexer.
7. Demorgan's theorem and Boolean expressions.
8. Digital to analog converter.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – I**  
(For those who joined in June 2015 and after)

<b>PART – III : Allied Subject Theory</b>		
Subject Title : <b>Discrete Mathematics</b>		
Subject Code: <b>10AT11</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To learn about the mathematical foundations of computer science*
- ❖ *To study mathematical logics used in computers*
- ❖ *To study about recursion techniques and graph theory*

**Unit 1: SET THEORY**

Operations on sets – relation between sets – closures of a relation – N-ary relations and their applications – functions – mathematical induction – permutations and combinations.

**Unit 2: MATRIX ALGEBRA**

Definition of Matrix – types of matrices – matrices associated with a given matrix – sub matrix – equality of matrices – addition and subtraction of matrices – multiplication of matrices – adjoin of square matrix – inverse of matrix – rank of matrix – normal form of matrix – clayey Hamilton theorem.

**Unit 3: MATHEMATICS LOGIC**

Introduction – propositions and logical operators – construction of truth tables – tautologies and contradictions – equivalence and implication – NAND and NOR – functionally complete sets – two state devices and statement logic – normal forms

**Unit 4: INDUCTION, RECURSION AND RECURRENCE RELATIONS**

Mathematical induction – recursion – recursion and iteration – closed form expression – sequence of integers – recurrence relations – recurrence relation and obtained from solutions – generating functions.

**Unit 5: GRAPH THEORY**

Basic concepts – connected graphs – distance in a graph – connectedness in directed graph – incidence and adjacency matrices – Eulerian and Hamiltonian graphs – euler circuits – trees – application of trees – binary search trees – decision trees – traversal trees – infix, prefix and postfix notation – trees and sorting – spanning tree

**Text Book:**

1. Discrete Mathematics: by N Ch. S.N.Iyengar, V.M.Chandrasekaran, K.A. Venkatesh and P.S. Arunachalam.

**Chapters:** 1, 2,3,4,7

**Reference Books:**

1. Discrete Mathematics for Computer Science by V.Sundarasan and K.Ganesan.
2. Discrete Mathematics for Computer Science by Bemard Kolman.  
B.Sc. Computer Science CBCS Syllabus - **SEMESTER – I**  
**(For those who joined in June 2015 and after)**

<b>PART – IV : Non Major Elective</b>		
Subject Title : <b>Introduction to Information Technology</b>		
Subject Code: <b>10NE11</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To synergize Information Technology in all its ramification.*
- ❖ *To provide basic inputs in various aspects of and a broad understanding of IT and its other interdisciplinary interfaces.*
- ❖ *Focus of the program is Information Technology and Management of Information Technology.*
- ❖ *To cater to the needs of effectively managing the business by bridging the gap between managerial practices in vogue and Information Technology.*

**Unit I**

Introduction: Information systems – Software and data – IT in Business and Industry – IT in Home and at Play – IT in education and training – IT in Entertainment and the Arts – IT in science, engineering and mathematics – Computer in Hiding.

**Unit II**

The Computer System and Central Process Unit: Types of computers – Corporate and Departmental computers, Desktop and Personal Computers – The Anatomy of computer – The foundation of Modern Information Technology: Binary Numbers, Digital Signals, Bits and Bytes –Central Process Unit – Memory.

**Unit III**

Input and Output: I/O Devices – Keyboards – Inputting text, Graphics – Pointing devices – The foundation of Modern outputs: Pixels and resolutions, Fonts, Color – Display Screens – Printers Secondary Storage: The foundation of modern storage: How Data is stored, Storage Characteristics – Storage Media: Floppy Disk, Hard Disk, Drives, Optical Disk – Back up data.

**Unit IV**

Software: Introduction – User Interface – Application Programs – Operating systems: Introduction, Types, File Management and Utilities – Major Software Issues.

## Unit V

Internet and World Wide Web: Introduction – The Web – Getting connected to the Web – Browsing the Web – Locating information on the Web – Web Multimedia.

### Text Book:

1. Information Technology The Breaking Wave By Dennis P.Curtin, Kim Foley, Kunal Sen, Cathleen Morin – Tata McGraw-Hill Publishing  
இரண்டாம் பருவம் - பாடத்திட்டம் (2017 - 2018-ஆம் ஆண்டு முதல்)

PART-I: Language Tamil Subject		
Subject Title: இக்காலக் கதை இலக்கியமும் மக்கள் தகவலியலும் - தாள்:2		
Subject Code: P1CT21	Hours per week: 6	Credit: 3
Seasonal Marks: 25	Summative marks: 75	Total Marks: 100

### பாடப்பகுதி

- அலகு: 1 தமிழ்ச் சிறுகதை இலக்கியம்  
அலகு: 2 தமிழ் நாவல் இலக்கியம்  
அலகு: 3 மக்கள் தகவலியல்  
அலகு: 4 தமிழ் இலக்கணம் - சொல்  
அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்

### பாடப்பகுதியின் உட்பிரிவுகள்

- அலகு : 1 தமிழ்ச் சிறுகதை இலக்கியம் - பூ மலரும் காலம் (ஜி.மீனாட்சி)  
அலகு : 2 தமிழ் நாவல் இலக்கியம் - வேரில் பழுத்த பலா (சு.சமுத்திரம்)  
அலகு : 3 மக்கள் தகவலியல் - பாடப்பகுதிகள்  
1. இதழ்கள் தொடங்குவதற்குரிய வழிமுறைகள்  
2. செய்தித்தாள் நிர்வாக அமைப்பு  
3. பேட்டி - அதன் வகைகள்  
4. செய்தி - செய்தி விளக்கம்  
அலகு : 4 தமிழ் இலக்கணம் - சொல்  
1. நான்கு வகைச் சொற்கள்  
2. வினா - விடை வகைகள்  
3. வேற்றுமைகள்  
4. தொகைகள் (வேற்றுமைத் தொகை, வினைத்தொகை, பண்புத்தொகை, உவமைத்தொகை, உம்மைத்தொகை, அன்மொழித்தொகை)  
அலகு : 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்  
அ) 1. சிறுகதையின் தோற்றமும் வளர்ச்சியும்  
2. புதின இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்  
ஆ) தொடரும் தொடர்பும் அறிதல் - பிரித்து எழுதுதல் - பொருந்தாச் சொல்லைக் கண்டறிதல் - வழுவுச்சொற்களை நீக்கிய தொடரைக் குறிப்பிடுதல்- சொற்களை அகர வரிசைப்படுத்தல்- வேர்ச்சொல்லைத் தேர்வு செய்தல் - எவ்வகை வாக்கியம் எனக் கண்டு எழுதுதல் - சொற்களை ஒழுங்குபடுத்திச் சொற்றொடர் ஆக்குதல் - ஆங்கிலச்சொல்லுக்கு நிகரான தமிழ்ச் சொல் அறிதல்.

### பாடநூல்கள்

1. சிறுகதை - பூ மலரும் காலம் (ஜி.மீனாட்சி)
2. நாவல் - வேரில் பழுத்த பலா (சு.சமுத்திரம்)

3. இதழியல் கலை (டாக்டர் மா.பா.குருசாமி)
4. தமிழ் இலக்கிய வரலாறு (முனைவர் பாக்யமேரி)

### பார்வை நூல்கள்

1. மக்கள் தகவல் தொடர்பியல் அறிமுகம் (டாக்டர் கி. இராசா)
2. இதழியல் (ச.ஈஸ்வரன்)
3. இதழியல் (டாக்டர் இரா.கோதண்டபாணி)
4. இதழியல் ஓர் அறிமுகம் (டாக்டர் அந்தோணி இராகு)
5. தமிழ் இலக்கிய வரலாறு (டாக்டர் மு.வரதராசனார்)

## B.Sc. Computer Science CBCS Syllabus - SEMESTER – II (For those who joined in June 2015 and after)

<b>PART II – Paper I</b>		
<b>Subject Title : Functional English</b>		
<b>Subject Code:P2CE22</b>	<b>Hours per week: 3</b>	<b>Credit: 1</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objectives:** Total number of hours per semester: **75 Hrs**

- ❖ *To develop listening, speaking and reading skills*
- ❖ *To develop Information and Communication Technology (ICT) skills*
- ❖ *To develop presentation skills*
- ❖ *To develop competency in grammar*

### Unit – I Listening, Speaking and Reading Components 15 Hrs

#### Prose

- |                               |   |                          |
|-------------------------------|---|--------------------------|
| 1. My Visions for India       | - | A.P.J. Abdul Kalam       |
| 2. Mahatma Gandhi             | - | V.S.Srinivasa Sastri     |
| 3. Computers and Common Sense | - | Roger Hunt & John Shelly |
| 4. The Golden Age of Cricket  | - | Neville Cardus           |
| 5. On Keyhole Morals          | - | A.G. Gardiner            |

### Unit – II Language Study 15 Hrs

- Tenses and Their Uses
- Concord or Agreement
- Conditional Sentences
- Active and Passive Voice
- Preposition

Book: *A Textbook of English Grammar and Usage* by **K.V.Joseph**  
Second Edition (2012), TATA McGraw Hill Education Private Limited,  
New Delhi.

### Unit – III Composition 15 Hrs

- Letter writing – Informal Letters
- Hints Development
- Descriptive Writing

### Unit – IV Extensive Reading: Short Stories 15 Hrs Extensive Reading

1. Upper Division Love - Manohar Malgonkar
2. The Tiger in the Tunnel - Ruskin Bond
3. A Devoted Son - Anitha Desai
4. *The Lost Child* - Mulk Raj Anand
5. Tree Speaks - C. Rajagopalachari

### Unit – V Translation

15 Hrs

- Translation of Sentences and Stories from Tamil to English/English to Tamil (Passages will be supplied)

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – II**  
(For those who joined in June 2017 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Computer Graphics</b>		
Subject Code: <b>10CT21</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

### Objective:

- *This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.*
- *A thorough introduction to computer graphics techniques, focusing on 2D & 2D modelling, image synthesis, and rendering. 3D object models (surface, volume and implicit), visible surface algorithms, image synthesis, shading and mapping*
- *The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.*

### UNIT – I:

**A Survey of Computer Graphics:** Computer Aided Design, Presentation Graphics, Computer Art, Entertainment, Education and Training, Visualization, Image Processing, Graphical User Interfaces –**Overview of Graphics System:** Video Display Devices – **Input Devices:** Keyboards, Mouse, Trackball and Space ball, Joysticks, Data Glove, Digitizers, Image Scanners, Touch Panels, Light Pens, Voice Systems – **Hard Copy Devices** – **Graphics Software:** Coordinate Representations, Graphics Functions, Software Standards, PHIGS Workstations.

### UNIT – II:

**Points and lines – Line Drawing Algorithms:** DDA Algorithm, Bresenham’s Line Algorithm – **Circle Generation Algorithms:** Properties of Circles, Mid-Point Circle Algorithm – **Other Curves:** Conic Sections, Polynomials and Spline Curves– **Line Attributes:** Line Types, Line Width, Pen and Brush Options, Line Color – **Area Filling Attribute:** File Styles, Pattern Fill, Soft Fill – **Character Attributes:** Text Attributes, Marker Attribute –**Bundled Attributes:**



Bundled Line Attributes, Bundled Area Fill Attributes, Bundled Text Attributes, Bundled Marker Attributes .

### **UNIT –III:**

**Basic Transformations:** Translations, Rotation, Scaling – **Matrix Representation and Homogenous Co–ordinates – Composite Transformations:** Translations, Rotations, Scaling, General Pivots Point Rotations, General Fixed Point Scaling, General Scaling Directions, Concatenation Properties, General Composite Transformations and Computational Efficiency – **Other Transformation:** Reflection and Shear – **Transformation Functions –Raster Methods for Transformations.**

### **UNIT – IV:**

**The Viewing Pipeline – Viewing Coordinate Reference Frame – Window to Viewport Coordinate Transformation – Clipping Operation:** Point Clipping, Line Clipping, Polygon Clipping, Curve Clipping, Text Clipping, Exterior Clipping

**Input Function:** Input Modes, Request Modes, Locator and Stroke Input in Request Mode, String Input in Request Mode, Valuator Input in Request Mode, Sample Mode, Event Mode, Concurrent use of Input Mode – **Interactive Picture Construction Techniques:** Basic Positioning Methods, Constraints, Grids, Gravity Field, Rubber Band Methods, Dragging, Painting and Drawing.

### **UNIT – V:**

**Three Dimensional Display Methods:** Parallel Projection, Perspective Projection, Depth Cueing, Visible Line and Surface Identification, Surface Rendering, Exploded and Cutaway Views, Three Dimensional and Stereoscopic Views – **Three Dimensional Graphics Packages.**

**Three Dimensional Transformation:** Translation, Rotation, Scaling – **Other Transformations:** Reflection and Shear.

### **Text Book:**

1. Computer Graphics C Version – Donald D. Hearn and M.Panline Baker, 2<sup>nd</sup> Edition, Prentice Hall of India

### **Reference Books:**

1. Computer Graphics – A programming Approach – S.Harrington, Tata McGraw – Hill Book Company
2. Principles of interactive Computer Graphics -W.M.Newmann& R.F. Sproull -Tata McGraw – Hill Book Company

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – II**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Microprocessor &amp; Interfacing Techniques</b>		
Subject Code: <b>10CT22</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Programs using 8086 instructions*
- ❖ *Interfacing techniques Programs*

**UNIT I: Introduction to Microprocessor**

Evolution of Microprocessor – Single chip Microcomputer – Embedded Microprocessor – Bit slice processor – RISC and CISC processor – DSP – Microprocessor with MMX technology – Future trends

**UNIT II: 16 bit Intel Microprocessor**

Intel 8086 – Pin description of Intel 8086 – Pin description for Maximum Mode – Pin description for Minimum Mode – Register organization of 8086 – BIU and EU – Interrupts – Addressing modes of 8086.

**UNIT III: 8086 Instruction Set**

8086 Instruction groups – 8086 Instructions – 8086 based Computer System – 8086 Read and Write Bus cycles – Assembly Language Program

**UNIT IV: I/O Devices and Supporting Chips**

Intel 8259 PIC – Intel 8251 PCI – Intel 8279 Keyboard Display Interface – 8237 DMA.

**UNIT V: Other Microprocessor**

Power PC 601 – Pentium – Pentium Pro Microprocessor – Alpha – Cyrix – MIPS – SUN's SPARC – AMD.

**Text Book**

1. Advanced Microprocessors and Interfacing – Badri Ram – Tata McGraw Hill – Edition 2006

**Chapters:**

Unit I – 1.1 to 1.4, 1.6, 1.11, 1.13, 1.17

Unit II – 2.1 to 2.8, 2.12

Unit III – 2.9, 2.10, 3.1, 3.5, 4.1, 4.2, 4.4, 4.5, 4.13

Unit IV – 8.6, 8.7, 8.8, 8.10

Unit V – 9.1.1, 9.2 to 9.8

### Reference Books:

1. Microprocessor servicing practical systems and troubleshooting – Stuart M. Asser.
2. Microprocessor Architecture, Programming and Applications – Ramesh S. Goankar.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – II**  
(For those who joined in June 2015 and after)

<b>PART – III :Core Subject Lab</b>		
<b>Subject Title : LAB II: Computer Graphics &amp; Microprocessor</b>		
<b>Subject Code: 10CP23</b>	<b>Hours per week: 6</b>	<b>Credit: 4</b>
<b>Sessional Marks: 40</b>	<b>Summative Marks: 60</b>	<b>Total Marks: 100</b>

### **COMPUTER GRAPHICS: Practical Lab List**

1. Car animation.
2. Bounce a ball.
3. Pie chart.
4. Bar chart.
5. a) 3-leaf, 4-leaf, polygon.
6. Line clipping (Cohen Sutherland).
7. DDA Line algorithm.
8. Bresnham circle.
9. Midpoint circle.
10. Boundary fills.
11. Clock.
12. Polar ellipse, polar circle.
13. Flood fills.
14. Chessboard.

### **MICROPROCESSOR: Practical Lab List**

1. Simple programs using 8086 instructions (35 % )
  - i) Multibyte addition
  - ii) Addition of N Bytes
  - iii) Factorial
  - iv) Biggest and Smallest number
  - v) Ascending and Descending order
  - vi) Block Movement using REP instruction
  - vii) Hexadecimal to Decimal Conversion
  - viii) Hexadecimal to Binary
  - ix) Masking the bits
2. Interfacing techniques Programs (65%)
  - i) Keyboard / Display Interface (8279)
    - Key Code Receive and Code Conversion

- Display “HELP US”
- ii) Programmable Peripheral Interface (8255)
  - Traffic Controller
- iii) Programmable Communication Bus Interface
  - Stepper Motor Controller
- iv) Programmable Interrupt Controller (8259)
  - Interrupt Service Subroutine implementation

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – II  
(For those who joined in June 2015 and after)**

<b>PART – III : Allied Subject Theory</b>		
Subject Title : <b>Statistics &amp; Probability</b>		
Subject Code: <b>10AT21</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Predict the chance of an event happening, using the terms never, sometimes, always.*
- ❖ *Describe the likelihood of an outcome, using such terms as likely, unlikely, expect, probability.*
- ❖ *Make a prediction based on a simple probability experiment.*
- ❖ *Identify an outcome as possible, impossible, certain, uncertain.*
- ❖ *List all possible outcomes of an experiment involving a single event.*
- ❖ *Make the connection between the number of faces for various dice, and the probability of a single event.*

**UNIT I: FREQUENCY DISTRIBUTION AND MEASURES OF CENTRAL TENDENCY:**

Frequency distributions - Graphic representation of a frequency distribution – Averages or measures of central tendency or measures of location – Requisites for an ideal measure of central tendency – arithmetic mean – weighted mean – median – mode – geometric mean- harmonic mean – selection of an average.

**UNIT II: MEASURES OF DISPERSION:**

Dispersion – characteristics for an ideal measure of dispersion – measures of dispersion – range – quartile deviation – mean deviation – standard deviation and root mean square deviation – coefficient of dispersion - coefficient variation.

**UNIT III: THEORY OF PROBABILITY:**

Definition of various terms – mathematical or classical or ‘a priori’ probability – statistical or empirical probability – mathematical tools: preliminary notion of sets – operations on sets – random experiment (sample space) – event –

some illustrations – laws of addition of probabilities – extension of general law of addition of probabilities – independence events – Bay's theorem.

#### **UNIT IV: RANDOM VARIABLES AND DISTRIBUTION FUNCTIONS:**

Random variables – distribution function – discrete random variable – continuous random variables – continuous distribution function – marginal density function - independent random variables – transformation of one dimensional random variable.

#### **UNIT V: EXACT SAMPLING DISTRIBUTION:**

Chi-square variant – derivation of the chi-square distribution – M.G.F. of Distribution – chi square test of goodness of fit - Student's 't' (definition) – fisher's 't' (definition) – applications of t distribution – F-static (definition) – application of F-distribution – F-test for equality of population variance.

#### **Text Book:**

1. Elements of mathematical statistics: 3<sup>rd</sup> edition by S.C Gupta and V.K. Kapoor

**CHAPTERS:** 2, 3, 4,5,9,13,14.

#### **Reference Books:**

1. Probability and Statistics by A.M. MATHAI.
2. Statistics and its Application by Sankaranarayanan.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – II**  
**(For those who joined in June 2015 and after)**

<b>PART – IV : Non Major Elective</b>		
<b>Subject Title : Web Programming</b>		
Subject Code: <b>10NE21</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Demonstrate competency in the use of common HTML code.*
- ❖ *Demonstrate competency using FTP to transfer web pages to a server.*
- ❖ *Construct efficient file structure for web sites.*
- ❖ *Utilize graphic design to enhance web pages.*
- ❖ *Create web pages that meet accessibility needs of those with physical disabilities.*

**UNIT – I**

Overview of HTML: Origins of Hyper Text Markup Language (HTML) - Browsers and Servers – The role of HTTP - Structure of HTML Program – HEAD tag – BODY tag – Paragraph tag - HTML page formatting basics.

**UNIT –II**

LISTS – Ordered list and Unordered list – Marquee tag – break tag – ruler tag – font tag – data definition tag.

**UNIT – III**

TABLES – TABLE building tags and attributes of table – table tag – table header tag – table row tag – table data tag – row span – column span.

**UNIT – IV**

LINKS – Linking pages using Anchor tag – attributes of Anchor tag – Image tag and its attributes – Frame tag.

**UNIT – V**

FORMS – Form tag – Input tag – types – text, radio, button, check, password – sample web page creation.

**Text Book:**

1. HTML Complete – RPB Publications – 2<sup>nd</sup> Edition.

**Reference Books:**

1. C.Xavier,"World Wide Web Design With HTML ",Tmh Publishers-2001.
2. Joel Sklar,"Principles of Web Design", Vikas Publications.
3. David Mercer,"HTML Introduction To Web Page Design And Development",Schaum's Outlines Tmh Publishers-2002.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – III  
(For those who joined in June 2015 and after)**

<b>PART – III : Core Subject Theory</b>		
<b>Subject Title : Computer Organisation</b>		
<b>Subject Code: 10CT31</b>	<b>Hours per week: 5</b>	<b>Credit: 5</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objectives:**

- ❖ *This course covers the basics of computer organization with emphasis on the lower level abstraction of a computer system including digital logic, instruction set and assembly language programming.*
- ❖ *Topics includes data representation, logic gates, simplification of logical expressions, design and analysis of simple combinational circuit such as decoders and multiplexers, flip-flops and registers, design and analysis of simple synchronous sequential circuit- random-access and read-only memories,*

**Unit I**

Basic Computer Units: Their functions Input/output units Control units & Arithmetic and Logic Unit. Programming Languages, Assembly Language and Assembler. Basic idea on Compiler, Interpreter and Operating System.

**Unit II**

Central Processing Unit: Processor Organizations' -Stack Organization! Instructions formats, Addressing modes, data transfer, Program Control, Parallel Processing, Pipeline Processing, Array Processing.

**Unit III**

Arithmetic & Logic Unit: Adder, Serial Adder, Parallel adder, Addition and Subtraction Algorithm -Multiplication and Division Algorithm, Compliment Arithmetic, Floating Point Arithmetic Operations -Decimal Arithmetic Operations.

**Unit IV**

Input/Output Unit: Peripheral Devices, Input/Output Interface, DMA, Input / Output Processor, Multiplication system Organization.

**Unit V**

Memory Unit: Memory Hierarchy, Main Memory, Auxiliary Memory, Associate Memory, Virtual Memory and Cache Memory.

**Text Book:**

1. Computer system Architecture -M. Morris Mano - Prentice Hall Publication.

**Chapters:** 1 to 6, 8 to 11.

**Reference Book:**

1. Data Communication - Stallings.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – III  
(For those who joined in June 2015 and after)**

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Object Oriented Programming with C++</b>		
Subject code: <b>10CT32</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objective:**

- ❖ *New programming approach (Bottom-Up)*
- ❖ *To cope with the complexity of real – world problem*
- ❖ *To experience with C++ programming using OOP*
- ❖ *Simple and easy to understand*
- ❖ *Project to enhance programming skills*

**UNIT I: PRINCIPLES OF OBJECT ORIENTED PROGRAMMING**

Software crisis – software evaluation – a look at procedure oriented programming – Object – Oriented Programming paradigm – Basic concepts of Object – Oriented programming – Benefits of OOP - Object – Oriented Languages – Application of OOP. BEGINNING WITH C++: What is C++? – Applications of C++ - A simple C++ program – More C++ Statements – An example with class – structure of C++ program – creating the source the source file – compiling and linking. TOKENS, EXPRESSIONS AND CONTROL STRUCUTURES: Introduction – tokens – Keywords – identifiers – basic data types – user defined data types – derived data types – symbolic constants – type compatibility – declaration of variables – dynamic initialization of variables – reference variables – operators in C++ - scope resolution operators – member de-referencing operators – memory management operators – manipulators type cast operator- expression and implicit conversions – operator overloading – operator precedence – control structures.

**UNIT II: FUNCTIONS IN C++**

Introduction – the main function – function prototyping call by reference – return by reference in line functions – default arguments – const arguments – function overloading – friend and virtual functions. CLASSES AND OBJECTS:



Introduction – C structure revisited – specifying a class – defining member functions – a C++ program with class – making an outside function inline – nesting of member functions – private member functions – arrays within a class – memory allocation for objects – static data members – static member functions – arrays of objects – objects as function arguments – friendly functions – returning objects – const member functions – pointers to members.

### **UNIT III - CONSTRUCTORS AND DESTRUCTORS**

Introduction – constructors –parameterized constructors – multiple constructors in class – constructors with default arguments – dynamic initializations of objects – copy constructor – dynamic constructors – constructing two dimensional arrays – destructors. OPERATOR OVERLOADING AND TYPE CONVERSIONS: Introduction – defining operator overloading – overloading unary operators – overloading binary operators – overloading binary operators using friends – manipulation of strings using operators – type conversions.

### **UNIT IV: INHERITANCE EXTENDING CLASSES**

Introduction – defining derived classes – single inheritance – making a private member inheritable – multilevel inheritance – multiple inheritance – hierarchical inheritance – hybrid inheritance – virtual base classes – abstract classes – constructors in derived classes – member classes – nesting of classes.

### **UNIT V: POINTERS, VIRUTAL FUNCTIONS AND POLYMORPHISM**

Introduction – pointers of objects – this pointer – pointers to derived classes – virtual functions – pure virtual functions. MANAGING CONSOLE I/O OPERATIONS Introduction – C++ stream classes – unformatted I/O operations – formatted console I/O operations – managing output with manipulators.

#### **Text Book:**

1. **OBJECT ORIENTED PROGRAMMING WITH C++ - E.Balaguru**  
Samy – Tata McGraw – Hill Publishing Company Ltd-6<sup>th</sup> Edn.- 1995.

#### **Units & Chapters**

I 1, 2, 3 II 4, 5 III 6, 7 IV 8 V 9, 10, 11

#### **Reference Books:**

1. Ira Pohl, “Object oriented programming using C++”, Pearson Education Asia, 2003.
2. Bjare Stroustrup, “The C++ programming language”, Addition Wesley, 2000.
3. John R.Hubbard, “Programming with C++”, Schaums outline series, TMH, 2003.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – III**  
(For those who joined in June 2017 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Data Structure</b>		
Subject Code: <b>10CT33</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To select the Data Structure that effectively models the information in a problem*
- ❖ *Design the software using Abstract Data & Control Structures*
- ❖ *Implement abstract data types in alternate ways.*
- ❖ *Evaluate the performance of an algorithm and to compare data structures*
- ❖ *Apply standard algorithms for searching and sorting*

**UNIT I: STACKS AND QUEUES:**

Stacks – queues – priority queues – stacks in the standard template library – queues in the standard template library – priority queues in the standard template library.

**UNIT II: LINKED LISTS:**

Singly linked lists – doubly linked lists – circular lists – skip lists.

**UNIT III: BINARY TREES:**

Trees, binary trees, and binary search trees – implementing binary trees – searching a binary search tree – tree traversal – insertion – deletion – balancing tree – heaps – polish notation and expression trees.

**UNIT IV: GRAPHS:**

Graph representation – graph traversals – shortest paths – cycle detection – spanning trees.

**UNIT V: SORTING:**

Elementary sorting algorithms – Decision trees – Efficient sorting algorithms.

**Text Book:**

1. Data Structure and Algorithms in C++ (2<sup>nd</sup> Edn.) - Author: Adam Drozdek.

**UNITS            CHAPTERS**

I	4.1 to 4.6
II	3.1 to 3.4
III	6.1 to 6.7, 6.9
IV	8.1 to 8.5
V	9.1 to 9.3

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – III  
(For those who joined in June 2015 and after)**

<b>PART – III : Core Subject Lab</b>		
Subject Title : <b>LAB III: OOPS &amp; Data Structure</b>		
Subject Code: <b>10CP34</b>	Hours per week: <b>6</b>	Credit: 4
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

**OOPS: Practical Exercise List**

1. Inline Functions
2. Function Overloading
3. Friend Functions
4. Array of Objects
5. Object as Parameters
6. Binary Operator Overloading
7. Unary Operator Overloading
8. Friend Functions
9. Virtual Functions
10. Constructors with Default arguments
11. Copy Constructor and Destructor
12. String Manipulations
13. Pointers
14. Files
15. Command Line Arguments
16. Single Inheritance
17. Multiple Inheritance
18. Multilevel Inheritance
19. Hybrid Inheritance.
20. Static Member functions.

**DATA STRUCTURE: PRACTICAL LAB LIST**

1. Stack using pointers
2. Stack using arrays
3. Queue using Pointers
4. Queue using arrays
5. Singly Linked List
6. Doubly Linked List

7. Circular Lists
8. Tree Traversal
9. Evaluating Expression
10. Insertion Sort
11. Selection Sort
12. Bubble Sort
13. Quick Sort
14. Heap Sort
15. Stack as a Linked List
16. Queue as a Linked List

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – III  
(For those who joined in June 2015 and after)**

<b>PART – III : Allied Subject Theory</b>		
Subject Title : <b>Operations Research</b>		
Subject Code: <b>10AT31</b>	Hours per week: <b>6</b>	Credit: <b>5</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To provide the concept and an understanding of basic concepts in Operations Research.*
- ❖ *To understand definition, scope, objectives, phases, models & limitations of operations research.*
- ❖ *To Analysis and Modeling in Computer Applications.*
- ❖ *To understand, develop and solve mathematical model of Transport and assignment problems.*
- ❖ *To understand, develop and solve mathematical model of linear programming problems.*

**Unit I**

Development of OR – Definition of OR – Modelling – Characteristics & Phases – tools, techniques & methods – Scope of OR.

**Unit II**

Linear Programming Problem – Formulation – Slack & Surplus Variables – Graphical Solution of LPP.

**Unit III**

Simplex method – Computational procedure – Artificial variables techniques – Big M Method.

**Unit IV**

Mathematical formulation of assignment problem – Method for solving the assignment problems.

**Unit V**

Mathematical formulation of transportation problem – Method for solving the transportation problem.

**Text Books:**

1. S.D.Sharma, “Operation Research”.

2. Kanthi Swarup et al., “Operations Research”, Sultan Chand & Sons, New Delhi, 1996.

**Reference Book:**

- 1) Hamdy S.Taha, Operations Research, TMH.

**Chapters**

Unit- I: 1.1 to 1.7

Unit-II: 2.1, 2.2, 3.1 to 3.5

Unit-III: 3.6, 4.2 to 4.4

Unit-IV: 11.1 to 11.3

Unit-V: 10.2 to 10.3, 10.7, 10.8.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – III**

**(For those who joined in June 2015 and after)**

<b>PART – IV : Skill Based Subject</b>		
Subject Title : <b>System Software</b>		
Subject Code: <b>10SB31</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To introduce the concepts of user and system requirements*
- ❖ *To describe functional and non-functional requirements*
- ❖ *To explain how software requirements may be organized in a requirements document*
- ❖ *To explain basic principles of Software Design*
- ❖ *To describe the differences between analysis and design*
- ❖ *To introduce refinements of the notations used in the Unified Modeling Language.*

**Unit-I**

Introduction: System software and Machine architecture – SIC – RISC machines

**Unit-II**

Assemblers: Basic assembler functions – Assembler features – Design options – Implemental

**Unit-III**

Loaders & Linkers: Basic loader functions – Loader features – Design options – Implementation

**Unit-IV**

Compilers: Basic compiler functions – Compiler features – Design options - Examples

**Unit-V**

Some System Softwares: O/S Examples – DBMS – Text Editors – Debugging Systems

**Text Book:**

1. An Introduction to System Programming (3<sup>rd</sup> Edition) – Leland L. Beck

Units	Chapters
I	1
II	2
III	3
IV	5
V	6 &7

### Reference Book:

1. System Programming and Operating System – D.M. Dhamdhare

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – IV**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Operating System</b>		
Subject Code: <b>10CT41</b>	Hours per week: <b>5</b>	Credit: <b>5</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

### Objectives:

- ❖ *To study the basic concepts of Operating system*
- ❖ *To learn Memory management techniques*
- ❖ *To understand the processor and device management techniques*
- ❖ *To study the file structure in physical form*

### Unit I

Importance of operating systems -Basic concepts and terminology -System resource manager -An operating system process view point.

### Unit II

Memory management -Single contiguous allocation -Introduction to multiprogramming -partitioned allocation -Relocatable partitioned memory management - paged memory management - Demand - paged memory management - segmented memory management- and Demand - paged memory management.

### Unit III

Processor management -State model- Job scheduling -Process scheduling - multiprocessor systems - process synchronization.

### Unit IV

Device management -Techniques for device management -Device characteristics -channels and control units -Device allocation considerations -I/O traffic controller -I/O scheduler -I/O device handlers.

### Unit V

Information management -A simple file system –General model of a file system -Symbolic file system -Basic file system -Access control verification - logical file system -Physical file system .

**Text Book:** 1. Operating Systems- Stuart E.Madnick & John J.Donovan

Tata McGraw-Hill Publication Company Ltd.

UNITS	CHAPTERS
I	1
II	3
III	4
IV	5
V	6

**Reference Book:** 1. Operating system concepts – Silber schatz Galvin.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – IV**  
(For those who joined in June 2015 and after)

PART – III : Core Subject		
Subject Title : <b>Relational Database Management System</b>		
Subject Code: <b>10CT42</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

### Objectives:

- ❖ *The fundamental concepts of database management.*
- ❖ *These concepts include aspects of database design, database languages, and database-system implementation.*
- ❖ *Understand the role of the DBMS & RDBMS in the organization.*

### UNIT – I: Introduction and background

Introduction – The database concept – definition of database – Earlier forms of database – The relational database.

#### The relational data model

Overview – Data modeling – The relational model – Other relational concepts and terminology – Relational algebra – Relational views.

#### Data Modeling 1

Entry – relationship(ER) model – Many-to-many relationships.

#### Data Modeling 2

Introduction – ER diagrams and database design – Additional techniques Time varying attributes.

### UNIT – II: Normalization

Introduction – Overview of normalization process – normal forms 1NF, 2NF and 3NF – Boyce – codd normal form – 4NF – Higher forms: 5NF and Dk/NF.

#### Database management system

Introduction – User interface – Database engine – Data dictionary.

#### Database programming

Introduction - Data definition language (DDL) – Data manipulation language (DML) – Data control language (DCL) – Query language – Generalized data access facilities.

### **UNIT – III: Physical design**

Introduction – Choice of database – Design of tables – Indexing.

#### **Integrity and security**

Introduction – Data base integrity – Data validation – Transactions – Backups and recovery – Database privileges or permissions.

**Concurrency: Overview** – Problems of concurrency – Serialization of transactions – Locking – Deadlock – Client – server systems.

### **UNIT – IV: Oracle**

Data types – Numbers, Strings, dates – Defining tables and column constraints – creating and modifying tables – Create, Alter, Drop-Select from and where clauses – Ordering, Group by, having in – updation, deletion, operating using sql – Union 7 intersection and minus operation – Nested queries in SQL (sub queries) – Aggregate function – Avg, min, max, sum & count.

### **UNIT – V: Programming with PL/SQL**

Basics of PL/SQL – Retrieving Data with cursor – Database triggers – Managing user and role – Database Administration Tools.

#### **Text Books:**

1. Relational Database Principles – 2<sup>nd</sup> Edn. – Colin Ritchie
2. Developing personal Oracle 7 for Windows 95 appln. – David Lockmen



B.Sc. Computer Science CBCS Syllabus - **SEMESTER – IV**  
(For those who joined in June 2017 and after)

PART-III Core Subject		
Subject Title : <b>DOT NET PROGRAMMING</b>		
Subject Code: <b>10CT43</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Identify the differences between the procedural languages and event-driven languages*
- ❖ *Identify and write syntactically correct statements using the Select structure*
- ❖ *To know basic idea about VB.Net.*
- ❖ *To study about ASP. Net data types, operators*

**UNIT –I - Introduction to NET**

Introduction to .NET - .NET Framework – Benefits of .NET – Common Language Runtime – Features of CLR – Compilation and MSIL-.NET Framework Libraries – Visual Studio IDE-Basic Elements of C#-Program structure and simple input and output operations-Operator and Expression – Statements – Array and Structures

**UNIT –II – VB.NET**

Introduction to VB.NET – VB.NET Fundamentals – Classes – Objects – Constructors – Overloading –Inheritance –Polymorphism – Interfaces – Exception – Delegates and Events

**UNIT –III - CONTROLS**

Building Windows Application – Creating a Windows Application using windows controls-Windows Forms – Text Boxes – Rich Text Boxes – Labels and Link labels- Buttons – Checkboxes – Radio Buttons – Panels and Group Boxes – List Boxes – Checked List Boxes – Combo boxes – Picture Boxes – Scroll bar – Calendar and timer control – Handling Menus- Dialog Boxes –Graphics

**UNIT –IV - ASP.NET**

ASP.NET Basics – Features of ASP.NET – ASP.NET page directives – Building form with web server control – Validation server control – Rich web control – Custom Control – Collection and List – XML- Web Services

### **UNIT – V – ADO.NET**

Data Management with ADO.NET – Introducing ADO.NET – ADO.NET Features – Using SQL Server with VB.NET – Using SQL Server with ASP.NET

#### **Text Books:**

1. Stephen C.Perry “Core C# and .NET”, Pearson Education, 2006.
2. Jesse Liberty, Programming Visual Basic .net 2003,second Edition, O really, Shroff Publishers and Distributors Pvt Ltd.

#### **Reference Books:**

1. S.Thamarai Selvi and R.Murugesan “A Textbook on C#”, Pearson Education, 2003.
2. Herbert Schildt,”The Complete Reference C#”,Tata McGraw Hill,2004
3. Steven Holzner,Visual Basic .NET Programming Black Book,2005 Edition,Paragiyph press USA &Dreamtech Press,India
4. Bil Evjen,Jason Beres,et al “Visual Basic .NET Programming Bible,2002 Edition,Wiley India Pvt Ltd.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – IV  
(For those who joined in June 2017 and after)**

<b>PART – III : Core Subject Lab</b>		
<b>Subject Title : LAB IV: Client Server Programming</b>		
Subject Code: <b>10CP44</b>	Hours per week: <b>6</b>	Credit: <b>4</b>
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

**DOT NET PROGRAMMING**

1. A) Write a program to generate factorial operation  
B) Write a program to perform money conversion  
C) Write Quadratic equation  
D) Write Temperature conversion
2. Write a program using Basic controls
3. Design a form to create a calculator
4. Create Traffic signal applications
5. Design Logon form and validate
6. A) Write a program to display the holiday in calendar  
B) Write a program to display the selected date in the calendar
7. Write a program to perform tree view operation
8. Write a program validation operation
9. Write a program using Data grid
10. Write a program ADO.net using SQL server with vb.net
11. Write a program using SQL Server with ASP.net

**ORACLE: Practical Lab List**

1. A daily sales file contains record with the following fields: Dept.No,Date,Item description,sales price for each item, quantity, quantity, cost of each item. Write a program using ORACLE to list all the input data. Compute total amount of sales and profit. The output contains Deptno, Item description, sales price, Quantity, Cost price and profit.
2. A hospital maintains blood donars records a file. The fields are Donar number, Name, Age, Address, Pin, Place of birth, Blood group (A,B,AB & C). Write a program to printout the number, Name & Address of the donors for the following categories.
  - (i) Blood donor having blood group AB.
  - (ii) Blood donor in age group between16-25.
  - (iii) Female donor having blood group 'O' and age in (20 to 25).
3. Write a program to compute the electricity charge of electric units with the following conditions. For Domestic - Rs.0.55 for a unit when unit less than 100 and Rs.1.10 for a unit when units greater than 100. For Industry - Rs.1.10 for a unit

when unit less than 1000 and Rs.1.40 for a unit when unit greater than 1000. Create a table having the structure code for Domestic and Industry current rate reading, previous rate readings.

(i) Write a program to prepare report in the format given CODE PR CR AMT

(ii) List out the Code and Amount, which are more than 100 units according to code wise.

4. Daily in the morning a newspaper vendor buys newspaper in whole sale from a distributor for 0.60 paise. He sells in retail for 0.75 paise. At the end of the day the unsold papers are returned to the distributor for a 0.30 paise rebate per paper. Write a program to prepare a report for the newspaper vendor in the following format with 10 weeks data. WEEK BOUGHT SOLD RETURN PROFIT/LOSS

5. A salary statement contains Name, Basic pay, Allowance, Total deduction including IT, Gross pay and Net pay.  $GP = BF + ALLOWANCE$ ,  $ALLOWANCE = 20\% \text{ OF BP}$ ,  $DEDUCTION = 10\% \text{ OF BP}$ . IT is calculated on the basics of annual income index with the following condition.

<b>ANNUAL SALARY</b>	<b>IT</b>
UPTO 30,000	NIL
>30,000 AND <=50,000	30% OF EXCESS OVER THE AMOUNT OF Rs.55,000.

ABOVE 55,000 50% OF EXCESS THE AMOUNT OF Rs.55,000.Total deduction = deduction + IT.

Write a program to prepare a salary report for five employees.

6. An examination has been conducted for a class of 7 students based on the average score and list all the students regno, average, score, grade, minimum pass for each subject is 50 Grading system is given below.

AVG-SCORE	GRADE
90 - 100	A
75 - 89	B
60 - 74	C
50 - 59	D
0 - 49	F

7. Write a program to a hospital billing system having the following fields Pno, Name, Age, Doctor attending, Patient type (in/out), consulting charge, Blood test charge, X-ray charge, other test charge and total fee. Write a report program for the following condition.

- 1) Patient who have undergone blood test.
- 2) Patient who have taken x-ray.
- 3) Patient who belong to a patient category.
- 4) List of patient with total fee.
- 5) Exit.

The common fields to be included in the above mentioned report are Pno, Name, Age, Corresponding charge and Total fees.

8. Write a program for canteen information system having two tables MENU & BILL. Menu table contains item and item rate. Assume that only the following item are available at the canteen: tea,coffee & cool-drinks. The bill table contains the following fields empno,name,date of issue,item1,no of tokens for item1,and rate1,item2, no of tokens for item2,rate2,item3, no of tokens for items,no of token,rate, total;  $rate=rate*\text{no of tokens}$ ;

9. An airline reservation database contains the reservation table and personal table. The reservation table contains the following fields namely flightno, passenger name, seatno, the personal table contains passenger name, sex, age, martial status, nationality.

Write a program to prepare the following list.

- 1) List the passenger names with seatno, according to flight no wise.
- 2) Total number of married female candidate in a particular flight.
- 3) List out all female candidates between18-25 for all flights.

10. A company states monthly salary to its employee. It consists of basic pay, allowance, deduction. DA = 43% of basic pay. HRA = 7% of basic pay. Deduction: PF - subscribed by a capital, LIC Premium - Payable by employee, Salary saving scheme. Loan recovery: If any payable by the employee. Create a main table with a records which is named as master which contains eno, ename, designation, basic pay, da, hra bank a/c no., LIC Premium number. A transaction table contains empno, pfsubscription, LIC Premium amount, loan recovery, create a program to prepare a report with the following information serial number, Bank a/c number, name, basic, total allowance, GP, total deduction, NP.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – IV  
(For those who joined in June 2015 and after)**

<b>PART – III : Allied Subject Theory</b>		
<b>Subject Title : Numerical Methods for Computer Science</b>		
<b>Subject Code: 10AT41</b>	<b>Hours per week: 6</b>	<b>Credit: 5</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objectives:**

- ❖ *To understand the principles involved in solving linear, non linear, polynomials using various techniques.*
- ❖ *To study the forward and backward interpolation techniques.*
- ❖ *To compute derivatives of a given function.*
- ❖ *To gain a knowledge of solving ordinary differential equations by various methods.*

**UNIT I**

Newton Raphson method – Regula False (False Position) method – Bisection method – Iteration method – Convergence method, System of linear equations – Gauss elimination method – Gauss-Seidel Iteration method

**UNIT II**

Gauss Jordan elimination method – Matrix inversion – Gregory-Newton forward interpolation formula – Gregory-Newton backward interpolation formula – Equidistant terms with one or more missing values

**UNIT III**

Gauss forward interpolation formula – Gauss backward interpolation formula – Laplace everet formula – Interpolation with unequal intervals – Divided differences – Newton divided differences formula – Lagrange’s interpolation formula

**UNIT IV**

Newton forward and backward differences to compute derivatives – Derivatives using stirling formula – The Trapezoidal rule – Romberg’s method – Simpson’s 1/3 rule – Simpson’s 3/8 rule

**UNIT V**

Numerical solution of ordinary differential equations – Power series approximations – Solutions by Taylor’s series method – Picard’s method of successive approximations – Euler’s method – Improved and modified Euler method – Runge-Kutta Methods

**Text Book:**

1. Numerical Methods – P.Kandasamy, K.Thilagavathy and K.Gunavathy, S. Chand & Company Ltd., New Delhi.

**Chapters:** 3, 4, 6, 7, 8, 9, 11, 12

**Reference Books:**

1. Advanced Mathematics for Engineering Students – S.Narayanan, T.K.Manicavachagam pillay And Dr.G.Ramanath.
2. 2) Introduction to Numerical Analysis – F.B.Hildebrand  
B.Sc. Computer Science CBCS Syllabus - **SEMESTER – IV**  
**(For those who joined in June 2017 and after)**

<b>Part IV – Skill Based Subject</b>		
<b>Subject Title: Unix and Shell Programming</b>		
<b>Subject Code: 10SB41</b>	<b>Hours per week: 2</b>	<b>Credit: 2</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objective:**

- ❖ *To introduce the fundamental concepts of UNIX operating system*
- ❖ *To introduce the fundamental concepts of Shell Programming*
- ❖ *To discuss an Operating system administration and related scripts*
- ❖ *To know another programming mechanism*

**UNIT I:**

Salient features of Unix -Unix system organization -the Unix file system - creating files -listing files and directories -a bit of Mathematics.

**UNIT II:**

The Unix file system -Essential Unix commands -I/O Redirection and Piping.

**UNIT III:**

VI Editor -Processes in Unix – Communication \_Unix style -Mail.

**UNIT IV:**

Shell programming: Shell variables-Shell keywords-system variables - User\_defined variables -positional parameters -Arithmetic in shell script - control instructions in shell -Taking Decisions (if-then-else- if statement) -The Loop control structure (while, until, for, break and continue statement).

**UNIT V:**

Shell Metacharacters-controlling terminal input -trapping signals -Functions - Executing multiple scripts -functions of a shell -variables revisited -exporting variables -controlling variable assignments -the eval command -Unix tools(grep,sed,tr and awk).

**Text Book:**

1. UNIX Shell programming by Yashavant. P..Kanetkar- BPB Publications - 2011.

Units

Chapters

I	1,2
II	3,4,5
III	6,7,8
IV	9,10,11
V	12,13,14

### Reference Books:

1. ADVANCED UNIX -A Programmer's Guide. by Stephen Prata.
2. UNIX Programming Environment. By Brian w.Kernighan & Rob Pike

### B.Sc. Computer Science CBCS Syllabus - SEMESTER – V (For those who joined in June 2015 and after)

PART II – Paper I		
Subject Title : <b>English for Career Development</b>		
Subject Code: <b>P2LE51 / P2CE51</b>	Hours per week: <b>1</b>	Credit: <b>**</b>
Sessional Marks: <b>100</b>		Total Marks: <b>100</b>

Total number of hours: 15 hours

### Objectives:

- ❖ *To make students face Competitive Examinations with confidence*
- ❖ *To train students in writing book reviews*
- ❖ *To make them write reports, resolutions, minutes*
- ❖ *To make them prepare agenda for meeting.*

### Unit I

- Comprehension

### Unit II

- Spotting the Errors
- Sentence Improvement
- Voice
- Preposition
- Cloze Test or Numbered Gaps

**Text Book:** *Objective English for Competitive Examinations*, Hari Mohan Prasad Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

### Unit III

- Book Reviews

### Unit IV

- Report-Writing
- Preparation of Agenda, Resolutions, Minutes

**Unit V** Extensive Reading – Self study – How to win Friends and Influence People  
– Dale Carnegie, Vermilian, London

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2017 and after)

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>Computer Networks</b>		
Subject Code: <b>10CT51</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Be familiar with the basics of data communication and familiar with various types of computer networks;*
- ❖ *Have experience in designing communication protocols; be exposed to the TCP/IP protocol suite.*

**UNIT I:** Overview Data Communication and Networking

**Uses of Computer Networks:** Business Application, Home Application, Mobile Users, Social Issues - **Network Hardware:** PAN, LAN, MAN, WAN, Internetworks -**Network Software:** Protocol Hierarchies, Design Issues for the Layers, Connection Oriented Vs Connectionless Services, Service Primitives, The Relationship of Services to Protocols – **Reference Model:** OSI and TCP/IP Reference models

**UNIT II:** Physical Layer

**Theoretical basis for data Communication:** Fourier Analysis, Bandwidth Limited Signals, The Maximum Data Rate of a Channel - **Guided Transmission Media:** Magnetic Media, Twisted Pairs, Coaxial Cable, Power Lines, Fiber Optics – **Public Switched Telephone Network:** Structure of the Telephone System, The Politics of Telephones, The Local Loop: Modem, ADSL and Fiber – **Multiplexing:** Time Division Multiplexing, Wavelength Division Multiplexing, Frequency Division Multiplexing–**Switching:** Circuit Switching, Packet Switching

**UNIT III:** Data Link Layer

**Data Link Layer Design Issues:** Services Provided to the Network Layer, Framing, Error Control, Flow Control -**Error Detection and Correction:** Error Correcting Codes, Error Detecting Codes -**Elementary Data Link Protocols:** A Utopian Simplex Protocol, A Simplex Stop and Wait Protocol for an Error Free



Channel, A Simplex Stop and Wait Protocol for a Noisy Channel -**Sliding Window Protocols:** A One Bit Sliding Window Protocol, A Protocol Using Go-Back-N, A Protocol Using Selective Repeat

#### **UNIT IV:** Network Layer & Transport Layer

**Network Layer Design Issues:** Store and Forward Packet Switching, Services Provided to the Transport Layers, Implementation of Connectionless and Connection Oriented Services, Comparison of Virtual Circuit and Datagram Circuit -**Routing algorithms:**Optimality Protocol, Shortest Path Algorithm, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, Anycast Routing, Routing for Mobile Hosts, Routing in Ad Hoc Networks -**IP Addresses– IP Version 6 – The Internet Transport Protocol: (UDP)** Introduction to UDP, Remote Procedure Call, Real time Transport Protocols, – **Transmission Control Protocol (TCP):** Introduction to TCP, The TCP Service Model, The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, TCP Connection Management Modelling, TCP Sliding Window, TCP Timer Management, TCP Congestion Control

#### **UNIT V:** Application Layer and Network Security

**Domain Name System:** The DNS Name Space, Domain Resource Records, Name Servers, - **E-Mail:** Architecture and Services, The User Agent, Message Formats, Message Transfer, Final Delivery –**World Wide Web:** Architectural Overview, Static Web Page, Dynamic Web Page and Web Applications, HTTP, The Mobile Web, Web Search

#### **Text Book:**

1. COMPUTER NETWORKS By Andrew S.Tenenbaum and David J. Wetherall V Edition, Pearson.

#### **Reference Books:**

1. Computer Communication and Network - John Fier,Pitman
2. Data Communication and Networking - Behrouz A Forouzn III Edition, TataMcGrawHill
3. Data and Computer Communications – E. Stallings,PHI

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject</b>		
Subject Title : <b>Java Programming</b>		
Subject Code: <b>10CT52</b>	Hours per week: <b>5</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *This course provides an introduction to object oriented programming (OOP) using the Java programming language.*
- ❖ *Its main objective is to teach the basic concepts and techniques which form the object oriented programming paradigm*
- ❖ *The model of object oriented programming: abstract data types, encapsulation, inheritance and polymorphism*
- ❖ *Fundamental features of an object oriented language like Java: object classes and interfaces, exceptions and libraries of object collections*
- ❖ *How to take the statement of a business problem and from this determine suitable logic for solving the problem; then be able to proceed to code that logic as a program written in Java.*
- ❖ *How to test, document and prepare a professional looking package for each business project using javadoc.*

**UNIT – I: Over view of Java:**

Object oriented programming - two control statements using blocks of code - lexical issues - java libraries. Data types, variables and arrays: simple types-integers-floating point types-characters-Booleans-liberals-variables-type conversion & casting – automatic type in experience – arrays. Operators: different types of operators- operator precedence. Control statements: selection-iteration-jump-statements.

**UNIT – II: Introducing classes:**

Class fundamentals – declaring objects-assigning objects- assigning objects reference variables-introducing methods-constructors-this keyword-garbage collection-finalize () method- overloading methods-object parameters-returning objects-recursion-access control-static methods-final method-arrays revisited-nested class-string class-command line arguments.

**UNIT – III Inheritance:**

Basics-using super-creating a multilevel hierarchy-method overriding-dynamic method dispatch-abstract classes-final with inheritance-object class. packages & interfaces- access protection-importing packages-interfaces.

## **UNIT – IV Multithreaded programming:**

The java thread model – main thread – creating a thread – creating multiple threads- thread priorities – synchronization – inter thread communication – suspending, resuming and stopping thread – using multithreading. Exception handling: fundamentals-types-uncaught exception-using try and catch multiple catch classes-nested try-throw-throws-java built in expressions – your own exceptions.

## **UNIT – V I/O applets and other topics:**

I/O basics – reading console input writing console output – the print writer class – reading and writing files - applets fundamentals – the transient and volatile modifier – native methods. Networking: networking basics inet address-TCP/IP client sockets-URL - TCP/IP SERVER SOCKETS-catching proxy HTTP SERVER datagram.

### **Text Book:**

Programming with Java: A Primer 4th Edition by E Balagurusamy-Tata McGraw Hill-2009

<u>Unit</u>	<u>Chapters</u>
I	1, 3, 4,5,6,7
II	8.1-8.10, 9.1-9.5
III	8.11-8.16, 10, 11
IV	12, 13
V	14, 16

### **Reference Book:**

1. The Complete Reference of Java 2: Fifth Edition Herbert Schildt. Tata McGraw-Hill-2002
2. The complete reference of Java: Seven Edition Herbert Schildt. Tata McGraw-Hill-2006
3. Core java volume II - Advanced features – cay S.Horstmann, Garucornell
4. Java GUI development - Vardtanpiroumian, Sames series.
5. Java servlet programming - Jason hunter, O'reilly series.
6. Java RMI - Troy Bryan downing.

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject</b>		
<b>Subject Title : Lab V: Java Programming</b>		
Subject Code: <b>10CP53</b>	Hours per week: <b>6</b>	Credit: <b>3</b>
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *This course provides an introduction to object oriented programming (OOP) using the Java programming language.*
- ❖ *Its main objective is to teach the basic concepts and techniques which form the object oriented programming paradigm*
- ❖ *The model of object oriented programming: abstract data types, encapsulation, inheritance and polymorphism*
- ❖ *Fundamental features of an object oriented language like Java: object classes and interfaces, exceptions and libraries of object collections*
- ❖ *How to take the statement of a business problem and from this determine suitable logic for solving the problem; then be able to proceed to code that logic as a program written in Java.*

**Practical Exercise List**

1. Student mark list using Class and Object
2. Prime Number checking
3. Armstrong number checking
4. Decimal to binary
5. Type casting
6. Print pattern
7. Palindrome number checking
8. Multiplication Table
9. Matrix Manipulation
10. Ascending order using Command line arguments
11. Method overloading for Geometric shapes
12. Factorial using Recursive Function
13. Student mark list using Single Inheritance
14. Student mark list using Multilevel Inheritance
15. Student mark list using Multiple Inheritance
16. Stack Operations
17. Queue Operations
18. String Manipulation
19. User defined Exception
20. Finding mean of n numbers using package

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject</b>		
Subject Title : <b>Lab VI: Animation Lab</b>		
Subject Code: <b>10CP54</b>	Hours per week: <b>5</b>	Credit: <b>2</b>
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

1. Write a program Car moving over a Hump using C.
2. Write a program Clock using C.
3. Write a program Flying Kite using C.
4. Write a program for Bounce a ball using C.
5. Blinking Lights Graphics using CPP.
6. Mickey Mouse Programming using CPP.
7. Pari man walk and jumping using CPP.
8. Write a program to display shapes using CPP.
9. Write a program to display A Flag using CPP.
10. Write a program to display a Circle in Circle using CPP.
11. Develop an animation for Rocket Lunch using Flash
12. Develop an animation for Traffic Signal using Flash
13. Develop an animation for Flag Waving using Flash
14. Develop an animation for Festival Celebration using Flash
15. Develop an animation flying of Birds using Flash

B.Sc. Computer Science CBCS Syllabus - SEMESTER – V  
(For those who joined in June 2015 and after)

<b>PART – III : Core Subject Theory</b>		
<b>Subject Title : Software Engineering</b>		
<b>Subject Code: 10EP1A</b>	<b>Hours per week: 4</b>	<b>Credit: 4</b>
<b>Sessional Marks: 25</b>	<b>Summative Marks: 75</b>	<b>Total Marks: 100</b>

**Objectives:**

- ❖ *Knowledge of basic SW engineering methods and practices, and their appropriate application;*
- ❖ *A general understanding of software process models such as the waterfall and evolutionary models.*
- ❖ *An understanding of the role of project management including planning, scheduling, risk management, etc.*
- ❖ *An understanding of implementation issues such as modularity and coding standards.*
- ❖ *An understanding of some ethical and professional issues those are important for software engineers.*
- ❖ *development of significant teamwork and project based experience*

**Unit I: Introduction to Software Engineering:**

Some Definitions – Some Size Factors – Quality and Productivity Factors. Planning a Software Engineering Project :Defining the Problem – Developing a Solution Strategy – Planning a Development Process – Planning an Organizational Structure – Other Planning Activities.

**Unit II: Software Cost Estimation**

Software Cost Factors – Software Cost Estimation Techniques – Staffing Level Estimation – Estimation Software Maintenance Cost.

**Unit III: Software Requirements Definition**

The Software Requirements Specification - Formal Specification Techniques - Languages and Processors for Requirements.

**Unit IV: Software Design**

“Fundamental design concepts – Modules and Modularization criteria – Design Notations –Design Techniques – Detailed Design Consideration Real Time and Distributed System Design – Test Plan – Milestones, walkthroughs and inspections – Design Guidelines

**Unit V: Verification and Validation Techniques**

Quality Assurance – Walkthroughs and Inspections Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification – Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source Code Metrics.

**Text Book:**

1. Software Engineering Concepts – Richard E.Fairley; McGraw – Hill Book Company, 1985.

**Chapters – 1, 2, 3, 4, 5, 8 & 9.**

**Reference Books:**

1. Software Engineering – R.S. Pressman McGraw – Hill Book Company, 1985.
2. **Principles of Object – oriented Software Development - A.Eliens**  
Addison Wesley

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2017 and after)

<b>PART – III : Elective Subject</b>		
Subject Title : <b>Mobile Computing</b>		
Subject Code: <b>10EP1B</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To learn about the concepts and principles of mobile computing;*
- ❖ *To explore both theoretical and practical issues of mobile computing;*
- ❖ *To develop skills of finding solutions and building software for mobile computing applications*
- ❖ *Define Mobile Computing and look at current trends*
- ❖ *Distinguish between types of Mobility*
- ❖ *Examine Theory Research in Mobility*

**UNIT I: Mobile Computing and its Models**

Nomadic, Mobile, Ubiquitous Mobile Computing Architecture- Mobile Computing Technology-Adaptations-Client Proxy Server model-Thin Client model-Disconnected operation model-Dynamic client server model-Mobile Agent model.

**UNIT II: Physical Layer**

Wireless Communication-Multiplexing-Analog Modulation –Digital modulation Spread spectrum-Access Techniques.

**UNIT III: Cellular Communications and GSM**

Mobile Communication Principles-mobile telephone system using the cellular concept-cellular system architecture-cellular system components-Digital systems-Evolution of mobile telephone system- Global system for mobile communication (GSM)-GSM Network-GSM network areas-GSM specifications-GSM subscriber services.

**UNIT IV: Wireless LAN and Bluetooth**

Wireless LAN technology-Wireless LAN Problems-MACA and MACW-IEEE 802.11 Standard - Bluetooth protocol stack-Protocols in Bluetooth architecture-Bluetooth Core Protocols-Cable replacement protocol-Telephony control protocol-PPP-TCP/UDP/IP-OBEX protocol - Bluetooth usage models and Protocols.

**UNIT V: WAP and WML**



Mobile Internet-Mobile Computing and WAP-WAP Model-WAP architecture-WAP Protocol stack - WML –WML structure-WML features- WML scripts.

**Text Book:**

1. Mobile Computing- Course Material By Karnataka State Open University.

**Reference Books:**

1. Computer Networks - Andrew S.Tenenbaum , IV Edition, PHI
2. Computer Communication and Network - John Fier,Pitman
3. Data Communication and Networking - Behrouz A Forouzn III edition  
Tata McGraw Hill.
4. Data and Computer Communications – E. Stallings,PHI

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2015 and after)

<b>Part – IV : Common Subject Theory</b>		
Subject Title : <b>Environmental Studies</b>		
Subject Code: <b>ESUG51</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

2hrs/week 24hrs

**Objectives:**

- ❖ *Disseminate information of Environment of national and international issues*
- ❖ *Environmental consciousness creation among the students*
- ❖ *Facilitation of environmental leadership among students*

**Unit-I** 5 hrs

Introduction – Nature, scope and importance of Environmental studies –  
Natural Resources and conservation – forest, water and energy.

**Unit-II** 5 hrs

Ecosystem – concept – structure and function, energy flow, food chain, food  
web and ecological pyramids.

**Unit-III** 5hrs

Biodiversity – definition, types – values – India, a mega diversity zone –  
Hotspots – Endangered and endemic species – threat to biodiversity and  
conservation.

**Unit-IV** 5 hrs

Environmental pollution – Air pollution- causes and effect – Ozone  
depletion – Global warming – acid rain – Water pollution – Noise pollution – Solid  
waste management – Nuclear hazard

**Unit-V** 4hrs

Human population and the environment – Population growth – variation  
among nations – effects of population explosion – family welfare programme –  
environment and human health.

**Text Book:**

1. Environment studies – R.Murugesan (2009), Milleneum Pub. Madurai-16

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – V**  
(For those who joined in June 2015 and after)

<b>PART II – Paper I</b>		
Subject Title : <b>Competitive Examination for IT</b>		
Subject Code: <b>10SB51</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

Total number of hours: 15 hours

**Objective:**

- ❖ To provide the knowledge of quantitative aptitude for competitive exams.

**Unit-I:**

H.C.F & L.C.M of Numbers – Problems on Ages – Profit & Loss – Ratio & Proportion

**Unit-II:**

Time & Work – Time & Distance – Problems on Trains

**Unit-III:**

Calendar – Permutations & Combinations – Probability

**Unit-IV:**

Test of Reasoning(Verbal) (1 to 50 Exercise Questions) – Analytical Reasoning (1 to 20 Questions) – Test of Reasoning(Non-Verbal) ( I- 1 to 20 Questions, II- 1 to 20 Questions, III- 1 to 20 Questions, I- Figure Analogy Test- 1 to 10 Questions, II- Figure Classification Test- 16 to 26 Questions )

**Unit-V:**

Logical Reasoning (1 to 50 Questions & 101 to 110 Questions) – Computer Literacy (Objective Type): (1 to 500 Questions)

**NOTE:**

- Unit-I & Unit-II: 1 to 20 Exercise Questions from each Topic
- Unit-III: 1 to 15 Exercise Questions from each Topic

**Text Books:**

1. 1) Unit-I to Unit-III: Quantitative Aptitude for Competitive Examinations – R.S. Aggarwal Seventh Revised Edition – S.Chand & Company Pvt. Ltd., New Delhi
2. Unit-IV & Unit-V: TANCET MCA (Anna University) – V.V.K. Subburaj (Edition – 2014) – Sura College of Competition, Chennai

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI**  
**(For those who joined in June 2015 and after)**

<b>PART II – Paper I</b>		
Subject Title : <b>English for Professional Excellence</b>		
Subject Code: <b>P2LE61 / P2CE61</b>	Hours per week: <b>1</b>	Credit: <b>1</b>
Sessional Marks: <b>100</b>		Total Marks: <b>100</b>

Total number of hours: 15 hours

**Objectives:**

- ❖ *To make students face Competitive Examinations with confidence*
- ❖ *To prepare students to face interviews*
- ❖ *To make students familiar with books and authors in English literature*
- ❖ *To make students prepare resume*
- ❖ *To motivate students to participate in Group Discussion*

**Unit – I**

- Sentence Completion
- Sentence Fillers
- Synonym
- Antonym
- Idioms and Phrases
- Substitution

**Unit – II**

- Sentence Arrangement
- Jumbled sentences
- Paragraph Reconstruction
- Analogy

**Text Book** *Objective English for Competitive Examinations*, Hari Mohan Prasad Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

**Unit III**

- Interview Skills – mock – interview.
- Debate, Group Discussion, Resume Writing

**Unit IV**

- Books and authors in English literature

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI  
(For those who joined in June 2017 and after)**

<b>PART – III : Core Subject Theory</b>		
Subject Title : <b>WEB PROGRAMMING</b>		
Subject Code: <b>10CT61</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**UNIT I:**

Internet Basic – Introduction to HTML – List – Table – Linking Documents – Frames –Cascading Style Sheet –Basic Style Sheet – Style sheet Rules – Style Sheet Properties – Font – Text – List – Color and Background Color – Box Model – Display properties.

**UNIT II:**

Introduction to JavaScript – Advantage of JavaScript – JavaScript Syntax – Data type – Variable – Array – Operator and Expression – Looping – Function – Dialog Box.

**UNIT III:**

JavaScript Document Object Model – Introduction – Object in HTML – Event Handling – Browser Object – Form Object – Build in Object – User Defined Objects– Cookies.

**UNIT IV:**

Introducing PHP – Basic of PHP – Data type – Variable – Operators – Arrays – Conational Statement – Iterations

**UNIT V:**

Functions – Working with Forms – Regular Expressions – Debugging and Errors –Project specifications for PHP – Login form, Sub Registration Form with in a Database Connection in MySQL and Validation

**Text Book:**

1. Web Enable Commercial Application Development Using HTML, DHTML, JavaScript, PHP, CGI – Ivan Bayross, 4<sup>th</sup> Revised Edition, BPB Publications, 2000

**Reference books:**

1. The Complete Reference HTML and XHTML, 4<sup>th</sup> Edition, Thomas A. Powell, Tata McGraw Hall
2. Mastering PHP 4.1, Jeremy Allen and Charles Hornberger, BPB Publications

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI  
(For those who joined in June 2017 and after)**

<b>PART – III :Core Subject Lab</b>		
Subject Title : <b>LAB VII : Web Designing Lab</b>		
Subject Code: <b>10CP62</b>	Hours per week: <b>5</b>	Credit: <b>2</b>
Sessional Marks: <b>40</b>	Summative Marks: <b>60</b>	Total Marks: <b>100</b>

**Web Designing:Practical Lab List**

**HTML**

1. Create a simple webpage
  - a. Heading Element
  - b. Text Element
  - c. Logical Styles
  - d. Physical Styles
  - e. Ordered, Unordered and Definition List
  
2. Hyper Links
  - a. Image Link → Link to page containing Images and Video
  - b. File Link → Time Table
  - c. Single Link → Ex. No. 1 HTML Page
  
3. Use frames
  - a. Navigation Frame
  - b. Floating Frame
  - c. Inline Frame
  
4. Registration Form with Table

**CSS**

5. Add a Cascading Style sheet for designing the web page
  - a. Inline Style Sheet
  - b. Internal Style Sheet
  - c. External Style Sheet

**Script Language**

6. Use user defined function to get array of values and sort them in ascending order
  
7. Calendar Creation: Display all month

8. Event Handling
  - a. Validation of Registration Form
  - b. Change Colour of background at each click of button or refresh of a page
  - c. Display calendar for the month and year selected from combo box
  - d. OnMouseOver event

### **PHP and MySQL**

9. User Authentication using Cookies
  - a. Create a Cookie and add these four user ID's and passwords to this Cookie.
  - b. Read the user id and password entered in the Login Form and authenticate with the values available in the cookies
10. User Registration
  - a. Creating a following field:  
Name, Password, E-mail ID, Phone Number, Sex, DOB, Language and Address from webpage
  - b. Store the information in a database and Modify and Delete for a Registration with the specified by the user

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – VI**  
(For those who joined in June 2017 and after)

<b>PART – III : Elective Subject</b>		
Subject Title : <b>Data Mining and Data Warehousing</b>		
Subject Code: <b>10EP2A</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *This course covers the basics of Data mining and its functionalities*
- ❖ *Covers on line analytical processing*
- ❖ *Covers the different types of techniques and tools*

**Unit I: Introduction:**

What motivated data mining? – What is data mining? -Data mining - on what kind of data? – Data mining functionalities – are all of the patterns interesting? – Classification of data mining systems – major issues in data mining

**Unit II:Data warehouse and OLAP technology for data mining:**

What is data warehouse? – A multidimensional data model – data warehouse architecture – data warehouse implementations – further development of data cube technology - from data warehouse to data mining.

**Unit III: Concept description:**

What is concept description? Data generalization and summarization based characterization – analytical characterization: analysis of attribute relevance – mining descriptive statistical measures in large databases.

Mining association rules in large databases: Association rule mining – mining single dimensional Boolean association rules form transactional databases – mining multilevel association rules form transactional databases.

**Unit IV: Classification and prediction:**

What is classification? - What is prediction? – Issues regarding classification and prediction – classification by decision tree induction – Bayesian classification – classification by back propagation – prediction – classifier accuracy.

Cluster analysis: What is cluster analysis? – Types of data in cluster analysis – a categorization of major clustering methods.

**Unit V: Applications and trends in data mining**

Data mining applications – data mining system products and research prototypes - additional themes on data mining – social impacts of data mining – trends in data mining. An introduction to DBMiner.

**Text Book:**

1. Jiawei Han, Michelin Kamber, “Data mining: concepts and techniques “, Morgan Kaufmanns publishers – 2001.

**Chapters:** 1,2,3,4,5,6,7,8



B.Sc. Computer Science CBCS Syllabus - **SEMESTER – VI**  
(For those who joined in June 2015 and after)

<b>PART – III : Elective Subject</b>		
Subject Title : <b>Digital Image Processing</b>		
Subject Code: <b>10EP2B</b>	Hours per week: <b>4</b>	Credit: <b>4</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *Covers the area of digital image processing*
- ❖ *Covers the transformation methods*
- ❖ *Gives the image segmentation and data compression and it's techniques*

**UNIT I: Introduction:**

Applications of digital image processing, Overview of image processing and computer vision systems, Different types of image representation and storage, Multimedia applications.

**Image Perception:**

Light, luminance, brightness and contrast, the visibility function, Monochrome vision models, Color coordinate systems, Color vision models.

**UNIT II:**

**Image Transforms:**

Two-dimensional spatial transforms, Intensity transforms, Morphological transforms, Image transform masks, Morphing and Warping.

**Image Enhancement:**

Point operations, Histogram modelling, Spatial operations, Transform operations, Multi spectral image enhancement.

**UNIT III: Edge detection:**

Gradient operators, Laplace operators, Boundary representation, Boundary extraction.

**UNIT IV: Region and Shape representation:**

Run-length codes, Quad-trees, Geometrical features, moment-based features, Fourier descriptors, Hough transforms.

**UNIT V: Image segmentation:**

Amplitude thresholding and window slicing, Component labelling, Thresholding and clustering, Boundary based approaches, Template matching, Texture segmentation.

**Image data compression**

1. Pixel coding, Transform coding, Wavelet coding, JPEG and MPEG systems.

**References:**

1. A.K.jain, Fundamentals of Digital Image Processing, Prentice-Hall (1990).
2. D. Phillips, Image Processing in C, R & D Publications Inc., (1997).
3. W.K. Pratt, Digital Image Processing, John Wiley.  
E.L. Hall, Computer Image Processing and Recognition, Academic Press.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI  
(For those who joined in June 2015 and after)**

<b>PART – III : Core Subject - Project &amp; Viva-Voce</b>		
Subject Title : <b>Project &amp; Viva – voce</b>		
Subject Code: <b>10PV61</b>	Hours per week: <b>8</b>	Credit: <b>4</b>
Sessional Marks:	Summative Marks: <b>100</b>	Total Marks: <b>100</b>

The students will collect data for their project work during summer vacation at the end of Fourth Semester as preliminary work to proceed their Project at the Sixth Semester.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI**  
**(For those who joined in June 2015 and after)**

<b>PART – IV : Common Subject Theory</b>		
<b>Subject Title : Value Education</b>		
Subject Code: <b>VEUG61</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**UNIT I: The heart of Education**

Introduction – Eternal Value – Integrated approach to value education - one for all and all for one – Responsibilities of a citizen – Habit Vs wisdom – purifying mind pollution – Respect for all Religions – Parents, teachers and fellow students – The need and benefit of exercise and meditation for students.

**UNIT II: The Value of Body and Life Energy**

Introduction – what are the causes for pain, Disease and death? Three Basic needs for all living Beings – Personal Hygiene Five Factors of Balance in Life – The need and benefits of physical Exercise – The value and Base of Life energy – The value and Base of Bio-magnetism - You are your own best caretaker.

**The Marvelous nature of mind**

Introduction- Bio-magnetism – The base of the mind – characterisation of the Genetic Centre – mental frequency – practice for a creative mind - benefits of meditation.

**UNIT III: Analysis of Thought**

Introduction – An Exposition on the nature of thought– six roots for thoughts – Introspection for analysis of thoughts-practical techniques for analysis of thoughts.

**Benefits of Blessings**

Effects of good vibrations – Make Blessing a Daily Habit

**UNIT IV: Moralisation of Desire**

Introduction – moralization of desire - Analyse your desires – Summary of practice.

**Neutralisation of Anger:**

Introduction – meaning – characteristics of Anger – Anger is a Destructive emotion – Anger spoils our relationship with others – Some common misconception about anger – will power and method success through awareness – method of neutralisation of anger.

**UNIT V: Eradication of Worries**

Worry is a mental disease – Nature’s Law of cause and effect – factors beyond our control – How to deal with problems – analyse your problem and eradicate worry

**Harmonious Relationships**

Introduction – Three angles of life – The value of harmony in personal relations – Love and Compassion – pleasant face and loving words – appreciation and gratitude to parents and teachers – Bringing needed reforms in educational institutions – Why should we serve others? Brotherhood – A scientific Basis for Universal Brotherhood protection of the environment – non-violence and the fivefold moral culture.

**Text Book: Value Education for Health, Happiness and Harmony**

(Based on the Philosophy and Teachings of Swami Vethanthiri Maharisi)  
Published By: Brain Trust, Aliyar A Wing of World Community Service Centre

B.Sc. Computer Science CBCS Syllabus - **SEMESTER – VI**  
(For those who joined in **June 2015** and after)

<b>PART – IV : Skill Based Subject</b>		
Subject Title : <b>PC Hardware and Trouble Shooting</b>		
Subject Code: <b>10SB61</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objective:**

- ❖ *To know about real time hardware devices*
- ❖ *Assembling the hardware components*
- ❖ *To find out the technical problems in trouble shooting manner*

**UNIT – I: PC HARDWARE OVERVIEW:**

Introduction – Basic parts of PC – Functional block diagram – System board – Microprocessor – Interrupts – DMA – SMPS – BIOS – POST Sequence configuration – Memory – Mass storage – I/O interface standards.

**UNIT – II: BUS STANDARDS AND NETWORKING:**

ISA – PCI –SCSI –IDE – USB – Comparative study and characteristics – Network Interface Cards – Cables and connections – Modem – AT command set.

**UNIT – III: PERIPHERAL DEVICES AND DISPLAY ADAPTERS:**

Functional descriptions of keyboard – mouse – printers – joystick – scanners – CGA- SVGA

**UNIT – IV: MASS STORAGE DEVICES:**

Floppy disk and drive – Hard disk and drive – MFM and RLL recording standards – CD technology – DVD technology – pen drives – tape drives.

**UNIT – V: TROUBLESHOOTING & TOOLS:**

Circuit Emulators – Logic State/Timing – Analysers – Digital Multimeters – CROs – Signature Analysers – Troubleshooting Problems of System boards, add on cards and peripherals.

**Text Book:**

1. Hans Peter Messmer, “Indispensable PC Hardware Book”, Pearson Education, 4<sup>th</sup> edition 2003.
2. Govindarajulu, “IBM PC and Clones”, Tata McGraw Hill, 3<sup>rd</sup> Edition.

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI**  
**(For those who joined in June – 2015 and after)**

<b>Part IV – Skill Based Subject</b>		
<b>Subject Title: DTP</b>		
Subject Code: <b>10SB62</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *The overall objective of this course is to study about Desk Top Publishing with practical experience within the domains of technology, creativity and enterprise.*
- ❖ *These include Graphic Design, Animation & Photography.*
- ❖ *Students are encouraged to choose their own route, allowing them to specialise in the area of most interest to them.*

**Unit-I: Adobe Photoshop**

Introduction – Exploring the New Interface – Working with commonly used Photoshop tools – Getting familiar with Palettes, Images and Selection – Comparing Bitmap and Vector images – Understanding image resolution – Editing images – Making colour adjustments – Exploring file formats in Photoshop – Working with Selection tools

**Unit-II: Drawing, Painting and Retouching Tools**

Setting the current fore ground and back ground colours – Exploring colour pickers dialog box using eye dropper tool – The colour palette – Using colour replacement tools – Healing brush tools – Path tool clone stromp tool – Erasers tool – Background eraser tool – Magic eraser tool

**Unit-III: Layers**

Exploring the layers palette – Working with layers – Creating a new layers – Hiding and showing layers – Deleting layers – Applying blend modes – Using type masking – Using shape masking

**Unit-IV: Corel Draw X4**

Introduction – Getting started with Corel Draw – Exploring the workspace of Corel Draw – Drawing basic geometric figures – Saving and opening an existing document – Previewing the drawing – Working with page layout – Closing the drawing and quitting Corel Draw.

**Working with Lines:**

Drawing a curve – Drawing calligraphic outline tool – Defining lines and outlines setting – Creating a calligraphic outline – Adding an Arrowhead

**Unit-V: Working with Objects**

Selecting and Deselecting objects Deleting, Sizing, Rotating, Combining Objects – Grouping in Corel Draw, Grouping Object, Ungrouping Object – Applying convert to curve command on Objects – Selecting colour for an Object – Filling Objects.

**Working with Text**

Types of Text – Converting text from one type to another – Changing the appearances of Text – Applying effects to the Text – Wrapping Paragraph text around Objects – Fitting Text to an Object’s path – Converting Text to an Object using Curve command.

**Text Book:** 1. Comdex 9–in–1 DTP Course Kit – Vikas Gupta

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI  
(For those who joined in June – 2017 and after)**

Part IV – Skill Based Subject		
Subject Title: <b>Cryptography and Network Security</b>		
Subject Code: <b>10SB63</b>	Hours per week: <b>2</b>	Credit: <b>2</b>
Sessional Marks: <b>25</b>	Summative Marks: <b>75</b>	Total Marks: <b>100</b>

**Objectives:**

- ❖ *To study about security threats*
- ❖ *To study about Encryption and decryption of data*
- ❖ *To learn about network security*

**Unit-I:**

Overview: Computer Security concepts – OSI security architecture – Security attacks – Security services – Security mechanisms

**Unit-II:**

Classical Encryption Techniques: Substitution techniques – Transposition techniques – Steganography Advanced Encryption Standard: AES structure – AES transformation functions – AES key expansion – AES example

**Unit-III:**

Applications of Cryptographic Hash functions: Message authentication requirements – Message authentication functions – Digital signatures – Digital signature standards – Other applications

**Unit-IV:**

Network and Interface Security: Transport Level Security – Wireless Network Security – Electronic Mail Security – IP Security

**Unit-V:**

System Security: Intruders – Malicious software – Firewalls – Legal and Ethical issues

**Text Book:**

1. Cryptography and Network Security Principles and Practice – William Stallings 5<sup>th</sup> Edition, Pearson

**Reference Books:**

- 1) Denning, D.E.R., “Cryptography and Data Security”, Addison-Wesley 1993.
- Schneier, B., “Applied Cryptography: Protocols, Algorithms and Source code in C”, John Wiley & Sons, 1993
- 2) Held, G., “Top Secret: Data Encryption Techniques”, Sams Publishing, 1993.
- Luby, M.G., “Pseudorandomness and Cryptographic Applications”, Princeton University, Press, 1996
- 3) Pfitzmann, B., “Digital Signature Schemes: General Framework and Fail-Stop Signatures”, Springer, 1996.
- 4) Smith, R.E., “Internet Cryptography”, Addison-Wesley, 1997

**Note: Industrial Visit**

**B.Sc. Computer Science CBCS Syllabus - SEMESTER – VI  
(For those who joined in June 2015 and after)**

<b>PART – V : Common Subject Theory</b>		
<b>Subject Title : Extension Activities</b>		
Subject Code: <b>EAUG61</b>	Hours per week:	Credit: <b>1</b>
Sessional Marks:	Summative Marks: <b>100</b>	Total Marks: <b>100</b>

**UNIT-I: Community Development-I:**

Definition – structure and composition – community based issues – need for awareness – Developmental Programmes.

**UNIT – II: Community Development–II:**

Rural Scenario – need of the Community – need for the community service – role of youth in community building – communal harmony – literacy – Educational Recreation.

**UNIT – III: Volunteer Empowerment:**

Women’s Emancipation – formation of Youth Clubs – Self-Help Groups – Youth and Development.

**UNIT – IV: Social Analysis:**

Social issues – cultural invasion – media infiltration – human rights Education/Consumer Awareness – Adolescents Reproductive – HIV/AIDS/STD – Social harmony/National integration – Blood Donation.

**UNIT – V: Introduction to NSS:**

Basic Concepts – profile – aims – objectives – symbol – Motto – structure – Regular activities – Special Camping Programme – Adventure Programme – National Days and Celebrations.(Applicable to NSS Students)

(OR)

**NCC** - Origin – Organisation – Ministry of Defence – Armed forces – commands – Defence establishments in Tamil Nadu Civil Defence – Aid to civil authorities – Disaster management – Leadership – Man management – Adventure activities – Social service

**Reference Book:** National Service Scheme Manual (Revised), Ministry of Human Resources Development, government of India.