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#### THE NATIONAL COLLEGE BASAVANAGUDI, BENGALURU- 04 AUTONOMOUS Website: www.ncbgudi.com

**DEPARTMENT OF COMPUTER SCIENCE** 

# Bachelor of Computer Applications BCA Regulations, Scheme & Syllabi

# Semesters I to VI

Revised w.e.f.

Academic Year 2019-2020 and onwards

Department of Computer Science | 1

#### 1. Eligibility:

A candidate who has passed the two year Pre-University Examination conducted by the Karnataka Pre-University Education Board or any other examination considered as equivalent thereto or JODC / Three years Diploma in Engineering of Government of Karnataka or any other examination considered as equivalent thereto shall be eligible for admission.

### **2. Maximum period for completion of the programmes:**

The candidate shall complete the programme within the period as prescribed in the regulation governing the maximum period for completing various degree programmes from the date of admission. It is generally twice the number of years of the programme. The term completing the programme means passing all the prescribed examinations of the programme to become eligible for the degree.

### 3. Medium of instruction:

The medium of instruction and examination shall be English.

### 4. Attendance:

A candidate shall be considered to have satisfied the requirement of attendance for a semester if she **attends not less than 75%** of the number of classes actually held up to the end of the semester in each of the subjects. If a candidate represents the Institution/State/Nation in sports/N.S.S./N.C.C./cultural or any officially sponsored activities he/she may be permitted to claim attendance for actual number of days participated, based on the recommendation of the Principal.

## **5.** Continuous Internal Assessment (CIA):

## (i) Core Course (Subjects with Practicals):

The break-up of marks for subjects is as follows:

Theory End Semester Examination of duration**3 hours = 70 marks** 

## Theory CIA **=30 marks**

Theory CIA of 30 marks comprises of **one test conducted for 1 ½ hours for 30 marks, scaled down to 15 marks, assignment or project = 10 marks, attendance = 5 marks.** 

Practical End Semester Examination, duration **3 hours = 35 marks** Practical CIA =**15 marks(tests or pre-final = 10 marks, and attendance = 5 marks)**  Practical ESE and CIA marking scheme will be decided by the respective Departments and approved by the Board of Studies.

#### (ii) <u>Marks for attendance:</u>

96 % and above = 5 marks , 91 – 95% = 4 marks , 86 – 90 % = 3 marks 81 – 85 % = 2 marks , 76 – 80% = 1 mark

- A candidate with 75% attendance is permitted to take up the End Semester Examination, but will not be given any marks for attendance.
- The marks of the Continuous Internal Assessment shall be published in the notice board/student portal of the college for information of the students.
- The Continuous Internal Assessment marks shall be communicated to the Controller of Examinations at least 10 days before the commencement of the End Semester Examinations and the Controller shall have access to the records of such periodical assessments.
- Continuous Internal Assessment marks shall be shown separately in the marks card. A candidate who has failed in a particular Semester shall retain the original marks.

#### 6. End Semester Examination:

Notification for the End Semester Examination will be issued 30 days before the commencement of the examination.

Students are required to pay the prescribed fee and submit the application form at the office of the Controller of Examinations (COE) within the dates notified.

Students, who do not pay the prescribed end semester examination fee for any semester, shall repeat the semester.

A student who has failed in a subject can attempt the same 3 times.

Practical examination will be conducted before the commencement of the theory examination.

#### 7. Results:

Provisional Results of each semester will be announced within Ten days after the completion of the examinations.

Semester Marks Cards will be issued within 15 days of the announcement of results.

Request for Re-valuation should be made within 5 days from the date of declaration of result along with the fee notified by the Controller of Examinations.

8. Declaration of Results:

Minimum to pass overall 40%:

Theory:24/70Internal Assessment: 11/30

Practicals: 13/35 Internal Assessment 5/15

## **BCA Programme Outcome**

## The BCA Programme enables students to:

- 1. Employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur with a zest for higher studies.
- 2. Provide socially acceptable technical solutions to complex computer science problems with the application of modern and appropriate techniques for sustainable development relevant to professional engineering practice.
- 3. Comprehend and write effective project reports in a multidisciplinary environment in the context of changing technologies.
- 4. Apply the knowledge of ethical and management principles required to work in a team as well as to lead a team.
- 5. Develop an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- 6. Ability to understand the principles and working of computer systems. Students can assess the hardware and software aspects of computer systems.
- 7. Aability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.
- 8. The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success and to demonstrate basic knowledge of Database System, Software Engineering, Computer Networking and Operating System for software applications.
- 9. Ability to apply mathematical methodologies to solve computation task, model real world problem using appropriate data structure and suitable algorithm.
- **10.** Ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations

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BCA Course Matrix							
		I Semester BO	CA				
Dent	Calla		Hound	Marks			Credite
Part	Loae	Course(Subject)	110015	IA	Exam	Total	Creats
	LBCK-C1	Kannada-I					
	LBCH-C1	Hindi-I		30	70	100	2
Part-1	LBCS-C1	Sanskrit-I	4				2
	LBCA-C1	Additional English-I					
	LBCE-C1	English-I	4	30	70	100	2
	1BC-C1	Mathematical Foundation for Computer Applications	4	30	70	100	4
	1BC-C2	Fundamentals of Accounting	4	30	70	100	4
Dout 2	1BC-C3	Programming in C	4	30	70	100	4
Part-2	1BC-C4	Computer Organization and Architecture	4	30	70	100	4
	1BC-P1	Programming in C Lab	3	15	35	50	1
	1BC-P2	Computer Application Lab	3	15	35	50	1
		<b>Total Marks &amp; Credits</b>		240	560	800	25

II Semester BCA							
Part	Code	Course(Subject)	Hours	Marks			Credits
Tart	coue	Course(Subject)	nours	IA	Exam	Total	creatis
	LBCK-C2	Kannada-II					
	LBCH-C2	Hindi-II	4	30	70	100	2
Part-1	LBCS-C2	Sanskrit-II	-			100	_
	LBCA-C2	Additional English-II					
	LBCE-C2	English-II	4	30	70	100	2
	2BC-C1	Numerical and Statistical Methods	4	30	70	100	4
	2BC-C2	Data Structures Using C	4	30	70	100	4
Part-2	2BC-C3	Object Oriented Programming Using C++	4	30	70	100	4
	2BC-C4	Operating System	4	30	70	100	4
	2BC-P1	Data Structure Lab Using C	3	15	35	50	1
	2BC-P2	C++ Lab	3	15	35	50	1
Part-3	MC1	Indian Constitution & Human Right	2	15	35	50	1
	Total Marks & Credits         240         560         800         25				25		
U							

III Semester BCA								
Part	Code	Course(Subiect)	Hours	Hours			Credits	
				IA	Exam	Total		
	LBCK-C2	Kannada-III	4	30	70	100	2	
Part-1	LBCH-C3	Hindi-III	4	30	70	100	2	
	LBCS-C3	Sanskrit-III						
	LBCA-C3	Additional English-III						
	LBCE-C3	English-III						
	3BC-C1	Java Programming	4	30	70	100	4	
	3BC-C2	Unix Operating System	4	30	70	100	4	
	3BC-C3	Database Management Systems	4	30	70	100	4	
Part-2	3BC-C4	VB.Net Programming	4	30	70	100	4	
	3BC-P1	Unix Lab	3	15	35	50	1	
	3BC-P2	VB.Net and SQL Lab	3	15	35	50	1	
	3BC-P3	Core Java Lab	3	15	35	50	1	
	MC2	Human Resource Management	2	15	35	50	2	
Part-3	OE	Open to the students of Other Disciplines	2	15	35	50	1	
		Total Marks & Credits		270	630	900	28	

IV Semester BCA							
Part	Code	Course(Subject)	Hours	Marks			Credite
Tart	coue	course(subject)	110015	IA	Exam	Total	creatis
	LBCK-C4 Kannada-IV						
	LBCH-C4	Hindi-IV	4	30	70	100	2
Part-1	LBCS-C4	Sanskrit-IV	-	00		100	2
	LBCA-C4	Additional English-IV					
	LBCE-C4	English-IV	4 3	30	70	100	2
	4BC-C1	Design and Analysis of Algorithms	4	30	70	100	4
	4BC-C2	Python	4	30	70	100	4
	4BC-C3	Software Engineering	4	30	70	100	4
Part-2	4BC-C4	Computer Graphics	4	30	70	100	4
	4BC-P1	Python Lab	3	15	35	50	1
	4BC-P2	Computer Graphics Lab	3	15	35	50	1
	4BC-P3	Mini Project	3	15	35	50	1
Part-3	MC3	Value Education	2	15	35	50	2
i ui t o	SD	Skill Development	2	15	35	50	1
		Total Marks & Credits		270	630	900	28

V Semester BCA								
Part	Code	Course(Subject)	Hours	Marks			Credits	
1 ui t	coue			IA	Exam	Total		
	5BC-C1	Internet Technologies	4	30	70	100	4	
	5BC-C2	Artificial Intelligence	4	30	70	100	4	
	5BC-C3	Computer Networks	4	30	70	100	4	
Dart-2	5BC-C4	Web Application Development	4	30	70	100	4	
r al t-2	5BC-C5	Cloud Computing	4	30	70	100	4	
	5BC-P1	Internet Technologies Lab	3	15	35	50	1	
	5BC-P2	Web Application Development Lab	3	15	35	50	1	
	5BC-P3	Simulation Project Lab	3	15	35	50	1	
Part-3	MC4	Communicative English	2	15	35	50	50 1	
Total Marks & Credits         225         525         750         26						26		
VI Semester BCA								
Part	Code	Course(Subject)	Hours	Marks		Credits		
				IA	A Exam Tota	Total		
						Total		
	6BC-C1	TCP/IP	4	30	70	100al	4	
	6BC-C1 6BC-C2	TCP/IP Network Security	4 4	30 30	70 70	100 100	4	
	6BC-C1 6BC-C2 6BC-C3	TCP/IP Network Security Mobile Computing and Wireless Technologies	4 4 4	30 30 30	70 70 70	100 100 100	4 4 4	
Part-2	6BC-C1 6BC-C2 6BC-C3 6BC-C4	TCP/IPNetwork SecurityMobile Computing and Wireless TechnologiesObject Oriented Analysis and Design	4 4 4 4	30 30 30 30	70 70 70 70	IOUA           100           100           100           100           100	4 4 4 4 4	
Part-2	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5	TCP/IP         Network Security         Mobile Computing and Wireless         Technologies         Object Oriented Analysis and Design         Business Analytics	4 4 4 4 4 4	30 30 30 30 30	70 70 70 70 70 70	IODA           100           100           100           100           100           100           100	4 4 4 4 4 4	
Part-2	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1	TCP/IPNetwork SecurityMobile Computing and Wireless TechnologiesObject Oriented Analysis and DesignBusiness AnalyticsBusiness Analytics Lab	4 4 4 4 4 3	30 30 30 30 30 30 15	70 70 70 70 70 35	100       100       100       100       100       50	4 4 4 4 4 4 4 1	
Part-2	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2	TCP/IPNetwork SecurityMobile Computing and Wireless TechnologiesObject Oriented Analysis and DesignBusiness AnalyticsBusiness Analytics LabProject Work	4 4 4 4 4 3 6	30 30 30 30 30 15 30	70 70 70 70 70 35 70	100a       100       100       100       100       50       100	4 4 4 4 4 4 1 2	
Part-2 Part-3	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2 MC5	TCP/IPNetwork SecurityMobile Computing and Wireless TechnologiesObject Oriented Analysis and DesignBusiness AnalyticsBusiness Analytics LabProject WorkEnvironmental Science	4 4 4 4 3 6 2	30 30 30 30 30 30 15 30 15	70 70 70 70 70 35 70 35	100a         100         100         100         100         100         50         50	4 4 4 4 4 1 2 1	
Part-2 Part-3	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2 MC5	TCP/IP  Network Security  Mobile Computing and Wireless Technologies  Object Oriented Analysis and Design  Business Analytics Business Analytics Lab  Project Work  Invironmental Science  Total Marks & Credits	4 4 4 4 3 6 2	30 30 30 30 30 15 30 15 225	70 70 70 70 70 35 70 35 525	100a         100         100         100         100         100         100         100         100         50         50         750	4 4 4 4 4 1 2 1 26	
Part-2 Part-3	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2 MC5	TCP/IPNetwork SecurityMobile Computing and Wireless TechnologiesObject Oriented Analysis and DesignBusiness AnalyticsBusiness Analytics LabProject WorkEnvironmental ScienceTotal Marks & Credits	4 4 4 4 3 6 2	30 30 30 30 30 15 30 15 225	70 70 70 70 35 70 35 525	100a         100         100         100         100         100         100         100         100         50         750	4 4 4 4 1 2 1 2 1 26	
Part-2 Part-3	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2 MC5	TCP/IP Network Security Mobile Computing and Wireless Technologies Object Oriented Analysis and Design Business Analytics Business Analytics Lab Project Work Environmental Science Total Marks & Credits	4 4 4 4 3 6 2	30 30 30 30 30 15 30 15 225	70 70 70 70 35 70 35 525	100a         100         100         100         100         100         100         50         50         750	4 4 4 4 1 2 1 2 1 26	
Part-2 Part-3	6BC-C1 6BC-C2 6BC-C3 6BC-C4 6BC-C5 6BC-P1 6BC-P2 MC5	TCP/IP Network Security Mobile Computing and Wireless Technologies Object Oriented Analysis and Design Business Analytics Business Analytics Lab Project Work Environmental Science Total Marks & Credits	4 4 4 4 3 6 2	30 30 30 30 30 15 30 15 225	70 70 70 70 35 70 35 525	100a         100         100         100         100         100         100         100         50         750	4 4 4 4 4 1 2 1 26	

# First Semester B.C.A

I Semester BCA							
Dort	Cada	Course (Subject)	Hours	Marks			Credits
Part	Code	Course(Subject)	nours	IA	Exam	Total	creats
	LBCK-C1	Kannada-I					
	LBCH-C1	Hindi-I		30	70	100	2
Part-1	LBCS-C1	Sanskrit-I	4		70	100	Z
	LBCA-C1	Additional English-I					
	LBCE-C1	English-I	4	30	70	100	2
	1BC-C1	Mathematical Foundation for Computer Applications	4	30	70	100	4
	1BC-C2	Fundamentals of Accounting	4	30	70	100	4
Dont 2	1BC-C3	Programming in C	4	30	70	100	4
Part-2	1BC-C4	Computer Organization and Architecture	4	30	70	100	4
	1BC-P1	Programming in C Lab	3	15	35	50	1
	1BC-P2	Computer Application Lab	3	15	35	50	1
		Total Marks & Credits		240	560	800	25

The National College, Autonomous, Basavanagudi, Bengaluru-04	
LBSK-C1 : ಕನ್ನಡ ೧– Kannada I	
Lecture Hrs: 54Internal Marks: 30Exam Marks	: 70
Objectives:	
ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ಪರಿಚಯಿಸುವುದರೊಂದಿಗೆ, ಸ್ಪಷ್ಟ ಓದು ಮತ್ತು ಬರಹದೊ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಭಾಷೆಯನ್ನು ಕಲಿಸುವುದು. ಹಾಗೂ ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಪರಿಣಿತಿ ಸಾಧಿಸಿಕೊಳ್ಳು ಪ್ರೇರಿಪಿಸುವುದು.	ಂದಿಗೆ ,ವಂತೆ
	ವನ್ನು
ಮಾಡುವುದು. ಪರಿಸರ ಎಂಬ ಪರಿಕಲ್ಪನೆಯ ಮೂಲಕ ಪರಿಸರದ ಬಗೆಗೆ ಅರಿವುವನ್ನುಂಟು ಮಾಡು	ವುದು
ಮತ್ತು ಅದನ್ನು ಬೆಳೆಸಲು ಪ್ರೋತ್ಸಾಹಿಸುವುದು. ಆಧುನಿಕ ಪರಿಕಲ್ಪನೆಗಳು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಜಿ	ೇವನ
ಮೌಲ್ಯಗಳನ್ನು ರೂಪಿಸುವಂತೆ ಬೋಧಿಸುವುದು. ವ್ಯವಸ್ಥೆಯಲ್ಲಿನ ಸಾಮಾಜಿಕ ತಾರತಮ್ಯಗಳ	ಬಗೆಗೆ
ಅರಿವನ್ನುಂಟುಮಾಡಿ ಸಾಮಾಜಿಕ ಸಮಾನತೆಗಾಗಿ ಪ್ರೇರೇಪಿಸುವುದು. ವಿಜ್ಞಾನ ಲೇಖನಗಳ ಮ	ೂಲಕ
ವಿದ್ಯಾರ್ಥಿಗಳೀಗೆ ವೈಜ್ಞಾನಿಕ ಆಲೋಚನೆಯನ್ನು ಉಂಟುಮಾಡುವುದು.	
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1. ಜನ್ನನ ಯಶೋಧರ ಚರಿತೆ ಪ್ರವೇಶ–ಅಕ್ಷರ ಪ್ರಕಾಶನ, ಹೆಗ್ಗೋಡು.	
2. ವಿನಯ–ದ.ರಾ.ಬೇಂದ್ರೆಯವರ ಆಯ್ದ ಕವನಗಳ ಸಂಕಲನ. ಪ್ರಕಾಶನ–ಶ್ರೀಮಾತಾ ಪ್ರಕಾಶನ ಹುಬ್ಬಳ್ಳಿ.	
3. ನನ್ನದೇವರು ಮತ್ತು ಇತರ ಕತೆಗಳು– ಕನ್ನಡ ಮತ್ತು ಸಂಸ್ಕೃತಿ ನಿರ್ದೇಶನಾಲಯ ಬೆಂಗಳೂರು.	
4. ಅವರು ಮರಾವೆಗಳನ್ನು ಕೇಳುತ್ತಾರೆ–ಪ್ರತಿಭಾನಂದಕುಮಾರ್, ಮಹಿಳಾ ಸಾಹಿತ್ಯಕ ನವನಗರ ಹುಬ್ಬಳ್ಳಿ.	

5. ಅನುವಾದ –ಖಾದ್ರಿಶಾಮಣ್ಣ–ಚಿಂತನಾ ದೀಪ್ತಿ ಪ್ರಕಾಶನ ಬೆಂಗಳೂರು.

- 6. ಪ್ರಾಚೀನ ಕಾವ್ಯಮಾರ್ಗ ೪-ಸಂ.ಪ್ರೊ.ಶಿವರಾಮಯ್ಯ ಮತ್ತು ಡಿ.ಲಿಂಗಯ್ಯ, ಪ್ರಸಾರಾಂಗ ಬೆಂ.ವಿ.ವಿ.
- 7. ಸಾಹಿತ್ಯ ಸಂವಾದ ೧-ಸಂಪಾದನೆ-ಬಸವರಾಜ ಕಲ್ಗುಡಿ-ಪ್ರಸಾರಾಂಗ ಬೆಂ.ವಿ.ವಿ.

# **LBCH-C1 : Hindi : "**गद्यामृत"

Lecture Hrs : 54	Internal I	Marks : 30	Exam Marks : 70
Course Objective: Understan	nd the impo	rtance & value	of the Hindi language.
Explanation about prose, poer	m & novel w	vith the features.	Get the idea about
Hindi language.	property.	onderstand the	importance of studying
युनिट - १ : सती।			9 Hours
लेखिकाशिवानीबाकीतीनमहिला	ओंकाचरित्र,		
एकमहाराष्टीदूसरीपंजाबीऔरतीर	सरीमादलसा3	गेंकापरिचय।कथाव	काविवरण।
युनिट-२ : कवितासबसेसुंदरसपन	नाहै।		9 Hours
लेखकडॉ. ए.			
अविन्दाक्षनकापरिचय।कवितानि	नर्माणहोनेकेस	ाहित्यकऔरविवर <b>प</b>	गात्मकपरिचय।
युनिट-३ : मदरतेरेसा।			9 Hours
लेखिकाआशारानीव्होराकीपरिचय	य।मदरतेरेसावे	नजीवनवृत्तांतकाप	ारिचय।
युनिट-४ : यादोंमें उभरताइंन्द्रप्रस्	थ।		9 Hours
लेखकमहेश्वरदयालदुबेकापरिचय	य।नईदिल्लीके	इतिहासकाविवरण	ГІ
युनिट-५ : खुशामद।			9 Hours
लेखकप्रभाकरमाचवेकापरिचय। र	बुशामदकेतरी	कोपरव्यंग्यात्मर्का	वेवरण।
निट - ६ : रचना।			9 Hours
वैज्ञानिकशब्दावलीऔरअनुच्छेदत	लेखनकाविवर	ण।	
Text Books			
1.''गद्यामृत''संपादकडॉ.एस.सी	हिरेमठऔरडॉ	<u>.</u>	
एन.मंजुला।प्रकाशकऔरमुद्रकःप्र	सारंगबेंगलूर्रा	वेश्वविद्याल्य, बं	ेगलूरु।
Reference Books	• •	<b>a a</b> :	
<ol> <li>हिन्दीव्याकरणप्रबोधएवरचन</li> </ol>	।।संपादक डॉ.	विजयपालसिंह।प्र	काशकऔरमुद्रक :
समग्रविकासप्रकाशन, इलाहबाद	71		

#### The National College, Autonomous, Basavanagudi, Bengaluru-04

LBCS-C1 Sanskrit I
Lecture Hrs : 54Internal Marks : 30Exam Marks : 70
Course Objective :The main objective of the course is to impart knowledge in classical
language through literature. The study trains learner in appreciating aesthetics. The study
of Sanskrit poetry helps the student in sharpening creative abilities in all disciplines.
<b>Unit-I:</b> Introduction of Kavya, its division, Drishya Kavya and Shravya <b>16</b>
kavya, Gadhya, Padhya, Champu, Drishya kavya and its division, Shravya Hours
kavyaand its division, Katha and Akhyayika, Maha kavya and Kanda kavya
Unit - II : Selected portions of veda, its division, its evolution, Upanishad, it16is last part of vedic literature and also called Vedanta, important upanishadsHours
Unit-III : Maha kavya, five Maha kavyas. Characteristics of Maha kavya,16puranas and classical poetry, Champu, the characteristics of ChampuHoursliterature, Panchathantra and HithopadeshaHours
Unit - IV: Translation of unseen passages and comprehension6Hours
Text Book :

History of Sanskrit Literature by Vidhwan Ananthachar & by Pandit Ranganathan

# LBCA Additional English I

Lecture Hrs: 54	Internal Marks: 30	Exam Marks: 70
Literature		27 Hours
<ol> <li>The Rogue - Atulanan</li> <li>The Unpalatable Offe</li> <li>The Letter - G G J Dhu</li> <li>The Taxi Driver - K S</li> <li>Nila - Vijay Nambisan</li> <li>Our Casuarina Tree -</li> <li>Moonrise - Savithri R</li> <li>Why I Want a Wife -</li> </ol>	nda Goswamy ring - Vasudhendra umketu Duggal n Toru Dutt ajeevan Judy Brady	
Language		27 Hours
<ol> <li>Comprehension Pass</li> <li>Paragraph Writing</li> <li>Communicative Skills</li> </ol>	age	

## LBCE-C1 : English 1

Lecture Hrs: 54	Internal Marks: 30	Exam Marks : 70
<b>Course Description:</b> T LSRW in the English La acquire language comp <b>Course Objectives:</b> To enable learners with <b>Course Outcome:</b> 1. To enable students with in the following skills i. reading skills ii. Writing Skills iii. Writing Skills iii. To make precis iv. fluency in speaking i 2. To help enjoy student texts.	The course is designed to equip le inguage. Thus, Grammar and Lite betency. h English Language Competency with reading and writing skills w in English to express thoughts an its literature and varied perspect	earners with competency in rature are introductory to ith a focus on skill acquisition id opinions in writing. tives presented by literary
Unit-I: Poetry		12 Hours
<ul> <li>Sonnet 18- Willia</li> <li>Leech Gatherer-'</li> <li>Buying and Sellia</li> <li>To a Student-Kan</li> </ul>	am Shakespeare William Wordsworth ng-Khalil Gibran mala Wijeratne	
Unit -II:Prose		20 Hours
<ul> <li>Professions for W</li> <li>Respect for the I</li> <li>War-Luigi Pirane</li> <li>Chameleon-Anto</li> </ul>	Nomen-Virginia Woolf Individual-Bertrand Russell dello on Chekhov	
Unit-III. Grammar and	d Writing Skills	22 Hours
<ul> <li>Tense forms</li> <li>Active and Passi</li> <li>Direct and Indire</li> <li>Expansion of passion</li> </ul>	ve Voice ect Speech ssages	

#### **1BC-C1** Mathematical Foundation for Computer Applications Lecture Hrs: 54 **Internal Marks : 30** Exam Marks: 70

**Course Description:** This course, provides an introduction to the basic concepts and techniques of calculus and linear algebra, emphasising their inter-relationships and applications to engineering, the sciences and financial areas, introduces students to the use of computers in mathematics, and develops problem solving skills with both theoretical and practical problems.

**Objectives of the course are:** This course emphasizes to develop mathematical thinking and problem-solving skills. Students should also be exposed to a wide variety of mathematical concepts that are used in the Computer Science discipline.

Learning Outcome: Students will be able to demonstrate understanding of and proficiency with basic concepts in linear algebra, systems of linear equations, matrices, determinants, Calculus: functions of one variable, differentiation and its applications, the definite integral, techniques of integration. Employ methods related to these concepts in a variety of applications. Apply logical thinking to problem-solving in context. Use appropriate technology to aid problem-solving.

#### **Unit-I: Matrix Theory**

Review of the fundamentals-Solution of linear equations by Cramer's rule and by Matrix method-Eigen values and Eigenvectors-Cayley-Hamilton theorem-Diagonalization of matrices.

#### **Unit - II: Analytic Geometry in Three Dimensions**

Direction cosines and Direction ratios-Distance formula-Section formula-problems-Equations to straight lines and planes-Angle between two straight lines-Equation to a sphere-right circular cone and cylinder.

#### Unit - III: Differential Calculus

Limits-Continuity-Differentiation of standard functions-Determination of the  $n^{th}$ derivative of standard functions-Statements of Leibnitz, Euler, Rolle's and Taylor theorems-Partial differentiation-Problems.

#### **Unit-IV : Integrated Calculus**

Standard integrals of algebraic, logarithmic, exponential and trigonometric functions-Integration by parts-problems-Definite integrals.

#### **Unit-V : Algebraic Structures**

Definition of a group-properties of groups-subgroups-Permutation groups-Scalars and vectors-Algebra of vectors-Scalars and vector products-Scalar and vector triple products.

#### **Unit-VI: Differential Equations**

Solutions of first order-first degree equations-variables separable-Homogenous and Nonhomogenous-Exact equations-Linear and Bernoulli's equations-illustrative examples. TEXT BOOKS

1. Grewal.B.S, Higher engineering Mathematics,  $36^{th}$  Edition

2. Srimani.P.K. and Vinayakmurthy.M., a Text book of Mathematical foundations for computer Science (for I BCA), 2001.

- 3. Srimani.P.K. and Vinayakmurthy.M., A Text book of Mathematics-BCA 101, BUB.2006 **REFERENCE BOOKS**
- 1. Sastry S.S. Engineering Mathematics, 2000
- 2. Peter V.O'Neil, Advanced Engineering Mathematics, 5<sup>th</sup> Edition

# 8 Hours

# **10 Hours**

# **10 Hours**

**10 Hours** 

6 Hours

# **1BC-C2** Fundamentals of Accounting

Lecture Hrs: 54 Internal Marks: 30 Exam Marks: 70 Course Description/Objectives: The objective of this paper is to provide some basic knowledge about accounting concepts, conventions, and procedure to record the business transactions. This is also to give them an overall idea about how accounting standards are followed in recording and maintaining books of accounts. It helps them in reading and analyzing the financial position of the company.

**Learning Outcome** : Upon successful completion of the course student will be familiarized with the concept of accounting. Student will get an idea about how the final accounts helps to analyze about a company's financial strength and viability.

#### Unit - I: Introduction To Financial Accounting

Introduction –Book-keeping –Meaning, Objectives, Types and functions of Accounting-Book–keeping V/s Accounting –Users of accounting data –Branches of accounting – advantages and Limitations of accounting, Accounting Concepts and conventions.

#### Unit - II: Accounting Process

Classification of accounting transaction and accounts, rules of debit and credit as per Double Entry System. Journal–Meaning, features, format, process on journal entry. Ledger-Meaning, features ,format, posting to ledger, balancing of ledger accounts, subsidiary books -Preparation of different types subsidiary books: Purchase Book, Sales Book, Purchase returns Book, Sales returns Book problems-Trial balance, featuresimportance.(problems)

#### **Unit-III : Cash Book**

Meaning, features, Types of cash book: Simple cash book, double column cash book and three column cash book, petty cash book, Bank Reconciliation Statement: Meaning, Definition, Need, features of Bank Reconciliation Statement, Reasons for the difference between the cash book balance and pass book balance, preparation of Bank Reconciliation Statement (Simple problems)

#### Unit-IV : Preparation Of Trial Balance And Final Accounts Of Sole 12 Hours Proprietor

Meaning, need and classification, Trading and Profit and Loss account and Balance Sheet (vertical format)

#### Unit-V: Computerized Accounting System

Meaning-Features-Manual and computerized accounting, merits and demerits of computerized accounting system, generating accounting reports

#### **SKILL DEVELOPMENT:**

• Collection of financial statements of any one organization for two years .

• Collecting the final accounts of a Public Limited Company and Commenting on the liquidity and profitability.

#### **TEXT BOOKS**

1. V.A.Patil and J.S.Korihalli, Book–Keeping and Accounting, (R. Chand and Co. Delhi). 2. R.S.Singhal, Principles of Accountancy, Nageen Prakash pvt.Ltd, Meerut.

3. B.S.Raman, Accountancy, (United Publishers, Mangalore)

4. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education), 5. Financial accounting: By Jane Reimers (Pearson Education)

#### **12 Hours**

#### **12 Hours**

#### **6 Hours**

# **1BC-C3** : Programming in C

#### Internal Marks : 30 Lecture Hrs : 54 **Course Description:**

The course provides students to study of C programming language. The course lectures stress the strengths of C, which provides the outcome of writing efficient, maintainable and portable code. Course includes few lab exercises to make sure the student has not only gained the knowledge but can also apply and execute it.

#### **Objectives:**

To study about algorithms, flowcharts and programs. To solve problems through logical thinking.

#### Learning Outcome :

To clearly understand the logic of the problem. To analyze the given problem and write the algorithm, flowchart. To write structured C programs, this is the foundation of any programming language.

#### **Unit-I**

Introduction to Programming Concepts: Software, Classification of Software, Modular Programming, Structured Programming, Algorithms and Flowcharts with examples. Overview of C Language: History of C, Character set, C tokens, Identifiers, Keywords, Data types, Variables, Constants, Symbolic Constants, Operators in C, Hierarchy of Operators, Expressions, Type Conversions and Library Functions.

#### Unit - II

Managing Input and Output Operation: Formatted and Unformatted I/O Functions, Decision making, branching and looping: Decision Making Statements - if Statement, if-else statement, nesting of if-else statements, else-if ladder, switch statement,?: operator, Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements.

#### Unit - III

Functions: Function Definition, prototyping, types of functions, passing arguments to functions, Nested Functions, Recursive functions.

#### **Unit-IV**

Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays, Multi Dimensional Arrays - Passing arrays to functions. Strings: Declaring and Initializing strings, Operations on strings, Arrays of strings, passing strings to functions. Storage Classes - Automatic, External, Static and Register Variables.

#### **Unit-V**

Structures-Declaring and Initializing, Nested structure, Array of Structure, Passing Structures to functions, Unions, typedef, enum, Bit fields. Pointers - Declarations, Pointer arithmetic, Pointers and functions, Call by value, Call by reference, Pointers and Arrays, Arrays of Pointers, Pointers and Structures. Meaning of static and dynamic memory allocation, Memory allocation functions.

#### **Unit-VI**

Files - File modes, File functions, and File operations, Text and Binary files, Command Line arguments. C Preprocessor directives, Macros – Definition, types of Macros, Creating and implementing user defined header files.

#### 9 Hours

9 Hours

9 Hours

#### 9 Hours

#### **Department of Computer Science** | 18

Exam Marks: 70

#### 9 Hours

#### **TEXT BOOKS**

**1.** E. Balaguruswamy, "Programming In ANSI C", 4th edition, TMH Publications, 2007

2. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Pearson Education, 2006

#### **REFERENCE BOOKS**

1. Ashok N. Kamthane et. al., "Computer Programming and IT", Pearson Education, 2011

2. Mahapatra, "Thinking In C", PHI Publications, 1998.

3. Yashwant Kanetkar, "Let Us C", 13th Edition, PHP, 2013.

# **1BC-C4: Computer Organization and Architecture**

#### Lecture Hrs : 54 Internal Marks : 30

**Course Description:** This course introduces the principles of computer organization and the basic architecture concepts. The course emphasizes working and construction of various logic gates and combinational circuits, Processor working and its instruction set, memory technology, memory hierarchy and I/O systems **Objectives:** 

#### To conceptualize the basics of organizational and architectural of a digital computer. Learning Outcome :

Be familiar with the history and development of modern computers. Be familiar with Number System and Boolean algebra. Be familiar with Combinational and logic circuits. Be familiar with organization and design of modern computer and its architecture. Be familiar with I/O organization and Memory organization

#### Unit-I

Number System and Boolean algebra: Binary, octal, Hexadecimal Number systems, base conversions, signed binary numbers, binary arithmetic, subtraction using compliments, Binary codes, weighted-BCD-8421 code, Gray code, excess- 3 code, ASCII code.

#### Unit - II

Boolean algebraand logic gates: Boolean laws, Demorgen's theorems. Minimization of Boolean expressions-using Boolean postulates and Karnaugh maps technique(sop).AND, OR, NOT gate using Transistor NAND, NOR as universal gates : X-OR,X-NOR gates

#### Unit - III

Combinational and logic circuits: Half adder, half subtractor, full adder, full subtractor, Multiplexer, De-multiplexer, Encoder, Decoder, Flip-Flops: JK, T, D master slave JK flip flops Shift registers: SISO, SIPO, PISO, PIPO (block diagrams), and 4-bit SISO shift register using D-flip-flop. Counters: Synchronous and Asynchronous. 9 Hours

#### **Unit-IV**

Basic computer organization and design :Introduction,Instruction codes, Computer registers, Computer instructions, timing and control, hard wired control, execution and instruction, input output control,micro programmed interrupt. Design of computer

#### **Unit-V**

**Central Processor Organization**: processor bus organization, arithmetic logic unit (ALU),Instruction formats, Addressing modes, data transfer and manipulation, program control, microprocessor organization.

#### **Unit-VI**

Input-output organization and memory organization: peripheral devices, asynchronous data transfer, directmemoryaccess, (DMA), priority

Interrupt, input output processor, Introduction, memory hierarchy, main memory, auxiliary memory, cache memory.

#### 9 Hours

#### 9 Hours

#### 9 Hours

9 Hours

# 9 Hours

Exam Marks : 70

#### **TEXT BOOKS**

- 1. Published March 1st 2007 by Morgan Kaufmann PublishersDigital Design and Computer Architecture.
- Computer Architecture: A Quantitative Approach (The Morgan Kaufmann Series in Computer Architecture and Design) 25 Oct 2011by John L. Hennessy (Author), David A. Patterson (Author)
- 3. Computer architecture by John. 5<sup>th</sup>edition ; publisher Morgan Kaufmann, 2011.

#### **REFERENCE BOOKS**

- 1. William StallingsComputer Organizationand Architecture10th Edition© 2016 Pearson Education, Inc., Hoboken
- 2. Computer Organization and Design: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design) 17 Nov 2008by David A. Patterson (Author), John L. Hennessy (Author)

# **1BC-P1: C Programming Lab**

No of Hours : 44Internal Marks : 15Exam Marks: 35Course Objectives/Course Description:The course is designed to provide a practical exposure to the students. To solve

The course is designed to provide a practical exposure to the students. To solve problems through C Programs.

**Learning Outcome:** Students acquire the knowledge to build the logic and develop a solution for a problem statement.

#### **SECTION: A**

- **1** Printing the reverse of an integer.
- **2** Generate first N prime numbers.
- **3** Get a string and convert the lowercase to uppercase and vice-versa without using library functions.
- **4** Find the occurrence of a particular character in a string.
- **5** Input a string and find the number of each of the vowels which appear in the string.
- **6** Accept N words and make it as a sentence by inserting blank spaces and a full stop at the end.
- 7 Print the reverse of a string.
- 8 Find the first N terms of Fibonacci series using arrays.
- **9** Declare 3 pointer variables to store a character, a character string and an integer respectively. Input values into these variables. Display the address and the contents of each variable.
- **10** Program to demonstrate structure and union.
- **11** Recursive program to find the factorial of an integer.
- **12** Finding the maximum of 4 numbers by defining a macro for the maximum of two numbers.

#### **SECTION: B**

- **11** Arranging N numbers in ascending and in descending order using bubble sort.
- **12** Checking whether the given matrix is an identity matrix or not.
- **13** Addition and subtraction of two matrices.
- **15** Multiplication of two matrices.
- **14** Convert a hexadecimal number into its binary equivalent.
- **16** Check whether the given string is a palindrome or not.
- **17** Demonstration of bitwise operations.
- **18** Applying linear search to a set of N numbers by using a function.
- **19** Create a sequential file with three fields: empno, empname, empbasic. Print all the details in a neat format by adding 500 to their basic salary.
- **20** Arrange N names in alphabetical order.
- **21** Arranging N numbers in ascending and in descending order using bubble sort.
- **22** Checking whether the given matrix is an identity matrix or not.

# **1BC-P2: Computer Application Lab**

No of Hours : 44Internal Marks : 15Exam Marks: 35Course Objectives: The course is designed to provide different types computer

applications hands-on exposure to the students.

**Learning Outcome** : Students will gain practice in using key applications such as word processors, spreadsheets, and presentation software, as well as understanding social and ethical issues around the Internet, information, and security. Manipulate and control the Windows desktop, files and disks.

**1 Scenario:** You share a house with Your friend. You want to tell them how much electricity is being used and how to use less. You decide to gather information on ways of saving electricity.

# NOTE:-All the data files required complete the below task are or stored in Computer folder

#### **Questions on Excel**

- **a** To save money, your housemates want to know how much electricity each appliance in your house costs to run per week. You have been given a file that shows the unit cost of running some of the appliances.
- **b** The file needs to be updated to show the data for the cooker.
- **c** It is used for 10 hours per week and the unit cost is 0.10. Enter a formula so that the cost per week of using each appliance is shown.Cost per week is weekly use multiplied by unit cost
- **d** Create a chart showing the cost per week of using each appliance in descending order. Make sure all the data is formatted correctly, clear and easy to read.

Questions on MS-Word

- **e** Create a poster to put up in the house to remind everyone of the costs of using the appliances.
- **f** Give the poster a title.

Select and use a suitable image from the ones you have been given.

- **g** Include the chart you created in Task 3 and the 'five ways to save electricity' you found in Part A. Make sure that the poster is clear and easy to read and free from errors.
- **h** Make sure the files and folders you have used and those you have created are organized so they can be found easily.
- **2** Scenario: You are working with the owner of a sport shop called 'Sun, Sea and Surf' based in Bangalore. He has some stock from the shop which he would like to put in an 'End of Season Sale.' The sale is going to be held in a hotel.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

- **a** The owner is planning an End of Season Sale, and needs some information. He needs to know the Sale Stock Value for each product. Sale Stock Value is Number in Stock multiplied by Price
- **b** He also needs to know the total of the Sale Stock Value.
- **c** He wants you to make the product with the highest Sale Stock Value stand out.He needs you to create a chart that shows the Sale Stock Value for each product.
- **d** The products must be shown in ascending order of stock value.You have been given a file with the stock data.You have been given a file with the stock data.Make sure

the data is formatted appropriately, clear and easy to read.

#### Questions on MS-Word

- **e** The owner needs you to create an A4 size poster to advertise the product with the highest stock value from your spreadsheet.
- **f** The poster must include details about the product, including Make, Product, Colour and Price.
- **g** You need to select and use a suitable picture of a surf board from the ones you have been given.
- **h** The words "Special Offer 50% off!" need to be included in an eye catching font that is clear and easy to read.
- i He wants you to check the appearance of the poster to make sure it is clear and what is needed.

Make sure the files and folders you have used and those you have created are organised so they can be found easily.

3 Scenario: You are working with the owner of City Books. He has three shops and needs to know which books are in each store and the value of the stock. He is planning to have a book sale and needs to advertise this book sale event.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

- **a** The owner needs to know the total stock value of the books that are in each of his three shops.
- **b** He needs a chart that shows this in ascending order.
- **c** You have been given a file with this information. Some of the data needs updating. The publish date of the Motor sports book has been entered incorrectly. It should be 2009.
- **d** The following details need to be added:In the Jesmond shop, 9 copies of a hard back sports book called Surfing which was published in 2010 and priced at £9.50.
- **e** The data needs to be displayed in the following order:Publish date, Title, Genre, Hard/Paper back, Shop, Number in stock, Retail Price, Stock ValueMake sure your work is clear, easy to read and formatted appropriately.

#### Questions on MS-Word

- **f** There is a book sale next month. Create a poster to advertise the event. You have been given files with the poster information and the logo.
- **g** The logo needs to be inserted at the top of the poster.
- **h** Insert a table at the bottom of the poster.
- i It needs to include details of the title, publish date and price of the two sports books published in 2004.
- **j** Format the table to include borders and shading.Make sure that the poster is accurate and is easy to read. Make sure the files and folders you have used and those you have created are organized so they can be found easily.
- **4** Scenario: You are working with the Manager in a seaside café called Snack Shack. She has prepared some menus for the new season and wants you to create a new price list to put on the tables. She also needs to find out which products made the most money during the year.

NOTE:-All the data files required complete the below task are or stored in Computer folder

#### Questions on Excel

**a** The Manager needs to look at the sales figures for each of the last 12 months. She needs you to create a chart that shows the total sales value for each product range.You have been given a file with the sales data.

- **b** She wants you to input a formula that will display the total sales value of each product range for the year.
- **c** She also wants you to make the product with the lowest sales value stand out.Make sure the data is formatted appropriately, clear and easy to read.

Questions on MS-Word

- **d** The Manager needs you to create a one-page A4-sized menu.Use the file 'price list'
- **e** It must be in two columns. The item headings (eg breakfasts) need to stand out.
- **f** The heading 'Snack Shack Menu' needs to be centered.
- **g** The price list must also include opening times. You have been given a file with this information.
- **h** Include the picture you flipped and saved in Task 2.She wants you to check the appearance of the price list to make sure it is clear and has no errors. Make sure the files and folders you have used and those you have created are organized so they can be found easily.
- **5** Scenario: Your company, Seymour Solutions, is holding a recruitment day. You have been asked to help prepare information and develop a presentation for the manager. NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

- **a** Seymour Solutions recently asked 150 people to take part in a customer satisfaction survey. The manager would like to use the results of the survey in his presentation.
- **b** Create a chart showing details of the customer satisfaction survey. You have been given the file containing the data.
- **c** He needs you to use formula/s to show the percentage of 'yes' responses to 0 decimal places.Percentage of 'yes' responses is number of 'yes' responses divided by 1.5
- **d** He wants the chart to show the percentage of 'yes' responses column in descending order. Make sure all the data is clear, easy to read, and formatted appropriately.

Questions on Power Point

- **e** The manager has a first draft of his presentation for the recruitment day. You have been given the file, and he needs you to finish it.
- **f** Come and join us! in bold on the first slide and the Seymour Solutions logo in a suitable position (you have been given this). The chart that you created in Task 3 inserted into slide 3 . Your name as a footer on all slides. A new background for all slides
- **g** Make sure the presentation is clear, easy to read and has no errors. When you have done this, print out your presentation in handout layout (4 slides to the page).
- **h** Organize the files you have used and those you have created into folders so theycan be found easily.
- **6** Scenario:GreenMeadowSchool is having an open day. You have been asked to edit apresentation for the Head teacher to use.

Questions on Excel

- **a** The Head teacher needs you to update a file that shows the results from this year's parent survey.You have been given the file containing the data. Use formulas to display the subtotals of each key stage.
- **b** Calculate the total for both key stages.
- **c** The parent feedback figures need to show as 'percentage.' Make sure all the data is clear and easy to read and fits on one page.

- **d** Create a chart that shows the results of the parent feedback for the column 'strongly agree' only.
- **e** Sort the percentages in descending order of percentages.

Questions on Power Point

- **f** The Head teacher has started a presentation for the school's open day. You have been given the file, and you need to finish it.
- **g** It must include:
  - A new bullet point on slide 2:
  - Enjoy the tea and cakes
  - > The sound file and the image you have been given
  - The URL for Ofsted that you found in Part A on a new slide. Give this slide a suitable heading
  - > The chart that you produced in Task 3.
- **h** Make sure the presentation is clear, easy to read and has no errors.
- i Organise the files you have used and those you have created into folders so they can be found easily.

# Second Semester B.C.A

II Semester BCA							
Part	Code Course(Subject)	Hours	Marks			Credits	
	couc		nours	IA	Exam	Total	creans
Part-1	LBCK-C2	Kannada-II	4	30	70	100	2
	LBCH-C2	Hindi-II					
	LBCS-C2	Sanskrit-II					
	LBCA-C2	Additional English-II					
	LBCE-C2	English-II	4	30	70	100	2
Part-2	2BC-C1	Numerical and Statistical Methods	4	30	70	100	4
	2BC-C2	Data Structures Using C	4	30	70	100	4
	2BC-C3	Object Oriented Programming Using C++	4	30	70	100	4
	2BC-C4	Operating System	4	30	70	100	4
	2BC-P1	Data Structure Lab Using C	3	15	35	50	1
	2BC-P2	C++ Lab	3	15	35	50	1
Part-3	MC1	Indian Constitution & Human Right	2	15	35	50	1
Total Marks & Credits240560				800	25		

LBCK-C2 : ಕನ್ನಡ ೨ – Kannada II	
Lecture Hrs: 54 Internal Marks: 30 Exam Mar	<sup>.</sup> ks : 70
Objectives:	
ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ಪರಿಚಯಿಸುವುದರೊಂದಿಗೆ, ಸ್ಪಷ್ಟ ಓದು ಮತ್ತು ಬರಕ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಭಾಷೆಯನ್ನು ಕಲಿಸುವುದು. ಹಾಗೂ ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಪರಿಣಿತಿ ಸಾಧಿಸಿಕೆ ಪ್ರೇರಿಪಿಸುವುದು.	ಕದೊಂದಿಗೆ ಸೊಳ್ಳುವಂತೆ
Course Outcomes:	
ವೈಜ್ಞಾನಿಕ ಮನೋಧರ್ಮಗಳನ್ನು ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಮೂಡಿಸಲು ಪ್ರಯತ್ನಿಸುವುದು. ಸಂಬಂಧ ಪರಿಕಲ್ಪನೆಗಳ ಮೂಲಕ ಮನುಷ್ಯ ಸಂಬಂಧಗಳ ಮಹತ್ವವನ್ನು ಕಟ್ಟಿಕೊಡುವುದು. ಆಧುನಿಕ ಪರ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಜೀವನ ಮೌಲ್ಯಗಳನ್ನು ರೂಪಿಸುವಂತೆ ಬೋಧಿಸುವುದು. ವೈಚಾರಿಕ ಲೇಖನಗಳ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಮೆಚಾರಿಕ ಹಾಗೂ ಮೆಜಾನಿಕ ನೆಲೆಯಲ್ಲಿ ಆಲೋಚಿಸುವಂತೆ ಮಡುವುದು	ಧ ಎಂಬ ಶಿಕಲ್ಪನೆಗಳು ' ಮೂಲಕ
ದದ್ಯಭೇ ಗಾಲ್ಲಿ ಬೈದಂಕರ ಹಗಸಕ ಬೈದಲ್ಲೇಕ ನಿರದದಲ್ಲಿ ಅದಾಕದಿಸಿದಂಕ ಹದದ್ರಿದೆ. Title: ಸಂಬಂಧಗಳು	
$rac{1}{1}$	7
ಅವ_ಪಿಲಂಕೇಶ್	, 2
ಸಂಕಮನ ಸಾಲು-ಜನಪದ	6
ತುಂಗಬದೆ-ಕೆ.ಎಸ್.ನರಸಿಂಹಸಾಮಿ	5
ಕಳ್ಳುಬಳ್ಳಿ –ಬಿ.ಟಿ.ಜಾಹ್ಯವಿ	5
Title: ವೈಜಾನಿಕ ಮನೋಧರ್ಮ	-
ೃ್ಞ ವೈಜ್ಞಾನಿಕ ಮನೋಧರ್ಮ–ಎಚ್.ನರಸಿಂಹಯ್ಯ	6
ಮತಧರ್ಮ,ದರ್ಶನ ಮತ್ತು ವಿಜ್ಞಾನ-(ಮೂಲ-ಜವಹರ್ ಲಾಲ್ ನೆಹರು), ಅನು-ಸರೋಜ	5
ಹಾಲಂಬಿ	
ಲೇಡೀಸ್ ವೆಹಿಕಲ್–ಡಾ.ಎಚ್.ಎಸ್.ಅನುಪಮ	5
ಬಿದಿರಿನ ಮನೆ–ಶಿವ ವಿಶ್ವನಾಥನ್	5
ಗಾಂಧೀಜಿ ಬಗ್ಗೆ ಐನ್ ಸ್ಟೀನ್-ಕೆ.ಎಸ್.ನಾರಾಯಣ ಸ್ವಾಮಿ	5

ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು

1. ಸರಳ ಪಮಪ ಭಾರತ–ಎಲ್. ಬಸವರಾಜು–ಮಸ್ತಕಾಲಯ ಪ್ರಕಾಶನ, ಮೈಸೂರು.

- 2. ತೆರದಮನ–ಎಚ್. ನರಸಿಂಹಯ್ಯ
- ತೆರದಬಾಗಿಲು-ಸಂ.ಎಂ.ಸರಸ್ವತಿ ತಳವಾರ್ ವಾಮದೇವ್
   ಮಲೆಮಾದೇಶ್ವರ ಕಾವ್ಯ-ಸಂ-ಪಿ.ಕೆ.ರಾಜಶೇಖರ್.

	IRCH C2 · Hindi II	
Lecture	Internal Marks : 30	Exam Marks : 70
Objectiv	e:	
• S • T • T	tudent will understand the literature of Hindi language. hey can be read and understand the great poets of Hindi hey can read and understand about the skill of creative v	i Literature. vriting in Hindi language.
• St	utcome : Idents Intilize their skill of language in future life	
• Th	eir future life with ethic and morality as per situation av	ailability.
युनिट -१	तुलसी के दोहे और विजयरथ।	9 Hours
	कवि तुलसीदास के परिचय। प्रस्तुत दोहावली की परिचय।	रामनाम
	का महत्ता और मनुष्यों के गुणका विवरण। राम- रावण य	र्द्ध प्रसंग।
युनिट -२	बिहारी के दोहे।	9 Hours
•	कविबिहारी के परिचय बिहारी ने छोटे छोटे दोहो में बडे बडे	हे भावयाने
	सागर में गागर भरने का विवरण।	
युनिट-३	दानवीर।	9 Hours
5	कवि रामधारीसिंह दिनकर का परिचय। कर्ण का दान गुण	। परिचय।
युनिट-४	वाण।	9 Hours
5	कवि सुमित्रानंदपंतकापरिचय।वाण्िाकीमहत्वकापरिचय	
युनिट-५:	पक्षधर।	9 Hours
0	कविआज्ञेयकापरिचय।मानवजीवनकेसंघर्षपरविवरण।	
युनिट-६	पेडगिरा और रचना।	9 Hours
•	कविडॉ. टी.डीप्रभाकरशंकर प्रेमी' कापरिचय।	
	दैनिक घटना की महानतथ्य का प्रस्ताव। प्रशासनिकशब्दा	वली
	और कहानी लेखन।	
TEXT BO	OKS	
1. 'कांव्यां	जली' संपादकबि. जयलक्ष्मी, एस.एम. मुमताजबेगम।प्रकाश्क3	औरमुद्रकःप्रसारंग,
बेंगलूरुविश	वविद्यालय, बेंगलूरु।	
REFERE	ICE BOOKS	
1. हिन्दीव	व्याकरणप्रबोधएवरचना।सपादक डॉ. विजयपालसिंह।प्रकाशकऔर	मुद्रक :
समग्रविक	सप्रकाशन, इलाहबाद।	

### LBCS-C2 : Sanskrit II

#### Lecture Hrs : 54 **Internal Marks : 30** Exam Marks: 70 **Course Objective :** > The main objective of the course is to impart knowledge in classical language through literature. > The study of Sanskrit literature /poetry helps the student in sharpening creative abilities in all disciplines. **Course outcome :** > The Sanskrit course is use to general public, at every age and at all levels of formal and non formal education. > It will improve the learners proficiency in the Sanskrit language. It will impart ethical and moral values of life in students that will evaluate or lead them towards right path. **Unit-I:** Introduction of Kavya, its division, Drishya Kavya and Shravya 6 kavya in brief, prose and poetry, its evolution Hours **Unit - II :** Prose literature, difference between katha and akhyayika, 12 tracing of prose work from vedic literature, authors date, life and works Hours

Unit - IV: Translation of unseen passages and comprehension

6

Hours Text Books : Kadhambari of Bana by prof. M. K Surya Narayana Rao, Subhash Publications and Bannanje Govidacharya

# I BCA Additional English II

LDCA AUGILIONAI ENGLISH II					
Lecture Hrs: 54	Internal Marks: 30	Exam Marks: 70			
Literature		27 Hours			
1. The Jamun Tree - Krishan	Chander				
2. Lalu - Saratchandra Chatte					
3. Politics of Living - Indrag					
4. The Curse - Kabitha Sinha	4. The Curse - Kabitha Sinha				
5. The Carpenter and the Beg	5. The Carpenter and the Beggar - Bharathidasan				
6. The Spear - Temsula Ao					
7. Manipur, Why Shouldn't I	Love Your Hills? - Thangjam Ibopishak				
8. This is the Jungle - Ke	nneth Anderson				
Language		27 Hours			
<ol> <li>Conversation Skills</li> <li>Picture Composition</li> <li>Advertisement Writing</li> <li>Close Test</li> </ol>					

LBCE-C2 : English -II				
Lecture Hrs : 54	Internal Marks : 30	Exam Marks : 70		
Course Description :_Th Language Competency. The arguments. Objectives: i. to equip students with in ii. to equip the students with iii. to make precis iv. To help enjoy student texts. Course Outcome : The learners identify competency to express the	te course enables the learners wi The literary texts are chosen to a ntermediate-level reading skills th important grammar skills nts literature and the varied pers contemporary ideological issue emselves fluently about the concer	th intermediate-level skills of ddress ideological issues and spective presented by literary es and concerns. They gain rs.		
Unit-I: Poetry		12 Hours		
1.For Father on the Shelf- 2.Purdah - Imtiaz Dharker 3.Australia-A.D.Hope 4.The Unknown Citizen-	Melanie Silgardo W.H. Auden.			

**10 Hours** 

**10 Hours** 

**22 Hours** 

### Unit -II: Novella

Breaking Ties- Sara Aboobacker **Unit - III: Drama** 

- 1. A scene from **The Tempest**-William Shakespeare
- 2. Mrichchakatika- Sudraka

#### **Unit-III: Reading & Writing Skills**

1.Skim and Scan
 2.Note Making
 3.Precis writing
 4.Comprehension(prose)

# **2BC-C1** Numerical And Statistical Methods

Lecture Hrs : 54 Internal Marks : 30 Exam Marks: 70

**Course Description:** The course statistics describes the concept of correlation and regression, probability distribution and testing hypothesis. Construction and use of numerical systems. Influence of data representation and computer architectures on algorithms choice and development.

**Objectives of the course are:** To acquaint students with various statistical methods. To cultivate statistical thinking among students. To prepare students for future courses having quantitative components. Use numerical methods for solving a problem, locate and use good mathematical software, get the accuracy you need from the computer, assess the reliability of the numerical results, and determine the effect of roundoff error or loss of significance.

**Learning Outcome :** Upon successful completion of the course one should be able to Understand and analyze bivariate data with respect to their association. Apply different distributions at the appropriate situations. Apply various tests of hypothesis understand their interpretation.

#### 1. Unit-I: NUMERICAL METHODS.

Solution of equations (polynomial and transcendental equations). Interval halving methods, secant, RegulaFalsi, Newtons-Raphson, Fixed point iteration method.

#### Unit - II

Solution of system of linear equations, Gaussian elimination method, Gauss-Jordan, Gauss-Siedal iteration methods, LU Decomposition method, Eigen values and Eigen vectors of a square matrix.

#### Unit - III

Newton's forward and backward differences, Interpolation formula-Lagrange interpolation, Curve fitting by least squares method.

#### **Unit-IV**

Numerical differentiation, Integration, Trapezoidal and Simpson's formula, Romberg Integration.

#### **STATISTICAL METHODS:**

#### **Unit-V**

Basics concepts and definition of statistics. Mean, Standard deviation, coefficient of variation, skewness and kurtosis, Karl Pearson correlation, rank correlation and illustrated examples.

#### **Unit-VI**

Probability: Basic concepts and definition of probability, Probability axioms, Laws of probability(based on set theory concepts), Conditional probability Bayes theorem, problems and applications.

#### **Unit-VII**

Random variable and Expectation: Discrete and continuous random variables, expectation of random variables, theorems on expectation, illustrative examples.

#### **Department of Computer Science** | 33

#### 7 Hours

#### **6 Hours**

5 Hours

# 8 Hours

### 8 Hours

**5** Hours

#### Unit-VIII

#### **5 Hours**

Random variable and Expectation: Discrete and continuous random variables, expectation of random variables, theorems on expectation, illustrative examples **Unit-IX 8 Hours** 

Probability Distribution: Probability function, Probability mass/density function Discrete Distribution-Bernoulli binomial, Poisson geometric distributions continuous distribution-Exponential and Normal Distribution applications and problems.

#### **TEXT BOOKS**

- 1. Statistics and Numerical Methods 2016 by Manish Goyal (Author)
- **2.** Numerical and Statistical Methods for Computer Science Engineering 26 Dec 2018by Ravish R. Singh (Author)

# 2BC-C2: Data Structures Using C

# Lecture Hrs : 54Internal Marks : 30Exam Marks : 70Course Description:

Course Description:

Data Structure is one of the fundamental understanding of programming and application development. Student is expected to work towards a sound theoretical understanding of Data Structures and also compliment the same with hands on implementing experience.

#### **Objectives of the course are**

To be able to practically implement the data structures like stack, queue, array etc. To understand and implement different searching and sorting techniques.

#### **Learning Outcome**

Understand the need for Data Structures when building application.Appreciate the need for optimized algorithm.Able to walk through insert and delete for different data structures.Ability to calculate and measure efficiency of code .Improve programming skills.

#### Unit-I

Introduction and Overview: Definition, Elementary data organization, Data Structures, data structures operations, Abstract data types, algorithms complexity, time-space tradeoff. Preliminaries: Mathematical notations and functions, Algorithmic notations, control structures, Complexity of algorithms, asymptotic notations for complexity of algorithms.

#### Unit - II

Arrays: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting and deleting String Processing: Definition, Storing Stings, String as ADT, String operations, word/text processing, Pattern Matching algorithms.

#### Unit - III

Linked list: Definition, Representation of Singly linked list in memory, Traversing a Singly linked list, Searching a Singly linked list, Memory allocation, Garbage collection, Insertion into a singly linked list, Deletion from a singly liked list; Doubly liked list, Header liked list, Circular linked list.

#### Unit-IV

Stacks – Definition, Array representation of stacks, Linked representation of stacks, Stack as ADT, Arithmetic Expressions: Polish Notation, Application of Stacks, Recursion, Towers of Hanoi, Implementation of recursive procedures by stack. Queues – Definition, Array representation of queue, Linked list representation of queues Types of queue: Simple queue, Circular queue, Double ended queue, Priority queue, Operations on Queues, Applications of queues.

#### Unit-V

Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.

#### 9 Hours

9 Hours

9 Hours

9 Hours

#### Unit-VI

#### 9 Hours

Graphs: Graph theory terminology, Sequential representation of Graphs: Adjacency matrix, traversing a Graph. Tree – Definitions, Binary trees, Representing binary trees in memory, Traversing Binary Trees, Binary Search Trees, Searching, Inserting and Deleting in a Binary Search Tree.

#### **TEXT BOOKS**

**1.** Seymour Lipschutz, "Data Structures with C", Schaum'soutLines, Tata McGraw-Hill, 2011.

#### **REFERENCE BOOKS**

1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education, 2013.

2. Robert Kruse, C.L.Tondo, Bruce Leung, Shashi Mogalla, "Data Structures and Program Design using C", Pearson Education, 2009.

3. Forouzan, "A Structured Programming Approach using C", 2nd Edition, Cengage Learning India, 2008.
# 2BCA-C3 :Object Oriented Programming using C++

Lecture Hrs : 54

**Internal Marks: 30** 

**Course Description:** This module teaches the basic principles of object-oriented programming, design and testing

Objectives of the course are: Develop problem solving skills by developing object-oriented programs in C++.

**Learning Outcome**: Students should be able to: understand the basic components of an object-oriented program including methods and attributes, the distinction between classes and instances, the structures required to write basic algorithms, the components of simple text and graphics based interfaces, the relevance of the design process and basic object-oriented design notation, the applicability and effectiveness of various basic software testing techniques

#### Unit-I

9 Hours

Evolution of programming methodologies-Procedure oriented versus Object Oriented Programming-characteristics of OOPS, Basics of OOP, Merits and Demerits of OOP. Data types, Input and Output, reference variables, Decision and loop, Arrays, String, structures and unions.

#### Unit - II

Built-in functions, user defined functions, different kinds of user defined function, calling the function, function definition, function declaration, parameter-actual and formal, different methods of calling the function-call by value, call by reference, overload function-different types of arguments, different number of arguments, default argument, inline function.

#### Unit - III

Simple class-defining the class, defining data members and member functions, Access specifier-private, public, protected, Static data members and functions, Array of objects, Objects as function arguments. Difference between class and structure. Friend functions and friend classes.Constructors-constructor with argument, constructor without arguments, constructor overloading, copy constructor, destructor. 9 Hours

#### **Unit-IV**

Defining operator overloading, overloading unary operators, overloading binary operators, manipulation of string using overloaded operator, rules for overloading and type conversions. PBase Class-derived class, defining derived classes, protected access specifier, public inheritance and private inheritance-member accessibility, single inheritance, multi- level inheritance, multiple inheritances, hierarchical and hybrid inheritances, virtual base class.

#### **Unit-V**

Pointer declaration and Access, Pointer to void, pointer and arrays, pointer Constant and pointer variable, pointer and functions, call by pointer, array of pointers, pointers to string, pointer sort, memory management-new and delete, pointer to object- referencing members using pointers, this pointer, returning values using this pointer.

## 9 Hours

#### 9 Hours

9 Hours

## Exam Marks: 70

#### Unit-VI

#### 9 Hours

Compile time versus runtime polymorphism, virtual functions, pure virtual function and abstract class. C++ stream and C++ stream classes, unformatted I/O operators, formatted I/O operators, manipulators-user defined manipulators. File stream classes, file input and output, string I/O, character I/O, writing an object to disk, reading an object from disk, file opening using open function, opening modes, mode parameters, file pointer, functions for manipulating file pointer, Command line arguments.

#### **TEXT BOOKS**

1. Object-Oriented Programming with C++ 20 Sep 2017by E Balagurusamy (Author) **REFERENCE BOOKS** 

- 1. Object-Oriented Programming in C++ by Rajesh K. Shukla (Author)Wiley (20 June 2008)
- 2. An Introduction to Object-Oriented Programming in C++:Graham M. SeedSpringer Science & Business Media, 06-Dec-2012

# **2BC-C4: Operating Systems**

Lecture Hrs : 54

#### **Internal Marks : 30** Exam Marks : 70

**Course Description:** The course covers theoretical challenges encountered when designing, implementing, and using operating systems.

**Course Objectives:**Operating system form and function. Memory functions, File structures .Concurrent execution: problems and solutions.

**Learning Outcome:** Student will gain experience in implementing and manipulating common components of modern operating systems. Summaries the full range of considerations in the design of file systems, summaries techniques for achieving synchronisation in an operation system. 9 Hours

#### Unit-I

Introduction. Definition, Types Of Operating Systems, Functions of Operating System, services ,system components, system calls, process concepts, process state, PCB.

#### Unit - II

Process Management. Schedulers, preemptive and non-preemptive scheduling, scheduling criteria, CPU scheduling algorithms, process synchronization, semaphores, deadlocks, detection and recovery.

#### Unit - III

Memory Management. Functions, single contiguous, partitioned memory management, multiple relocatable partitioned memory management, paging, segmentation.

#### **Unit-IV**

**MM and File Management**. Demand paging and virtual memory management. File Concept, fileaccess methods, directory structures, allocation methods, free space management.

#### **Unit-V**

Disk Management (Structure, Disk scheduling methods). Secondary storage structure, Disk structure, disk Scheduling methods, disk scheduling algorithms, Disk management, swap-space management.

#### **Unit-VI**

**Protection and security.** Goals of protection, Domain protection, Access matrix, security problem, authentication, one time password, Program threats and system threats.

#### **TEXT BOOKS**

1. Operating System Concepts by Galvin and Silbertehatz, publisher John wiley& sons 2011. 2. Operating System by William stallings, publisher Addison Wesley pub co inc, 2009. **REFERENCE BOOKS** 

1. perating Systems: Three Easy Pieces 1 Sep 2018.

2.Modern Operating Systems 4e Paperback – 31 Aug 2016by Tanenbaum (Author)

#### 9 Hours

9 Hours

9 Hours

#### 9 Hours

# 2BC-P1: Data Structures using Lab Using C

#### No of Hours : 44

Internal Marks : 15

Exam Marks: 35

## **Course Objectives/Course Description**

The course is designed to provide a practical exposure to the students.

### Learning Outcome

Upon completion of the course, the students acquire the knowledge to build the logic and develop a solution for a problem statement.

#### **SECTION-A**

- 1 Use a recursive function to find the Fibonacci series.
- **2** Use pointers to find the length of a string and to concatenate two strings.
- **3** Use pointers to copy a string and to extract a substring from a given a string.
- **4** Use a recursive function for the towers of Hanoi with three discs.
- 5 Insert an integer into a given position in an array.
- **6** Deleting an integer from an array.
- 7 Write a program to create a linked list and to display it.
- 8 Write a program to sort N numbers using insertion sort.
- **9** Write a program to sort N numbers using selection sort.
- **10** Use a recursive function to find the Fibonacci series.
- **11** Use pointers to find the length of a string and to concatenate two strings.

## **SECTION-B**

- **12** Inserting a node into a singly linked list.
- **13** Deleting a node from a singly linked list.
- **14** Inserting a node into a doubly linked list.
- **15** Deleting a node into a doubly linked list.
- **16** Pointer implementation of stacks.
- **17** Pointer implementation of queues.
- **18** Creating a binary search tree and traversing it using in order, preorder and post order.
- **19** Sort N numbers using merge sort.
- **20** Inserting a node into a singly linked list.
- **21** Deleting a node from a singly linked list.

	2BC- 6P: C++ Lab
No	of Hours : 44 Internal Marks : 15 Exam Marks: 35
Cou	rse Objectives/Course Description
The	course is designed to provide a practical exposure to the students.
Lea	rning Outcome
Upo	on completion of the course, the students acquire the knowledge to build the logic
allu	SECTION_A
1	<b>SECTION-A</b> Write a program to swap two values using pointers and reference variables
2	Write a program to calculate area and circumference of circle using inline
	functions.
3	Using different methods to check whether a given number is prime or not using
	function overloading and also use default arguments.
4	Write a program to find a factorial of a number using function overloading (use
5	both direct and recursive methods).
5	print these details with batting average (Use arrays of objects)
6	Create a class to hold information of a husband and another for the wife. Using
	friend functions give the total salary of the family.
7	Write a program to demonstrate static members.
8	Program to overload == operators to compare two strings.
9	no Account type Balance Including the following a) Constructors b) destructors
	call) default constructors d) input and output function ; input and output for 10
	people using different methods.
10	Write a program to create a student report using Inheritance technique.
	SECTION-B
11	Date incrementing using ++ operator (unary operator).
12	Program to overload Binary operator '+' to concatenate 2 strings.
13	Write a program to perform Addition of two matrices using operator overloading.
14	Create a base class for a stack and implement push and pop operation. Include a
	overflow d) stack underflow
15	Write a program to illustrate hybrid inheritance.
16	Program to sort n names using pointer sort.
17	Demonstration of Virtual function.
18	Write a program to show returning current object, accessing member data of
10	current object and returning values of objects using this pointer.
17	fields: student- name Student's Register No. Student's Attendance (overall % of
	Attendance); and enter Data for 10 students and output the same in proper
	Format.
20	Accessing a particular record in a Employee file.

# Third Semester B.C.A

III Semester BCA							
Part	Code	Course(Subject)	Hours	Marks			Credits
				IA	Exam	Total	
	LBCK-C2	Kannada-III	4	30	70	100	2
Part-1	LBCH-C3	Hindi-III	4	30	70	100	2
	LBCS-C3	Sanskrit-III					
	LBCA-C3	Additional English-III					
	LBCE-C3	English-III					
	3BC-C1	Computer Graphics	4	30	70	100	4
	3BC-C2	Unix Operating System	4	30	70	100	4
	3BC-C3	Database Management Systems	4	30	70	100	4
Part-2	3BC-C4	VB.Net Programming	4	30	70	100	4
	3BC-P1	Unix Lab	3	15	35	50	1
	3BC-P2	VB.Net and SQL Lab	3	15	35	50	1
	3BC-P3	Computer Graphics Lab	3	15	35	50	1
	MC2	Human Resource Management	2	15	35	50	2
Part-3	OE	Open to the students of Other Disciplines	2	15	35	50	1
		Total Marks & Credits		270	630	900	28

The National College, Autonomous, Basavanagudi, Bengaluru-04			
LBSK-C3 : ಕನ್ನಡ ೩– Kannada III			
Lecture Hrs: 54 Internal Marks: 30 Exam	Marks:70		
Objectives:			
೧೦ ನೇ ಶತಮಾನದ ಕನ್ನಡ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು. ಸ್ಪಷ್ಟ ಓದು ಮತ್ತು ಬರಹದೆ.	ೂಂದಿಗೆ		
ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಭಾಷೆಯನ್ನು ಕಲಿಸುವುದರೆ ಜೊತೆಗೆ ಸ್ಥಳೀಯ ಭಾಷೆಯಲ್ಲಿ ಪರಿಣಿತಿ ಸಾಧಿಸಿ	ಕೊಳ್ಳುವಂತೆ		
ರೂಪಿಸುವುದು.	·		
Course Outcomes:			
ಸಾಹಿತ್ಯದ ಬಗೆಗೆ ಆಸಕ್ತಿ ಮೂಡಿಸುವುದಲ್ಲದೆ ಕ್ರಿಯಾಶೀಲ ಬರವಣಿಗೆಗಾಗಿ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು	ಪ್ರೇರೇಪಿಸುವುದು.		
ಪಾಚೀನ ಕಾವ್ಯಭಾಗಗಳು ಕತೆಯ ಮೂಲಕ ಬದುಕಿನ ನೈತಿಕ ಮೌಲ್ಯಗಳನ್ನು ರೂಪಿಸುತ್ತವೆ.	ವಿಚಾರ ಸಾಹಿತ್ಯವು		
ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಸಾಮಜಿಕ ಕಳಕಳಿಯನ್ನುಂಟು ಮಾಡಲು ಸಹಕಾರಿಯಾಗಿದೆ.	5		
Title: ಕಾವ್ಯ			
ವೈಶಂಪಾಯನ ಗಿಳಿಯ ಪ್ರಸಂಗ–ನಾಗವರ್ಮ	7		
ಕುರುಕುಲಾರ್ಕನುಮರ್ಕನುಮಸ್ತಮೆಯ್ದಿದರ್–ರನ್ನ	5		
ಕುಂಬಾರ ಗುಂಡಯ್ಯನ ರಗಳೆ–ಹರಿಹರ	5		
ಮಾಯೆಯ ತಿರಸ್ಕಾರ–ಚಾಮರಸ	6		
ಸಿರಿಮುಡಿಗೆ ಕೈಯಿಕ್ಕೆದನ್– ಕುಮಾರವ್ಯಾಸ	5		
ಕುಲಕುಲವೆನ್ನುತಿಹರು–ಕನಕದಾಸ	5		
Title: ವಿಚಾರ ಸಾಹಿತ್ಯ			
ವಿಚಾರಕ್ರಾಂತಿಗೆ ಆಹ್ವಾನ – ಕುವೆಂಪು	5		
ರಾಮ ಕೃಷ್ಣ ಶಿವ–ಲೋಹಿಯ. ಸಂ. ಕೆ.ವಿ.ಸುಬ್ಬಣ್ಣ	6		
ಮಹಿಳೆ ಮತ್ತು ವಿಜ್ಞಾನ-ನೇಮಿಚಂದ್ರ	5		
ಸಾಮಾಜಿಕ ಕ್ರಾಂತಿಯ ಸ್ವರೂಪ – ಎಂ.ಡಿ ನಂಜುಂಡಸ್ವಾಮಿ 5			
ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು			
೧. ಪ್ರಾಚೀನ ಕಾವ್ಯ ಸೌರಭ–ಸಂ.ನರಹಳ್ಳಿ ಬಾಲಸುಬ್ರಮಣ್ಯಂ–ಪ್ರಸಾರಾಂಗ ಬೆಂ.ವಿ.ವಿ.			
೨. ಹರಿಹರನ ರಗಳೆಗಳು			
೩. ರನ್ನ ಕವಿ ಗದಾಯುದ್ಧ ಸಂಗ್ರಹಂ–ಸಂ–ತೀ.ನಂ.ಶ್ರೀಕಂಠಯ್ಯ			

4. ರಾಮ ಕೃಷ್ಣ ಶಿವ-ಸಂ-ಕೆ.ವಿ.ಸುಬ್ಬಣ್ಣ

# LBCH-C3 : Hindi III : "दौड"

Lecture Hrs : 54

Internal Marks : 30

Exam Marks : 70 45 Hours

युनिट -१ : "दौड"

उपन्यासदौडकाउपन्यासकममताकालियाकापरिचय।आजकेनवय्वकोंकाजीवनचित्रण।

# युनिट - २ : रचना।

9 Hours

पत्रलेखनकापरिचय।सारलेखनकापरिचय।

## **TEXT BOOKS**

''दौड'' संपादक : ममताकालिया।संपादकऔरमुद्रक : वानिप्रकाशननईदिल्ली।

## **REFERENCE BOOKS**

1. स्बोधव्यवहारिकहिन्दी।संपादक :डॉ. कुलदीपगृप्त।

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संपादकऔरमुद्रकःअनिलपुसककेन्द्र, बेंगलूरु।
```

	LBCS-C3 Sanskrit	: III				
Lecture Hrs : 54	Internal Marks : 30	Exam M	larks : 70			
<b>Unit-I:</b> Introduction of literature and its charac vijaya champu, Champu	f Kavya and its division teristics, kinds of Champu li Ramayana, History of Sansk	in brief , Champu terature, Nilakhanta rit literature	<b>10 Hours</b>			
<b>Unit - II :</b> Detailed text - and works	<b>Unit - II :</b> Detailed text – Champu Ramayana of Bhoja, authors date, life <b>8 Hours</b> and works					
<b>Unit-III</b> : Champu R explanation and its gene	amyana of Bhoja, Sloka ral significance and characte	s, translation and ers of the text	30 Hours			
<b>Unit – IV:</b> Translation of <b>Text Book : Champu Ra</b>	Eunseen passages and comp amayana of Bhoja by V. R T	rehension <b>`ripura</b>	6 Hours			

# LBCA Additional English III

Lecture Hrs: 54	Internal Marks: 30	Exam Marks: 70
Literature		27 Hours
<ol> <li>1. The Doll's House</li> <li>2. A Work of Art - Art</li> <li>3. What I Require from</li> <li>4. Non Violence - Alt</li> <li>5. Everest: My Journe</li> </ol>	e - Katherine Mansfield aton Chekov n Life - JBS Haldane lous Huxley ry to the Top - Bachendri Pal	
Language		27 Hours

- Essay Writing
   Short Story Writing

#### LBCE-C3: English-III

Lecture Hrs : 54

**Internal Marks : 30** 

**Course Description:** The course addresses the contemporary concerns of today. Texts are chosen from Indian languages in translation and Indian English. The learners are introduced to current literary trends. The Language section is designed to equip learners with employability skills in the English language.

Exam Marks: 70

**18 Hours** 

**10 Hours** 

26 Hours

**Course Objectives:** To familiarise learners with current literary trends and equip them with employability skills.

#### **Course Outcomes:**

- 1. To introduce learners to Indian literatures
- 2. To respond to varied perspectives presented by the literary texts
- 3. Advanced reading and writing skills
- 4. To familiarise the learner with short official communication

#### **Unit-I - Literature**

Play: Tughalaq by Girish Karnad

#### Unit - II

- **1.** *Gateman's Gift* R K Narayan
- 2. In the Mothers Garden—Volga
- 3. *Measurements*—Navakanta Barua
- **4.** *Lalitha Effect* Shiv Vishvanathan
- 5. *I am not your data*—Abhay Xaxa

#### Unit - III: Language Skills

- 1. Writing Paragraphs
- 2. Photo-journalistic writing
- 3. Comprehension of Poems
- 4. Short Writing Skills: Circular, Notices and Memo

# **3BC-C1 : Java Programming**

**Internal Marks: 30** Lecture Hrs: 54 Exam Marks: 70 **Course Description:** Java is one of the most popular programming languages used to create Web applications and platforms. It was designed for flexibility, allowing developers to write code that would run on any machine, regardless of architecture or platform.

**Objectives of the course are:** Its main objective is to teach the basic concepts and techniques like classes, objects, interfaces, exceptions and libraries of object collections which form the object oriented programming paradigm.

Read and understand Java-based software code of medium-**Learning Outcome:** to-high complexity. Upon completing requirements for this course, the student will be able to: A. Create a software application using the Java programming language. **Unit-I** 9 Hours

Fundamentals of OOP: Introduction, Object-Oriented paradigm, Basic concepts of OOP, Benefits of OOP, Application of OOP. An Overview of Java: Java History, Java Features, Simple Java Programs, More of Java, An application with two classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments, Programming Style.

#### Unit - II

Constants, Variables & Data Types: Introduction, Constants, variables, Data types, Declaration of variables, Scope of variables, Arrays, 1-D Arrays, 2-D Arrays. Classes, Objects and Methods: Introduction, Defining a class, Adding variables, Adding Methods, Creating Objects, Accessing class Members, Constructors, Method Overloading, Static Members, Nesting of Methods, Inheritance, Overriding Methods, Final Variables & Methods, Final Classes, Finalizer methods, Abstract Methods & Classes, Visibility Control, Dynamic Binding.

#### Unit - III

Interfaces, Multiple Inheritance, And Packages: Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface variables, Java API Packages, Using System Packages, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, String Handling.

#### **Unit-IV**

Exceptionhandling: Types of errors, Exceptions, syntax of Exception Handling Code, Multiple Catch Statements, Using finally Statement, Throwing our own Exception. Multi-threading programming: Creating Threads, Extending the Thread Class, Stopping & Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface.

#### Unit-V

Applets, Event handling: Introduction, Difference b/w Applets & Application, Preparing & building Applet Code, Applet Life Cycle, Creating an Executable Applet, Applet Tag, Adding Applet to HTML Tag, running the Applet, Attributes of Applet Tag, Passing Parameters to Applet, Applet Capability & Security.

#### 9 Hours

#### 9 Hours

9 Hours

#### Unit-VI

#### 9 Hours

AWT: Abstract Window Toolkit, working with windows, Graphic and text, AWT Controls, Layout Managers & Menus. Introduction to Event Handling, Event Handling Mechanism, Listener Implementation, AWT Events.

#### **TEXT BOOKS**

1.JAVA The complete reference ,Ninth Edition,byPatrikNaughton and Herbert Sehildt,Oracle Press .

2 Programming With JAVA – By E Balaguruswamy,Mc-Grawhill publishers.

#### **REFERENCE BOOKS**

1. Mastering Java Machine Learning 2017by Uday Kamath Krishna Choppella Dr Uday Kamath (Author) Publisher: Ingram short title (2017)

2. Core Java Volume I--Fundamentals, 1 27 Aug 2018by Cay S. Horstmann (Author) **Publisher:** Prentice Hall; 11 edition (17 August 2018)

# **3BC-C2**: Unix Operating System

#### **Internal Marks : 30 Exam Marks: 70** Lecture Hrs : 54 **Course Description:**

A study of the UNIX operating system including multi-user concepts, terminal emulation, use of system editor, basic UNIX commands, and writing script files. Topics include introductory systems management concepts.

**Course Objectives:**To familiarize students with the concepts, design, and structure of the UNIX operating system. To teach students the use of basic UNIX Utilities, the principles of UNIX shell programming.

**Learning Outcome:**Ability to understand the Unix Operating System and the working of the built in commands available in Unix. This course will prepare students to develop software in and for effective command line usage, shell programming and C Language.

#### Unit-I

Introduction: History, features of Unix System architecture, Unix File System, Boot Block, super block, I-node table, data block, storing and accessing files, directory and file related commands.

#### Unit - II

Process management: Process creation, process examining and process killing, background process, piped process, process control, FOR, EXIT, WAIT and EXEC commands, demon process, delaying of processing and processing at specified time.

#### Unit - III

Special tools and utilities: Filters, Stream editor SED and AWK, Unix System calls and library functions, processes, signals and interrupts, writing simple system calls, storage and compression facilities.

#### **Unit-IV**

System administration: User and supervisor privileges and facilities, controlling processes, accessing the file system, security issues, secondary storage management, Unix System Communication: Introduction, write, read, wall commands, sending and handling mails.

#### Unit-V

Shell Programming 1:Vi Editor, shelltypes, shell command line processing, shell script features, executing a shell script, system and user defined variables, exprcommand, shell screen interface, read and echo statement, commands ubstitution, escape sequence characters, shell script arguments, test command, simple programs.

#### Unit-VI

Shell Programming 2: Conditional Control Structures-If statement, case statement,Loopingcontrol structure-While, Until, For, Break, and continue statements, Shell programs.

#### **TEXT BOOKS**

1. Unix Shell programming" by YeshwantKanetkar, BPB Publications, 4<sup>th</sup> Edition, 2017. 2. Unix concepts and Applications" by Sumitabha Das, Tata McGraw-Hill Education 4<sup>th</sup> Edition,2017.

# 9 Hours

9 Hours

## 9 Hours

#### 9 Hours

9 Hours

#### **REFERENCE BOOKS**

1. Sudo Mastery (It Mastery) 2nd ed. Editionby Michael W Lucas (Author) Publisher: Tilted Windmill Press; 2nd ed. edition (September 3, 2019)

2. Beginning Modern Unix: Learn to Live Comfortably in a Modern Unix Environment Paperback – August 11, 2018

#### **3BC-C3 : Database Management Systems** Lecture Hrs : 54 **Internal Marks : 30** Exam Marks : 70

**Course Description:** Advanced topics in database management and programming including client server application development are introduced. Expands knowledge of data modeling concepts and introduces object-oriented data modeling techniques.

**Objectives of the course are:** Students will learn the use of Structured Query Language in а variety of application and operating system environments. Technologies addressed in this course include SQL and relational database management systems such as MySQL, and SQL Server.

Learning Outcome : Have a broad understanding of database concepts and database management system software. Have a high-level understanding of major DBMS components and their function. Be able to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.

#### Unit-I

Introduction, Database Systems, Characteristics of DB Approach, Advantages of DBMS, Database Users, DB Languages, Applications of Database. 9 Hours

#### Unit - II

Data Model Concepts, Database System Architecture-Centralized, Client/Server: Twotier, Three-tier, Three-Schema Architecture-Physical Data Independence and Logical Data Independence, Different types of data models, Database Interfaces.

#### Unit - III

E-R Model concepts- Entities, Attributes, Relationship, E-R model constraints, E-R diagrams, Relational model concepts, Characteristics of relations, constraints on relations, Relational Algebra-Unary and Binary operations.

#### **Unit-IV**

**SQL**:DDL - Create table/views, Drop, Alter commands, DML - Insert, Delete, Update, Select, queries ,sub-queries, nested queries, Joins – equijoin, non-equijoin, Built-in functions of SQL & grouping. Concept of Functional dependency, Normalization -1NF,2NF,3NF.

#### Unit-V

Secondary Storage devices, Buffering of Blocks, Files on disk, Operations on files, File organization: Ordered files, Hashed files, Indexed files, Heap files, RAID organization.

#### **Unit-VI**

Concurrency Control Techniques, Recovery Techniques on databases, Transaction processing concepts, Database security and authorization. Introduction to Distributed databases, Data fragmentation, Replication and Allocation in distributed database, Query Processing in Databases.

#### **TEXT BOOKS**

1. RemezElmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", 5 th Edition, Pearson Education, 2007.

#### 9 Hours

#### 9 Hours

#### 9 Hours

9 Hours

#### **REFERENCE BOOKS**

1. Abrahamsi. Silberschatz, Henry. F. Korth, S. Sudarshan, "Database System Concepts" 6th Edition, McGraw Hill, 2012.

2. Database Design and Relational Theory: Normal Forms and All That Jazz 2nd ed. Editionby C. J. Date (Author)Publisher: Apress; 2nd ed. edition (December 16, 2019)

# **3BC-C4 : VB.NET Programming**

**Internal Marks : 30** 

#### Lecture Hrs : 54 **Course Description:**

This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger.

Objectives of the course are: The student will use VB.Net to build Windows applications using structured and object-based programming techniques.

**Learning Outcome:** The student will be able to Design, create, build, and debug Visual Basic applications. Explore Visual Basic's Integrated Development Environment (IDE).

#### Unit-I

#### **Overview of Microsoft .NET Framework and Basics of VB.Net**

The .NET Framework, The Common Language Runtime (CLR), Common type system(CTS), Variables and Data Types, operators, Data Type Conversion Functions, Control Flow Statements- Conditional Statements, Looping Statements.

#### Unit - II

#### **Arrays, Procedures, Functions**

Arrays, foreach statement, Dynamic Arrays, Arraylist, String and Date functions, Procedures and functions.

#### Unit - III

#### Windows Controls-1

Visual studio IDE, Form Control, Common controls - Label, Text Box, Button, Check Box, Radio Button and Group Box, Date Time Picker, List Box, Combo box, Picture Box, Rich Text Box,

#### Unit - IV

#### Windows Controls-2

Tree View, Menu Control, Tool Tip, Progress bar, Masked Textbox, Checked List box Data Grid, Timer, MsgBox, MessageBox, InputBox

#### **Unit-V**

#### **Object Oriented Programming**

Creating Classes, Object Construction & Destruction, Properties, Methods, Events, Access Specifiers: Public, Private, Protected, Protected, Friend, Me, MyBase and MyClass keywords, Abstraction, Encapsulation & Polymorphism Interfaces & Inheritance.

#### **Unit-VI**

#### **Database access using ADO.NET**

Benefits of ADO.NET, Managed providers, Disconnected data access, **Connected Data Access.** 

#### **TEXT BOOKS**

9 Hours

9 Hours

Exam Marks: 70

# 9 Hours

9 Hours

#### 9 Hours

1. Visual Basic.Net: Console and Windows Applications A Practical Approach By Rajendra Salokhe Arutha publishers 2017 edition.

2. Advance .NET Technology By Chirag Patel, 2<sup>nd</sup> edition, Dreamtech press **REFERENCE BOOKS** 

1.Computer Bible Games with Visual Basic 2019 Edition A Beginning Programming Tutorial For Christian Schools & Homeschools

2. Beginning Visual Basic - 2019 Edition: A Step by Step Computer Programming Tutorial [Print Replica] by Philip Conrod (Author), Lou Tylee (Author)

3. Visual Basic in easy steps, 6th edition: Updated for Visual Basic 2019 Mike McGrath (Author)

4. Visual Basic and Databases 2019 Edition: A Step-By-Step Database Programming Tutorial by Philip Conrod (Author), Lou Tylee (Author)

# **3BC-P1:Unix Lab**

No of Hours : 44

**Internal Marks : 15** 

Exam Marks: 35

#### **Course Objectives/Course Description**

The lab allows students to practice the use of commands, the use of common applications, and shell programming within the UNIX environment. Specifically basic UNIX utilities, file systems, shell environments, shell and other scripting languages, operating system security, and standard text editors

**Learning Outcome:** The students acquire the knowledge to build the suitable logic for solving the problem. The Knowledge and skills acquired in this course will be used in the area of Operating Systems and to build applications.

#### Section: A

- 1. To print all prime numbers between m and n(m<n).
- 2. To check whether a given number is Armstrong or not.
- 3. To find GCD and LCM of two numbers.
- 4. To count the number of vowels.
- 5. Checking whether the given string is a palindrome or not.
- 6. To find the occurrence of a character in given string.
- 7. Write a shell script, which displays all the files in the current directory, which has read or write permission.
- 8. Write a shell script to find a given pattern in a list of files of current directory using grep command.
- 9. To print a string in the reverse order.
- 10.Create a file containing the following fields candidate no name, Age, Sex, Height and Weights. Print all the details in a neat format.

#### **Section B**

- 1. Write a menu driven shell program for payroll System.
- 2. Write a menu driven shell program to generate a Electricity Bill.
- 3. Write a menu driven shell program to generate a shopping Bill.
- 4. Write a shell script to print the student details and generate the marks card.
- 5. Write a shell program for Inventory control of Super market.
- 6. Write a menu driven shell script to implement the following unix commands. a.rm b. uniq c. tail d. cmp

# **3BC-P2: VB.NET and SQL Lab**

No of Hours : 44

**Internal Marks : 15** 

Exam Marks: 35

## Part-A (VB.NET)

- 1. Accept a character from console and check the case of the character.
- 2. Write a program to accept any character from keyboard and display whether it isvowel or not.
- **3.** Write a VB.Net program to accept a string and convert the case of the characters.
- 4. Develop a menu based VB.Net application to implement a text editor with cut, copy,paste, save and close operations.
- 5. Develop a form in VB.NET to pick a date from Calendar control and display the day,month, and year details in separate text boxes.
- 6. Develop a database application using ADO.NET to insert, modify, update and deleteoperations.
- **7**. Develop a VB.Net application using Datagrid to display records.
- 8. Write a Program to demonstrate Crystal Report for Sales Order.

# Part-B (SQL)

#### A. To write simple queries and practice them.

- 1. Get the description of EMP table.
- 2. Get the description DEPT table.
- 3. List all employee details.

4. List all employee names and their salaries, whose salary lies between1500/- and 3500/- both inclusive.

- 5. List all employees which starts with either J or T.
- 6.. List all employee names and jobs, whose job title includes M or P.
- 7.. List all jobs available in employee table.
- 8. List all employees who belongs to the department 10 or 20.
- 9. List all employee names , salary and 15% rise in salary.
- 10. List minimum , maximum , average salaries of employee.
- 11. Find how many job titles are available in employee table.
- 12. What is the difference between maximum and minimum salaries of employees in the organization?
- 13. Display all employee names and salary whose salary is greater thanminimum salary of the company and job title starts with 'M'.
- 14. Find how much amount the company is spending towards salaries.
- B. Writing Queries using GROUP BY and other clauses. To write queries using clauses such as GROUP BY, ORDER BY, etc. and retrieving information by joining tables.
- Source tables: emp, dept, programmer, software, study.
- Order by : The order by clause is used to display the results in sorted order.
- Group by : The attribute or attributes given in the clauses are used to form groups. Tuples with the same value on all attributes in the group by clause are placed in one group.
- Having: SQL applies predicates (conditions) in the having clause after groups have

been formed, so aggregate function be used.

1. Display total salary spent for each job category.

2. Display lowest paid employee details under each manager.

3. Display number of employees working in each department and their department name.

4. Display the sales cost of package developed by each programmer.

6. Display each institute name with number of students.

7. Display the details of software developed by the male programmersearning more than 3000/-.

C.Writing Nested Queries.

To write queries using Set operations and to write nested queries.

1. Find the name of the institute in which the person studied anddeveloped the costliest package.

2. Find the salary and institute of a person who developed the highest selling package.

3.Display the details of those who draw the same salary.

D. Create Two tables.

gid	first_name	last_name	birthday	favorite_tool
1	Albert	Einstein	1879-03-14	mind
2	Albert	Slater	1973-10-10	singlet
3	Christian	Slater	1969-08-18	spade
4	Christian	Bale	1974-01-30	videotapes
5	Bruce	Wayne	1939-02-19	shovel
6	Wayne	Knight	1955-08-07	spade

#### Gardeners table

pid	gardener_id	plant_name	fertilizer	planting_date
1	3	rose	yes	2001-01-15
2	5	daisy	yes	2020-05-16
3	8	rose	no	2005-08-10
4	9	violet	yes	2010-01-18
5	12	rose	no	1991-01-05
6	1	sunflower	yes	2015-08-20
7	6	violet	yes	1997-01-17
8	15	rose	no	2007-07-22

#### Plantings table

a) Perform Inner Join for the above tables.

b) Perform Full Join for the above tables.

c) Perform Left Join.

d) Perform Right Join.

# **3BC-7P:Core Java Lab**

No of Hours : 44

Internal Marks : 15

Exam Marks: 35

#### **Course Objectives/Course Description**

this hands-on course, students gain extensive experience with Java and its objectoriented features. Students learn to create robust console and GUI applications and store and retrieve data from relational databases. Students will learn how to write, compile and execute Java programs.

#### Learning Outcome

Upon completion of the course, the students acquire the knowledge to build the suitable logic for solving the problem. Students can create a software application, test, document and prepare a professional looking package for each project.

#### Section A:

1. Write a program to find whether the character 'a' is in your name or not. If yes find the number of times of character 'a' appears in your name. Print locations of occurrences of 'a'.

2 To find sum of a digits of a given number.

3 To insert element in an existing array.

4 To display IP address of a system.

5 To sort an existing array.

6 To illustrate Method Overloading.

7 To create object for TreeSet and use all methods.

8 To check all math functions.

9 To generate random numbers between 50 and 100.

10 Program to create an applet to scroll a text message.

#### Section: B

11 To arrange the given string in ascending and descending order.

12 To illustrate Hybrid Inheritance.

13 To illustrate Thread Synchronization.

14 To create a object for Stack and all methods.

15 To calculate Tax using Interface.

16 To draw a human face using Applet.

17 To Demonstrate Custom Exeption.

18 To find various colleges under every University using packages.

# Fourth Semester B.C.A

IV Semester BCA							
Part	Code	ode Course(Subject)	Hours		Marks	Credite	
Tart	coue		110015	IA	Exam	Total	Creatts
	LBCK-C4	Kannada-IV				100	
	LBCH-C4	Hindi-IV	4	30	70		2
Part-1	LBCS-C4	Sanskrit-IV	-				
	LBCA-C4	Additional English-IV					
	LBCE-C4	English-IV	4	30	70	100	2
	4BC-C1	Design and Analysis of Algorithms	4	30	70	100	4
	4BC-C2	Python	4	30	70	100	4
	4BC-C3	Software Engineering	4	30	70	100	4
Part-2	4BC-C4	Core Java	4	30	70	100	4
	4BC-P1	Python Lab	3	15	35	50	1
	4BC-P2	Core Java Lab	3	15	35	50	1
	4BC-P3	Mini Project	3	15	35	50	1
Part-3	MC3	Value Education	2	15	35	50	2
I UI C	SD	Skill Development	2	15	35	50	1
Total Marks & Credits         270         630         900         28							

LBCK-C4 : ಕನ್ನಡ ೪ – Kannada IV	
Lecture Hrs: 54 Internal Marks: 30 Exam Marks	5:70
Objectives: ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳನ್ನು ಪರಿಚಯಿಸುವುದರೊಂದಿಗೆ, ನಾಟಕ ಪ್ರಕಾರದ ಮೂಲಕ ವಿದ್ಯಾಥಿ ಭಾಷೆಯನ್ನು ಕಲಿಸುವುದರೊಂದಿಗೆ ಭಾಷೆಯ ವಿವಿಧ ಮುಖಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.	ರ್ಶಗಳಿಗೆ
Course Outcomes: ನಾಟಕಗಳು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಸಾಮಾಜಿಕ ಜವಾಬ್ದಾರಿಯನ್ನು ಕಲಿಸುವುದರಲ್ಲಿ ಮಹತ್ವದಾಯಕ ಕಾದಂಬರಿಯು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಸಾಹಿತ್ಯ ಪ್ರಕಾರದ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸುವಲ್ಲಿ ಅನುಕೂಲಕರವಾಗಿ ಕಥೆಗಳು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಸಾಹಿತ್ಯ ಸೃಷ್ಟಿಯಂತಹ ಕ್ರಿಯಾಶೀಲ ಬರವಣಿಗೆಗೆ ಸಹಾಯಕವಾಗಿ ಪ್ರಬಂಧಗಳು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ವಿಷಯವೊಂದನ್ನು ವಿಶ್ಲೇಷಿಸುವುದನ್ನು ಕಲಿಸುತ್ತದೆ.	ವಾಗಿವೆ. ರುತ್ತದೆ. ರುತ್ತದೆ.
Title: ನಾಟಕ ಏಕಲವ್ಯ–ಸಿದ್ಧಲಿಂಗಯ್ಯ	20
Title: ಕಾದಂಬರಿ ಬೆಟ್ಟದ ಜೀವ– ಶಿವರಾಮ ಕಾರಂತರು	16
Title: ಕತೆ/ಲಲಿತ ಪ್ರಬಂಧ ೧. ಬಿಳಿಯ ಕಾಗೆ–ಎಚ್.ನಾಗವೇಣಿ	4
೨. ನಾಗರ ಬೆತ್ತ–ಸೇಡಿಯಾಮ ಕೃಷ್ಣಭಟ್ಟ	5
೩. ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ –ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್	4
೪. ಹೀಗೊಂದು ಟಾಪ್ ಪ್ರಯಾಣ–ಈರಪ್ಪ ಎಂ.ಕಂಬಳಿ	5
ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು	
1. ಏಕಲವ್ಯ-ಸಿದ್ಧಲಿಂಗಯ್ಯ, ಅಂಕಿತ ಮಸ್ತಕ, ಬೆಂಗಳೂರು	
೨. ಬೆಟ್ಟದ ಜೀವ- ಶಿವರಾಮ ಕಾರಂತರು, ಸ್ವಪ್ನ ಬುಕ್ ಹೌಸ್, ಬೆಂಗಳೂರು	
ನ. ಅಲತ ಪ್ರಬಂಧಗಳು- ಅ.ರಾ.ಮತ್ರ-ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬರಗಳೂರು ೪ ಹೀಗೊಂದು ಟಾಪ್ ಪಯಾಣ-ಈರಪ ಎಂ ಕಂಬಳಿ	

LBCH-C4: Hindi : " <b>नरसिंहकथा</b> "					
Lecture Hrs : 54	Internal Marks : 30	Exam Marks : 70			
युनिट - १ : नरसिंहकथा।		45 Hours			
नाटककारकापरिचय।पाँचअंकोंकोन	॥टकनरसिंहकथाकाविवरण।				
युनिट - २ : रचना।		9 Hours			
निबंधलेखनकापरिचय।कल्पकापसं	द : चलनचित्रऔरनाटककेतुलना।				
TEXT BOOKS	C C				
'नरसिंहकथा' संपादकलक्ष्मीनारार	यणलाल।				
प्रकाशकऔरमुद्रक : लोकभारतीप्रक	गशन , इलाहाबाद।				
REFERENCE BOOKS					
1. सुबोधव्यवहारिकहिन्दी, संपादव	म : डॉ. कुलदीपगुप्त।प्रकाशकओरम्	ाद्रक : अनिल			
पुस्तककेंद्र, बेंगलूरु					

#### The National College, Autonomous, Basavanagudi, Bengaluru-04

	LBCS-C4 : Sanskrit IV			
Lecture Hrs : 54	Internal Marks : 30	Exam Marks : 7	70	
<b>Unit-I:</b> Drishya kavya and Sh and Uparupaka, drama – it's	ravya, Gadhya, padhya and Chamj a kind of Rupaka	ou, Rupaka 8 H	Hrs.	
<b>Unit - II :</b> Drama – origin and	d development of drama, theories	of drama 8 I	Hrs.	
<b>Unit-III</b> : Important dramatists, Bhasa is one of the dramatist, his life history, his date, works, common features found in dramas of Bhasa, his style				
<b>Unit – IV:</b> Detailed text – acts), dramatists personae, M worship sutradhara, his role	drama Swapna vasava dattam o Vandi, its significance in drama, it , prasthavana, slokas and dialogue	f Bhasa (I–III <b>26</b> s preliminary s, explanation	oHrs	
<b>Units – V:</b> Translation of uns	seen passages and comprehension	4 I	Hrs.	

**Text Book :** Swapna Vasava Dattam of Bhasa by Prof. M. K Surya Narayana Rao, Subhash Publications

LBCA Additional English IV					
Lecture Hrs: 54	Internal Marks: 30	Exam Marks: 70			
Prose & Poetry		20 Hours			
<ol> <li>Character - Willia</li> <li>The unknown citi</li> <li>Invictus - Willian</li> <li>Telephone Conve</li> <li>White Paper - Sha</li> <li>Punishment in Ki</li> </ol>	Im Wordsworth zen- W.H. Auden I Ernest Henley rsation - Wole Soyinka arankumar Limbale (Translated) by I ndergarten - Kamala Das	Priya Adarkar			
Play		7 Hours			
1. "Never Never Ne	st" - Cedric Mount				
Language		27 Hours			
<ol> <li>Summary Writing</li> <li>Note making</li> </ol>	ŗ				

#### LBCE-C4: English - IV

Lecture Hrs : 54 Internal Marks : 30

Exam Marks : 70

**20 Hours** 

**10 Hours** 

24 Hours

**Course Description:** The course introduces the learners with contemporary literary texts and prepares the aspiring learners to competitive examination

**Course Objectives:** To introduce the learners to Children's Literature and the larger perspective it presents. The course also helps learners to acquire critical thinking skills through exercises in Critical Reasoning.

#### **Course Outcomes:**

1. Learners will comprehend the contextualised discussion of contemporary issues through Children's Literature

2. To equip learners with the following language abilities:

- I. To become independent readers
- II. To express their thoughts and opinions in writing in the format of the blog
- III. To equip learners with important short writings for official communication

#### Unit-I: Novella

Haroun and the sea of stories—Salman Rushdie

#### Unit -II

- 1. A Far cry from Africa Derek Wallacot
- 2. I do not love you except because I Love you Pablo Neruda
- 3. A Study in Emerald Neil Gaiman
- 4. How the Flamingos got red legs Folktale from Latin America

#### Unit-III: Reading & Writing Skills

- 1. Reading Skills: SQ3R
- 2. Writing for the blog
- 3. Official Letter Writing
- 4. Resume with Covering Letter

5. Critical Reasoning

# **4BC-C1**: Design and Analysis of Algorithms

Lecture Hrs : 54 **Internal Marks : 30** 

**Course Description:** the course is to teach techniques for effective problem solving in computing. The use of different paradigms of problem solving will be used to illustrate clever and efficient ways to solve a given problem. In each case emphasis will be placed on rigorously proving correctness of the algorithm. In addition, the analysis of the algorithm will be used to show the efficiency of the algorithm over the naive techniques.

**Objectives of the course are:** This course aims to introduce the classic algorithms in various domains, and techniques for designing efficient algorithms.

**Learning Outcome**: Analyze the asymptotic performance of algorithms. Write rigorous correctness proofs for algorithms. Demonstrate a familiarity with major algorithms and data structures. Synthesize efficient algorithms in common engineering design situations.

Unit-I:Introduction to Analysis and Design of Algorithms.

A simple example of Design, Insertion sort, pseudo code for insertion sort, analysis of time complexity, Asymptotic notations and time complexity and writing efficient programs (by considering some small programs). Harner's method of evaluating a polynomial at a given point, finding maximum and minimum for a given set of numbers, straight max, straight min, combinations for max and min. Analysis of linear and binary search algorithms.

#### Unit – II: Divide and Conquer Algorithms.

Divide and conquer algorithms, Sorting, multiplication of two long integers, Stassen's matrix multiplication.

#### **Unit – III: The Greedy Method.**

Greedy approach, optimum scheduling, fractional Knapsack problem, minimum spanning trees, single source shortest path problem.

#### **Unit-IV : Dynamic Programming.**

Dynamic programming, Design and analysis, Travelling salesman problem, optimal parameterization for product of a sequence of matrices.

#### Unit-V: Back Tracking and Branch and Bound.

Back tracking and Branch and bound methods, least cost method, 4-queens problem using back tracking, travelling salesman problem using branch and bound method.

# **Unit-VI: Lower Bound Theory**

**TEXT BOOKS** 

1. Design & Analysis Of Algorithms by S Srikanth, Published by Skyward Publishers 2.A.M Padma Reddy, Seventh revised edition February 2014, Sri Nandi Publication

#### **REFERENCE BOOKS**

1. The Design and Analysis of Computer Algorithms by Aho, Hopcroft and Ullman.

2. Algorithms by Jeff Erickson (Author)Publisher: Independently published (June 13,2019)

**3.** Algorithms Illuminated (Part 3): Greedy Algorithms and Dynamic Programminby Tim Roughgarden (Author)Publisher: Soundlikeyourself Publishing, LLC (May 1, 2019)

# 9 Hours

#### 9 Hours

#### 9 Hours

9 Hours

#### 9 Hours

# 9 Hours

Exam Marks: 70

# **4BC-C2:** Python Programming

Internal Marks: 30 Lecture Hrs : 54 Exam Marks : 70 **Course Objectives/Course Description:**The course is designed to provide Basic knowledge of Python. Python programming is intended for Software development and coding in software Industry. Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience.

Learning Objectives: To understand why Python is a useful scripting language for developers. To learn how to design and program Python applications. To learn how to design object-oriented programs with Python classes. To learn how to use class inheritance in Python for reusability. To learn how to use exception handling in Python applications for error handling.

Learning Outcome: Problem solving and programming capability.

#### **Unit-I**

Introduction to Python, History of Python, Basic Features of Python, Python virtual machine, writing python program, Datatypes in python, operators, Mathematical Functions.

#### Unit - II

Input and output, Selections-if statements, Loops-for and while loops, infinite loops, nested loops, break, continue, pass, assert and return statements.

#### Unit - III

Arrays in Python-creating an array, types of arrays, arrays using numpy, multidimensional arrays, Strings and string functions, Functions-defining a function, calling functions, recursive functions, function decorators.

#### **Unit-IV**

Lists and Tuples, Dictionaries, classes and objects, Inheritance and Polymorphism, abstract class and interface.

#### **Unit-V**

**12 hrs** 

Exception, Exception Handling, Types of exception, Files, types of files, file open and close, with statement, GUI programming using tkinter.

#### **TEXT BOOKS**

1. Dr. R. Nageshwar Rao, "Core Python programming", Dreamtech press, 2017 edition.

#### **REFERENCES BOOKS**

1. Kenneth A. Lambert, B.L Juneja, "Fundamentals of Python Programming", Cengage Learning, ISBN:978-81-315-2903-4, 2015

2. Charles Dierbach. "Introduction to Computer Science Using Python:

Computational Problem-Solving Focus", Wiley, ISBN: 978-81-265-5601-4, 2015

3. Y. Daniel Liang, "Introduction to Programming Using Python", Pearson, ISBN:978-0-13-274718-9, 2013

4. Exploring Python, Timothy A. Budd, Indian edition, McGraw Hill education, ISBN-13:978-0-07-132122-8

# 10hrs

10hrs

# **10 hrs**

## **12 hrs**

# **4BC-C3: Software Engineering**

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70 Course Description:Software Engineering (SE) comprises the core principles consistent in software construction and maintenance: fundamental software processes and life-cycles, requirements analysis, software engineering methodologies and standard notations, principles of software architecture, software quality frameworks and validation, software developmentand maintenance tools.

**Objectives of the course are:**A general understanding of software process models f software requirements and SRS documents. Understanding of the role of project management including planning, scheduling, risk management, etc. Describe data models, object models, context models and behavioral models. Understanding of different software architectural styles, implementation issues and coding standards. **Learning Outcome:**Basic knowledge and understanding of the analysis and design of complex systems. Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems. To produce efficient, reliable, robust and cost-effective software solutions. Ability to perform independent research and analysis.

#### Unit-I

Introduction: Evolution, S/W characteristics, Challenges, Applications, Software engineering process, S/W engineering models ,Waterfall Model,Prototyping,Iterative Development,Rational Unified Process,Extreme Programming and Agile Process.

#### Unit - II

Software Requirements Analysis and Specification:Role of SRS, Requirement Process,Requirements specification, Desirable Characteristics of an SRS,Component of an SRS,Structure of a Requirement Document,Functional Specification with Use cases,Other Approaches for Analysis,Validation.

#### Unit - III

Software Architecture:Role of Software Architecture,Architecture Views,Component and Connector View,Architecture Styles for C&C view,Documenting Architecture Design,Evaluating Architectures.

#### **Unit-IV**

9 Hours

Design:Design concepts, Design Principles, Function-Oriented Design: Module-Level Concepts, Design Notation and Specification, Structured Design Methodology, Detail Design: PDL, Logic/Algorithm Design, Verification.

#### **Unit-V**

Coding:Programming Principles and Guidelines,Unit Testing,Coding Standards and Verification,Code Inspection and Static Analysis.

#### Unit-VI

#### 9 Hours

9 Hours

Testing:Testing Concepts,Testing Process, Test Planning and Strategies, Black-Box Testing, White-Box Testing.

#### 9 Hours

9 Hours

#### **TEXT BOOKS**

1. An Integrated approach to Software Engineering by Pankaj Jalote,3<sup>rd</sup>Edition,Narosa Publishing House,2013.

2. Software Engineering by Roger S.Pressman, A Practitioner's approach, 7<sup>th</sup>Edition, McGraw-HILL Publication, 2010.

#### **REFERENCE BOOKS**

1. Software Engineering by Ian Sommerville,9<sup>th</sup>Edition,Pearson Education Ltd,2010.

# **4BC-C4** :Computer Graphics

**Internal Marks : 30** Lecture Hrs: 54 Exam Marks: 70 **Course Description:** Computer graphics courses enable students to create 2D and 3D designs, use animation techniques and study advances in the field. The course will focus on the theoretical aspects and implementation of computer graphics. This course provides introduction to computer graphics algorithms, software and hardware. Topics include: ray tracing, the graphics pipeline, transformations, texture mapping, animation and color enables the student to learn the functionalities behind Image processing and other graphics concepts.

**Objectives of the course are:** Students will be able to identify and explain the core concepts of computer graphics, Apply graphics programming techniques to design, and create computer graphics scenes. Create effective graphics library programs to solve graphics programming issues, including 3D transformation, objects modeling and color modeling.

Learning Outcome : Ability to use modern 2D and 3D computer graphics techniques, models, and algorithms to solve graphics problems.

#### **Unit-I**

Overview of computer graphics. Practical applications of computer graphics, Display devices (CRTs, DVST, and Plasma panel display) hard copy devices (printers and plotters), Display processors, and Graphics software and graphics standards.

#### Unit - II

Output Primitives. Line drawing and circle generating algorithms, color and intensity, Area filling, scan-line area fill algorithm.

#### Unit - III

Two-dimensional Transformations. Scaling, translation and rotation, Matrix representations and homogeneous coordinates, composite transformations, reflection and shear, raster methods for transformations.

#### **Unit-IV**

**Concept of Window and clipping.** Concept of a window, window to viewport transformation. Clipping algorithms (Cohen-Sutherland line clipping algorithm and Sutherland –Hodgeman polygon clipping algorithms), text clipping and interior clipping.

#### **Unit-V**

Three-Dimensional Graphics. Three-dimensional co-ordinate systems, Three-dimensional display techniques, Three-dimensional graphics packages, polygon surfaces, Fractals, objects, Representation of solid objects, constructive solid Octrees, Introduction to fractals.Hidden surface geometry, eliminationcharacteristics of algorithms, back face detection method, Depth buffer algorithm and Introduction to animation.

#### **Unit-VI**

Input Devices and Input Techniques. Physical input devices (Key board, mouse, lighten, and tablet devices) logical classification of input devices, Input modes and functions, event handling. Interactive input techniques.

#### 9 Hours

## 9 Hours

## 9 Hours

# 9 Hours

9 Hours

#### **TEXT BOOKS**

1. Computer Graphics by Hearn D & M.P. Baker, Second Edition (Pearson Education)

#### **REFERENCE BOOKS**

- 1. Computer Graphics: Implementation and Explanation Paperback August 29, 2019by Jules Bloomenthal (Author)
- 2. The Complete Guide to Blender Graphics: Computer Modeling & Animation, Fifth Edition 5th Editionby John M. Blain (Author) Publisher: A K Peters/CRC Press; 5 edition (April 30, 2019)
- 3. Introduction to Computer Graphics: A Practical Learning Approach (Chapman & Hall/CRC Computer Graphics, Geometric Modeling, and Animation) 1st Edition Publisher: Chapman and Hall/CRC; 1 edition (October 17, 2014)

# **4BC-P1: Python Lab**

**Internal Marks : 15** 

No of Hours : 44

Exam Marks: 35

**Course Objectives/Course Description:** 

The course will help the students to get familiar with: Basics of Python programming. Decision Making and Functions in Python. Object Oriented Programming using Python Files Handling in Python. GUI Programming and Databases operations in Python.

**Learning Outcome:** Describe the Numbers, Math functions, Strings, list, tuples and dictionaries in Python. Express different Decision Making statements and Functions Interpret Object oriented programming in Python. Understand and summarize different File handling operations.

- 1. Program to demonstrate mathematical functions.
- 2. Program to calculate Body mass Index by accepting height and weight.
- 3. Program to demonstrate Bank transactions using class and objects.
- 4. Program to generate prime numbers and calculate CPU time using time module.
- 5. Program to generate different permutations of a given String using functions.
- 6. Program to demonstrate format specifiers of python by calculating interest and Principle amount for 'n' number of years.
- 7. Program to sort given numbers using selection Sort.
- 8. Program to convert temperature to Fahrenheit and vice versa using functions.
- 9. Program to find different areas of shapes using functions.
- 10. Program to find the occurrence of Character in a given file.
- 11. Program to generate Login Page UI using Tkinter.
- 12. Program to accept data from a Excel Sheet of temperature database and calculate the maximum and minimum temperature recorded using pandas.
- 13. Program to demonstrate list methods.
- 14. Program to demonstrate String methods in python.
# **4BC-P2: Computer Graphics Lab**

No of Hours : 44

## Internal Marks : 15

Exam Marks: 35

#### **Course Objectives/Course Description:**

Software applications, libraries, and graphical user interfaces to support computer graphics and design projects by providing supervised practice and individualized computer assisted learning on software and techniques commonly found in the computer graphic design field.

#### Learning Outcome:

Develop design drawings that demonstrate computer graphics and design skills and prepare technical drawings that demonstrate expertise in desired career objective and skills.

#### Section A

- 1. Program to draw a straight line using DDA technique.
- 2. Program to draw a straight line using Bresenham's technique.
- 3. Program to draw a circle using DDA technique.
- 4. Program to draw a circle using Bresenham's Technique
- 5. Pie chart Depiction of the results of an election between four parties.
- 6. Develop a Histogram for ABC Car Company produced 24, 16, 12 & 08 thousand cars in 1990, 1991, 1992, & 1993.
- 7. Animation like fish movement.
- 8. Animation like flag movement.
- 9. Animation like a man walking with an umbrella. **Section B**
- 10. Program to fill any given polygon using scan fill algorithm.
- 11. Program to illustrate Translation and Scaling for a Triangle.
- 12.Program to illustrate Rotation and Reflection for a Triangle.
- 13.Program to implement Cohen Sutherland line clipping algorithm.
- 14. Program to implement Sutherland-Hodgeman polygon clipping algorithm
- 15. Clipping the triangle against a given window

# **4BC-P3: Mini Project**

No of Hours : 44

**Internal Marks : 15** 

Exam Marks: 35

**Course Description**:Students have to develop a mini project using a DBMS as back end tool and any GUI as a front end tool. Students should be divided into batches, each batch containing not more than four students. They should implement their projects in college in any RDBMS package available in the college.

**Course Objectives:**The course is designed to give a real-time development and industry exposure to the students.

**Learning Outcome:** The student experiences and learns the industry software development methodologies.

# Fifth Semester B.C.A

V Semester BCA							
Part	Code	Course(Subject)	Hours	Marks			Credits
	nouis	IA	Exam	Total	Creuits		
	5BC-C1	Internet Technologies	4	30	70	100	4
	5BC-C2	Artificial Intelligence	4	30	70	100	4
	5BC-C3	Computer Networks	4	30	70	100	4
Part-2	5BC-C4	Web Application Development	4	30	70	100	4
	5BC-C5	Cloud Computing	4	30	70	100	4
	5BC-P1	Internet Technologies Lab	3	15	35	50	1
	5BC-P2	Web Application Development Lab	3	15	35	50	1
	5BC-P3	Simulation Project Lab	3	15	35	50	1
Part-3	Part-3 MC4 Communicative English		2	15	35	50	1
Total Marks & Credits      225      525      750      26							

# **5BC-C1: Internet Technologies**

Internal Marks : 30 Lecture Hrs : 54 **Course Description:** The basic principles of WWW sites planning and creation. The basics of sites creation of Cascading Style Sheets, Client-side programming, Serverside programming, Dynamic Web pages, which based on databases. Languages for description and data. Representation. Web sites testing and publications and also management by it. The Management systems

**Course Objectives:**This course is intended to teach the basics involved in publishing content on the World Wide Web. This includes the 'language of the Web' – HTML, the fundamentals of how the Internet and the Web function, a basic understanding of graphic production with a specific stress on creating graphics for the Web, and a general grounding introduction to more advanced topics such as programming and scripting. This will also expose students to the basic tools and applications used in Web publishing.

**Learning Outcome:** Analyze a web page and identify its elements and attributes.Create web pages using XHTML and Cascading Styles sheets. Build dynamic web pages using JavaScript (client side programming).

#### **Unit-I: HTML AND XML**

Html tags, list, table, images, frames, forms. DTD, XML schemes, presenting and using XML.

#### Unit II: CSS

What is CSS and CSS3, CSS syntax, CSS example, CSS comments, The id and selector class, Three ways to insert CSS, CSS background, CSS text, CSS fonts, CSS links, CSS lists, CSS tables, CSS box model, CSS border, CSS outline, CSS margin, CSS padding.

#### **Unit – III : Scripting**

Java script: Introduction, documents, forms, statements, functions, objects; Event and event handling.

#### **Unit-IV**:JDBC

Introduction to JDBC, JDBC Drivers, java.sql package, Using Data Source Object to make a connection, JDBC Processing with Java.sql, ResultSet, JDBC Processing with Javax.sql, Connection Pooling, Transactions.

#### **Unit-V**:Web Servers and Servlets

Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servlet HTTP package, Handling Http Request&Response.

#### **Unit-VI : Introduction to JSP: 9 Hours**

JSP Architecture, JSP life cycle, JSPscripting elements, JSP directive elements, JSP Standard action elements, Implicit objects, Error handling in JSP.

#### 9 Hours

9 Hours

9 Hours

# 9 Hours

## 9 Hours

## Exam Marks: 70

#### **TEXT BOOKS**

 Web Technologies-Black Book,Kogent Learning Solution Inc Sol. DreamTech Press. 17 September 2009

2. Web Technologies,Uttam K Roy.oxford university press , 13 June 2011.

#### **REFERENCE BOOKS**

The complete reference Java 2.7th Edition by Patrick Naughton and Herbert Schildt TMH.1 Jul 2017

# **5BC-C2:** Artificial Intelligence

**Internal Marks : 30** Lecture Hrs : 54

**Course Description:**Artificial Intelligence, is science and engineering to develop intelligent machines that works like human to do tasks such as speech recognition, decision-making, reasoning, learning, problem solving and translation between languages. It has become an intelligent part of today's industry which is crucial as data is growing Big. It can perform tasks such as identifying patterns in data more effectively than humans thus making business more profitable.

**Objectives of the course are:** The objective of the course is to present an overview of Artificial Intelligence principles and approaches. Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning. Understand the role of knowledge representation, problem solving, and learning in intelligent-system engineering.

**Learning Outcome:** Students will be able to compare AI with human intelligence and traditional information processing, and discuss its strengths and limitations and its application to complex and human-centered problems. Discuss the core concepts and algorithms of advanced Artificial Intelligence. The subject aims at realizing aspects of intelligent behavior in computer systems.

#### **Unit-I**

Introduction. What is AI? Definitions, Importance of AI, Applications. Knowledge and Knowledge Representation, PL

#### Unit - II

Knowledge and Knowledge Representation. FOPL, Use and Rules, associative networks, Frames, Conceptual dependency and scripts.

#### Unit - III

Inference using the different methods of representation of knowledge, PL and FOPL. Conversion to clausal form, Resolutions, Rules, Production system and inference, Inference in associative networks and frames.

#### **Unit-IV**

Natural Language processing. Introduction, Grammars and basic parsing techniques **Unit-V** 

Expert System. Introduction, Rule based and knowledge based knowledge acquisition Maintenance and manipulations.

#### **Unit-VI**

Learning. Introduction, Different methods of learning. A brief Introduction to LISP. **TEXT BOOKS** 

1. Introduction to Artificial Intelligence and Expert Systems by Dan. W. Patterson, 3rd Edition, 2015, Pearson Publication.

2. Artificial Intelligence: A Modern Approach 3rd Edition by Stuart Russell(October 14, 2015), Pearson Education India.

#### **REFERENCE BOOKS**

1. Artificial Intelligence by Eleine Rich and Knight,3rd Edition,1 Jul 2017Mc Graw Hill Publication

2. Artificial Intelligence: Building Intelligent Systems by Joshi P (Author), 3rd Edition, 2015, PHI Publication

#### 9 Hours

#### 9 Hours

9 Hours

9 Hours

Exam Marks : 70

9 Hours

9 Hours

# **5BC-C3: Computer Networks**

Lecture Hrs: 54

**Internal Marks: 30 Course Description:** This course is to provide students with an overview of the concepts and fundamentals of data communication and computer networks. Data

communication concepts switching and routing, network congestion, network topologies, network configuration and management, layered network models (OSI reference model) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols.

**Objectives of the course are:** At the end of the course, the students will be able to: 1. Build an understanding of the fundamental concepts of computer networking.

2. Familiarize the student with the basic taxonomy and terminology of the computer networking area. 3. Introduce the student to advanced networking concepts. Learning Outcome: After completing this course the student must demonstrate the knowledge and ability to: 1. Independently understand basic computer network technology. 2. Understand and explain Data Communications System and its components. 3. Identify the different types of network topologies and protocols.

#### Unit-I

**Objectives of Networking and Physical layer: Structure, architecture,** 

standardization OSI model. Transmission on Media - Twisted pair, base band and broad band coaxial cable, fiber-optic, analog transmission, digital transmission, PSTN, transmission and switching.

#### Unit - II

MAC Sublayer: LAN protocols, IEEE standards for LANs, Token Bus, Token Ring, fiber-optic networks, satellite networks.

#### Unit - III

DataLink Layer: Design Issues, Error detection and correction, sliding window protocols, Data link Layer in Public networks.

#### Unit-IV

Network Layer: Design Issues, Routing Algorithms-Optimality Principles, Shortest Path, Flooding, flow Based Routing, Broadcast routing, Congestion control algorithms, Internet working.

#### Unit-V

**Transport Layer and Session Layer:** Design Issues, QOS, Primitives, Design Issues Remote procedure calls, session's layer in public networks.

#### Unit-VI

Presentation Layer and Application Layer: Design Issues, Cryptography(Secret Key Algorithm-DES), FTP and management, e-mail

#### **TEXT BOOKS**

1. Computer Networks by Andrew S. Tanenbaum, Version 5th edition, Prentice Hall 2016

#### **REFERENCE BOOKS**

1. Computer Networking Beginners Guide: Ultimate Guide To Master Communication System Including Cisco And Ccna, Wireless And Cloud Technology, System ... And Ip Subnetting (Computer Networking Easy) July 26, 2019by Ramon Base (Author) 2. Networking for Beginners: Be Familiar with Computer Network Basics. Learn

9 Hours

# 9 Hours

9 Hours

# 9 Hours

9 Hours

#### 9 Hours

### Exam Marks: 70

What a Computer Network is, Why It Matters and How Networking May Raise a Challenge to Machine Learning July 7, 2019 by Scott Chesterton (Author)3. Computer Networking Beginners Guide: Introductory Guide to Understanding Wireless Technology and Communications Systems Including Cisco, CCNA, and the OSI model May 5, 2019 by Josh Daly (Author)

## **5BC-C4 Web Application Development**

Lecture Hrs : 54 Internal Marks : 30

**Course Description:**Web Application Development introduces the concepts and technical needs of web applications. The course equips students with resources for design, production, and evaluation of web applications and strategies for locating these resources.

**Objectives of the course:**This course is designed to provide the knowledge of Dot Net Frameworks along with ASP.Net and C#.

Learning Outcome: After completion of the course the student will be able to use the features of Dot NetFramework along with the features of ASP. NET & C#. Also Students will able to create console applications, web applications and web services. Unit-I 9 Hours

**Introduction to .Net Framework and C#:** The .Net Programming Frame work, .Net Languages, Common Language Run Time, The .Net Class Library Necessity of C#, Evolution of C#, Characteristics of C#, Applications, Structure of C# program, Name spaces, providing interactive inputs, multiple main methods, C# tokens, literals, variables, data types, value types, reference types, Boxing and Unboxing, for-each statement, Methods in C#, Handling Arrays.

#### Unit - II

**Classes and Objects:** Defining a class, Adding Variables, Adding Methods, member access modifiers, creating objects, accessing class members, static members and static constructors, constant members and read-only members, properties, indexers, Delegates and Events.

#### Unit - III

**Data Access with .NET.** ADO.NET overview, Using database connections, commands, The data reader, the dataset class, populating dataset class with a data adapter. The DataGridView Control, DataGridView Class Hierarchy, Data binding.

#### Unit-IV

**Developing ASP.NET Application and Web Controls** ASP.NET Application, Code behind model, The Global. Asax application File, Understanding ASP.NET Classes, Web form Fundamentals. Basic Web control classes, Auto Post back and Web control Events, Assessing Web controls Using Visual Studio.NET.

#### **Unit-V**

**Validation and Rich Controls and State management.** Validation Controls, Validation Process, Validation Classes, Server side Validation Classes, Manual Validation, Understanding Regular Expression, Custom Validation, View State, Transferring Information, Custom Cookies, Session State, Application State.

#### Unit-VI

**Master page , Themes, WCF:** Creating master page, simple master page, nested master page, expanding themes, creating themes, applying themes at runtime, features of wcf , routing services, default configuration, creating and using web services, creating and using wcf services.

#### 9 Hours

## 9 Hours

9 Hours

#### 9 Hours

#### 9 Hours

#### Exam Marks : 70

#### **TEXT BOOKS**

1. Programming in C# By E Balagurusamy, Fourth Edition(Tata McGraw Hill Publications)

2. Comdex .Net Programming Kit , Vikas Gupta, Fourth edition dreamtech puplication,

3. Asp.net Complete Reference , Mac Donald , Tata McGraw Hill Publications

#### **REFERENCE BOOKS**

1. Fundamental Concepts for Web Development: HTML5, CSS3, JavaScript and much more! For complete beginners! October 25, 2019by Roxane Anquetil (Author)

2. C# 8.0 and .NET Core 3.0 – Modern Cross-Platform Development: Build applications with C#, .NET Core, Entity Framework Core, ASP.NET Core, and ML.NET using Visual Studio Code, 4th Edition October 31, 2019by Mark J. Price (Author)

3. Mastering C# 8.0: Master C# Skills with Hands-on Code Examples (English Edition) October 11, 2019by Joydip Kanjilal (Author)

## **5BC-C5: Cloud Computing**

Lecture Hrs : 54 Internal Marks : 30

**Course Description**:Cloud Computing is a large-scale distributed computing paradigm which has become a driving force for information technology. This course covers topics and technologies related to Cloud Computing and their practical implementations. You should explore different architectural models of cloud computing, the concepts of virtualisation .Students should gain hands-on experience with various features of popular cloud platforms such as Google App Engine, Amazon Web Service throughout the lectures, tutorials, and laboratory sessions. Advanced cloud programming paradigms such as Hadoop's MapReduce is also included in the course.

**Objectives of the course are:** Understand various basic concepts related to cloud computing. Technologies. Understand the architecture and concept of different cloud models: IaaS, PaaS, SaaS. Understand big data analysis tools and techniques. Understand the underlying principle of cloud virtualization, cloud storage, data management and data visualization. Understand different cloud programming platforms and tools.

#### **Learning Outcome**

Introduce the broad perceptive of cloud architecture and model Apply different cloud programming model as per need. Explore some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications.

#### **Unit-I: Understanding Cloud**

Origin and influences, A brief History, Definitions, Business Drivers, Technology Innovations, Clustering Grid Computing, Virtualization, Technology Innovations vs. Enabling Technologies, Roles and Boundaries, Cloud Consumer, Cloud Service Owner,Cloud Characteristics, On-Demand Usage, Ubiquitous Access Multitenancy (and Resource Pooling), Elasticity, Measured Usage, Resiliency

#### Unit - II Cloud Delivery and cloud deployment models

Cloud Delivery Models, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), Comparing Cloud Delivery Models, Combining Cloud Delivery Models, *IaaS* + *PaaS*, *IaaS* + *PaaS* + *SaaS*, Cloud Deployment Models. Public Clouds, Community Clouds, Private Clouds, Hybrid Clouds, Other Cloud Deployment Models

#### **Unit - III Cloud Models**

Introduction, Storage as a service, Amazon storage services, Compute as a service Amazon elastic compute cloud(EC2), Cloud System matrix, Platform as Service, Windoes Azure, Google Apps Engine, Amazon Web services, Software as a Service CRM as a service, sales force.com

#### **Unit-IV :- Data Center**

Introduction to Data center, Virtualization, Standardization and modularity, Automation, Remote operation and management, Data center Security and facilities, Computing hardware, storage hardware, Network hardware, LAN fabric , SAN fabric, NAS gateways.

#### 9 Hours

9 Hours

Exam Marks: 70

#### 9 Hours

#### 9 Hours

#### **Unit-V : Cloud Virtualization Technologies**

Server Virtualization, Hypervisor based Virtualization, Hardware support Virtualization, VMware Virtualization software, Storage Virtualization, Hardware independence, Server Consolidation, Resource replication, Virtualization Management, Hypervisor clustering architecture.

#### **Unit-VI: Using the Mobile Cloud**

Defining Mobile Market, Connecting to the cloud, Adopting mobile cloud application, Smart phones with the Cloud, Android, Apple iPhone, Black berry, Symbian, Windows mobile, Mobile web service, Mobile interoperability, Location awareness, Push Service, Using SMS, Defining WAP and other Protocol, Performing Synchronization

#### **TEXT BOOKS**

1. Cloud Computing: Concepts, Technology & Architecture By Thomas Erl, Ricardo Puttini, Zaigham Mahmood, Publication : Prentice Hall 2013(4<sup>th</sup> Edition)

2. Moving to Cloud by Dinkar Sitaram, Geetha Manjunath, Publication: Syngress Elsevier Inc, 2014(2<sup>nd</sup> Edition)

3. Cloud Computing: From Beginning to End April 1, 2015by Mr. Ray J Rafaels (Author)

4. Cloud Computing with Security: Concepts and Practices 2nd ed. 2020 Edition

by Naresh Kumar Sehgal (Author), Pramod Chandra P. Bhatt (Author), John M. Acken (Author)Publisher: Springer; 2nd ed. 2020 edition (September 5, 2019)

#### **REFERENCE BOOK**

5. Essentials of Cloud Computing: A Holistic Perspective (Texts in Computer Science) Hardcover – August 28, 2019by Chellammal Surianarayanan (Author), Pethuru Raj Chelliah (Author)

6. Cloud Computing: A Comprehensive Guide to Cloud Computing Paperback – July 29, 2019by Austin Young (Author)

#### 9 Hours

9 Hours

# **5BC-P1 Internet Technologies Lab**

**Course Description:** The basic principles of WWW sites planning and creation. The basics of sites creation of Cascading Style Sheets, Client-side programming, Server-side programming, Dynamic Web pages, which based on databases. Languages for description and data. Representation. Web sites testing and publications and also management by it. The Management systems

**Course Objectives:** This course is intended to teach the basics involved in publishing content on the World Wide Web. This includes the 'language of the Web' – HTML, the fundamentals of how the Internet and the Web function, a basic understanding of graphic production with a specific stress on creating graphics for the Web, and a general grounding introduction to more advanced topics such as programming and scripting. This will also expose students to the basic tools and applications used in Web publishing.

**Learning Outcome:** Analyze a web page and identify its elements and attributes.Create web pages using XHTML and Cascading Styles sheets. Build dynamic web pages using JavaScript (client side programming).

#### Section **B**

- 1. Design Student application form using HTML.
- 2. Write HTML script to design a web page where page is divided into 2 frames. One frameset displays list of products and other frameset describes about product when one particular product is clicked.
- 3. Create an html file by applying the different style sheet using external and internal style sheet.
- 4. Write CSS to demonstrate id selector.
- 5. Write JavaScript to add two numbers using GetElementById method.
- 6. Write JavaScript for Form validation-checking for number and letters.
- 7. Write JavaScript to demonstrate date object.
- 8. Write JavaScript to demonstrate objects.
- 9. Write JavaScript to see a cookie.
- 10. Write a Jsp code to get parameters using get parameter method.

#### Section **B**

- 1. Write a java Jsp code to implement verification of a particular user login and display a welcome page.
- 2. Write a java Jsp code which uses <jsp: plugin> tag to run an applet.
- 3. Write a java Jsp code to get student information through html and createa java bean class, populate bean and displaythe same information through anotherJsp.
- 4. Write a Jsp code to get student information from database stored in Mysql.
- 5. Insert a record to database using Jsp and Jdbc.

# **5BC-P2: Web Application Development LAB**

No of Hours : 44Internal Marks : 15Exam Marks: 35Course Description/Objective:This hands on lab helps the students to familiar with<br/>basic concepts of C#, concepts like delegates and events, ADO.NET, Web application<br/>development using asp.net.

**Learning Outcome**: After completion of the course the student will be able to use the features of Dot NetFramework along with the features of ASP. NET & C#. Also Students will able to create console applications, web applications and web services. **PART A: C#** 

- **1.** Write a C# program toaccept students register number,nameand 3 subjects marks and perform the following.
  - a)Display all student details with total marks.
  - b)Display student details whoscored highest marks
  - c)Display all student names in ascending order.

Design a system using class called book with a suitable members.

- **2.** A bookshop maintains the inventory of books that is being sold. The List includes book title, author name,price and stack position. The shop keeper Performs following activities
  - a) Add new books to inventory
  - b) Add stock to existing stock
  - c) Search a particular book
  - d)Display stock details.

Design a system using class called inventory with a suitable members.

**3.** Write a program to create a class studentwith datamembers registernumber,name and

three subject's marks.Set the values of the datamembers by using **indexers**.Calculate total marks ,averge and declare the class.Display all the information of the student with classs.

- **4.** Write a Program to find sum and difference of two matrices using multicast delegates.
- **5.** Write a Program to generate the first N even numbers and fobonacci numbers using events.
- **6.** Create a database *Bank* in which create a table customer with fields *Account Number*,

*Name, Account type* and *Total Balance*. Write a program to perform the following. a) Display all the records of the customer table.

- b) Display Account number and name of the customers whose account type is "SB"
- c) Update the total balance by adding bonus amount Rs 500whose balance is greater than or equal to 10,000.

- **7.** Create a database *Emp* in which create a table customer with fields *Employee Id*, *Name*, Designation and *Basic Salary*. Write a program to perform the following.
  - a) Display all the records of the Emp table.
  - b) Display number of records present in the table
  - c) Display the details of the employee who has highest basic salary.
- **8.** Write a program to create a dataset company and perform the following a) Add the table employee manually.
  - b) Retrieve the table Department from physical database and store in the Dataset.
  - c) Display the all contents of the company dataset.

#### PART B: ASP.NET

- **9.** Create Student feedback form about courses and store the details in a database and display feedback details inDataGridView control.
- **10.** Write a program containing the following controls: ListBox, Button, Image and Label.

The listbox is used to list products available in a store. When the user clicks the button . respective image will display on Image control and the cost of the selected product will be displayed on the label control.

- **11.** Create a Login user page by using *Login* Control. If the login is successful display user name and password in another page. If the user attempts login three times block the login control.
- **12.** Create a web page with textboxes for customer name, meter number, current reading and previous reading. Put required field validator and Compare validators. Calculate units consumed and total amount and display the same in another page.

# 5BC-P3: Simulation Project Lab

#### No of Hours: 44

**Internal Marks : 15** 

Exam Marks: 35

**Course Description**: Students should develop a project in a group of two members. They should implement their projects in college using C or C++. The students have to collect data outside practical hours. Project may be taken outside but must be implemented in the college. Internal marks can be awarded by the guide by evaluating the performance of the students during the course of project work.

**Course Objectives:**The course is designed to give a real-time development and industry exposure to the students.

**Learning Outcome:**The student experiences and learns the industry software development methodologies.

# Sixth Semester B.C.A

VI Semester BCA								
Part	Code	Course(Subject)	Hours	Marks			Credite	
i ui t	couc	course(subject)		IA	Exam	Total	creates	
	6BC-C1	TCP/IP	4	30	70	100	4	
	6BC-C2	Network Security	4	30	70	100	4	
Part-2	6BC-C3	Mobile Computing and Wireless Technologies	4	30	70	100	4	
	6BC-C4	Object Oriented Analysis and Design	4	30	70	100	4	
	6BC-C5	Business Analytics	4	30	70	100	4	
	6BC-P1	Business Analytics Lab	3	15	35	50	1	
	6BC-P2	Project Work	6	30	70	100	2	
Part-3	MC5	Environmental Science	2	15	35	50	1	
Total Marks & Credits      225      525      750      26								

9 Hours

1. Internetworking with TCP/IP by Comer.Douglas E ComerPublisher: Pearson (Intl)Copyright year: © 2015,Edition: 6th

#### **REFERENCE BOOKS**

1. Computer Networking Beginners Guide: Ultimate Guide To Master Communication System Including Cisco And Ccna, Wireless And Cloud Technology, System ... And Ip Subnetting (Computer Networking Easy) July 26, 2019by Ramon Base (Author) 2. TCP/IP Illustrated, Volume 1: The Protocols (2nd Edition) (Addison-Wesley Professional Computing Series) 2nd EditionPublisher: Addison-Wesley Professional; 2 edition (November 25, 2011)

#### **Lecture Hrs : 54 Course Description:**

This course introduces the student to the concept of the Internet Protocol and the suite of associated protocols. Through a series of discussion modules and exercises, the student willgain knowledge in the TCP/IP suite of protocols.

6BC-C1 :TCP/IP

**Internal Marks : 30** 

**Objectives of the course are:** Upon completion of this course thestudent will be able to:Differentiate the popular communication models. Explain the functions of the IP suite of protocols. Describe the architecture of IP addressing.

**Learning Outcome:**Identify the different types of network topologies and protocols.Model of TCP/IP.Identify the different types of network devices and their functions within a network. Understand and building the skills of subnetting and routing mechanisms.

#### Unit-I

**TCP/IP:**Origin, layering, Internet address, port numbers, DNS, client-server model, API, Link Laver, SLIP, MTU.

#### Unit - II

**Internet Protocol:** IP header, routing, subnet addressing, masks, example of subnet, ARP introduction, ARP cache, ARP, RARP-RARP packet format, examples, server design.

#### Unit - III

**ICMP**: message types, Ping program and trace execute program.

#### Unit-IV

**IP and Dynamic Routing:** Routing principles, dynamic routing, RIP, OSPF, BGP, CIDR, User datagram protocol, IGMP, DNS, FTP and BOOTP.

#### **Unit-V**

**TCP:** Header, TCP connection establishment and termination, Interactive data flow, bulk data flow time out and transmission.

#### Unit-VI

Telnet and Remote login, File Transfer Protocol, SMTP, other application TEXT BOOKS

#### 9 Hours

9 Hours

9 Hours

#### 9 Hours

9 Hours

### Exam Marks: 70

Lecture Hrs : 54 Internal Marks: 30 Exam Marks: 70 **Course Description:** Overview of secret-key and public-key cryptography. Authentication protocols and key management. Network security practice. Email security. IP security and web security. Intrusion detection and prevention systems. Firewalls and virtual private networks. Wireless network security.

The National College, Autonomous, Basavanagudi, Bengaluru-04

**Objectives of the course are:** 1. To understand the fundamentals of Cryptography 2. To acquire knowledge on standard algorithms used to provide confidentiality, integrity and authenticity. 3. To understand the various key distribution and management schemes. 4. To understand how to deploy encryption techniques to secure data in transit across data networks

#### Learning Outcome :

Identify computer and network security threats, classify the threats and develop a security model to prevent, detect and recover from the attacks. Encrypt and decrypt messages using block ciphers, sign and verify messages using well known signature generation and verification algorithms.

#### Unit-I

Planning for Security: Introduction; Information Security Policy, Standards, and Practices; The Information Security Blue Print; Contingency plan and a model for contingency plan

#### Unit - II

Security Technology-1: Introduction; Physical design; Firewalls; Protecting Remote Connections

#### Unit - III

Cryptography: Introduction; A short History of Cryptography; Principles of Cryptography; Cryptography Tools; Attacks on Cryptosystems.

#### **Unit-IV**

Introduction to Network Security, Authentication Applications: Attacks, services, and Mechanisms; Security Attacks; Security Services; A model for Internetwork Security; Internet Standards and RFCs Kerberos, X.509 Directory Authentication Service.

#### **Unit-V**

Electronic Mail Security: Pretty Good Privacy (PGP); S/MIME Hours IP Security: IP Security Overview; IP Security Architecture; Authentication Header; Encapsulating Security Payload; Combining Security Associations; Key Management.

#### **Unit-VI**

Web Security: Web security requirements; Secure Socket layer (SSL) and Transport layer Security (TLS); Secure Electronic Transaction (SET)

#### **TEXT BOOKS**

1. Michael E. Whitman and Herbert J. Mattord: Principles of Information Security, 2nd Edition, Cengage Learning, 2013.

2. William Stallings: Network Security Essentials: Applications and Standards, 3rd Edition, Pearson Education, 2017.

#### 9 Hours

# 9 Hours

9 Hours

9 Hours

#### 9 Hours

# 9 Hours

#### **REFERENCE BOOKS**

- 1. Behrouz A. Forouzan: Cryptography and Network Security, Special Indian Edition, Tata McGraw-Hill, 2014.
- 2. Computer & Internet Security: A Hands-on Approach 2nd Editionby Wenliang Du (Author)Publisher: Wenliang Du; 2 edition (May 1, 2019)
- 3. Cyber Securityby Jocelyn O. Padallan (Author)Publisher: Arcler Press (November 1, 2019)

#### 6 BC-C3: Mobile Computing and Wireless Technologies

Internal Marks: 30 Lecture Hrs : 54 Exam Marks: 70 **Course Description:** This course will give you an understanding of mobile computer systems particularly in the context of wireless network systems such as 2G/3G/4G mobile telephony, data networks, and other wireless networks and infrastructure. The course emphasizes how to interface hardware to mobile computing devices, and programming those devices.

**Course Objectives:**To impart fundamental concepts in the area of mobile computing, to provide a computer systems perspective on the converging areas of wireless networking, embedded systems, and software.

Learning Outcome: On completion of this course you should be able to: Describe wireless and mobile communications systems and be able to choose an appropriate mobile system from a set of requirements.Be able to avoid or work around the weaknesses of mobile computing, or to reject mobile computing as а solution.Interface a mobile computing system to hardware and networks.

#### Unit-I

Mobile Computing Architecture: Types of Networks, Architecture for Mobile Computing, 3-tier Architecture, Design Considerations for Mobile Computing. Unit - II

Global Systems for Mobile Communication (GSM): GSM Architecture, Entities, Call routing in GSM, PLMN Interface, GSM Addresses and Identities, Network Aspects in GSM, Mobility Management, GSM Frequency allocation.

#### Unit - III

SMS(Short Message Service): Mobile computing over SMS, Short Message Service, Value Added Services through SMS.

#### **Unit-IV**

GPRS (General Packet Radio Service): GPRS and Packet Data Network, GPRS Network Architecture, GPRS Network Operations, Data Services in GPRS, Applications for GPRS, Billing and Charging in GPRS.

#### **Unit-V**

CDMA(Code Division Multiple Access), 3G ,4G: Spread Spectrum technology, IS-95, CDMA versus GSM, Wireless Data, Third Generation Networks, Applications on 3G, Fourth Generation Networks, Difference between 3G and 4G.

#### **Unit-VI**

Mobile client: Moving beyond desktop, Mobile handset overview, Mobile phones and their features, PDA, What is Android, Architecture of Android Application, Features of Android.

#### **TEXT BOOKS**

1. Dr. Ashok Talukder, MsRoopaYavagal, Mr. Hasan Ahmed: Mobile Computing, Technology, Applications and Service Creation, 2d Edition, Tata McGraw Hill, 2010.

#### **REFERENCE BOOKS**

1. Designing and Deploying 802.11 Wireless Networks: A Practical Guide to Implementing 802.11n and 802.11ac Wireless Networks For Enterprise-Based Applications (2nd Edition) (Networking Technology) 2nd Edition Publisher: Cisco Press; 2 edition (May 28, 2015)

#### 9 Hours

#### **9** Hours

# 9 Hours

#### 9 Hours

9 Hours

# 9 Hours

2. Wireless Networks and Communicationsby Samson Colon (Editor) Publisher: Willford Press (June 10, 2019)

3. Fiber Optic Telecommunications Networks: Lit Fiber Serviceby James Booth (Author) Publisher: Independently published (June 4, 2019)

# 6BC-C4: Object Oriented Analysis and Design

Lecture Hrs : 54 **Internal Marks : 30** Exam Marks: 70 **Course Objectives/Course Description:**The course provides instruction and practical experience focusing on the effective use of object-oriented technologies and the judicious use of software modeling as applied to a software development process. Learning Outcome: To understand the object oriented life cycle. To know how to identify classes, objects, relationships. To know the Object Oriented Design process. To know about software quality and usability. To be able to model use case diagram. 9 Hours Unit-I

An Introduction to Objects Technology: The traditional approach, Object Technology Basics, Abstraction, Encapsulation, OOAD Methods.

#### Unit - II

Modeling Techniques: Modeling, Object Model, Dynamic model, Functional model.

Unit - III

The Analysis Phase: What is Analysis, Steps in the Analysis Phase, Library Management System (LMS) a case study, Characteristics of Analysis phase, and Overview of other OOA methods.

#### **Unit-IV**

9 Hours

The Design phase: What is Design, Aims of the Design Phase, Points to remember in Design phase, Example of a Design Class, Design Phase, Characteristics of the Concepts of Components, Design Phase for Modern Applications, Design Guidelines, The Design Document, Design Document-A Case Study, Overview of OOD methods. **Unit-V** 9

**Object Oriented Programming and Testing:** Programming with Objects, OOP Considerations, Generals Guidelines, and Programming Language Support for Object Orientation. Testing considerations, Testing Object orientedmodels, object oriented testing techniques, Designing test cases, Class testing, Interclass testing. **Unit-VI** 9

#### Hours

Hours

**Object oriented Databases and Introduction to UML:** Object oriented technology and RDBMS, OODBMS. What is UML, UML Terminology, Things in UML, Relationships in UML, Diagrams.

#### **TEXT BOOKS**

Atul Kahate: Object Oriented Analysis and Design, Mc Graw Hill Publication. 1. **REFERENCE BOOKS** 

1. Object Oriented Analysis And Design A Complete Guide - 2020 Edition Kindle Edition

by Gerardus Blokdyk (Author) Publisher: 5STARCooks (23 September 2019) 2. Object Oriented Analysis And Design A Complete Guide - 2020 Edition Paperback -

Hours

9 Hours

9

September 23, 2019by Gerardus Blokdyk (Author)Publisher: 5STARCooks (September 23, 2019)

## **6BC-C5 Business Analytics**

Lecture Hrs : 54

Internal Marks: 30

**Course Description**: Business analytics course helps to mine valuable information from innumerable bytes of data within minutes. The emphasis of the course lies on Forecasting, Time Series Analysis, and Econometrics to facilitate prediction of potential results on the basis of historical patterns. Techniques like statistical and quantitative analysis of data, enterprise analysis and Decision Making.

**Objectives of the course:** Apply data and analytics to reshape business models, operations, and decision-making processes. Integrate big data into marketing, supply chains, human resources, and other key functions.

Learning Outcome: The course prepares students for effective business intelligence, analytics, data science, and leadership roles by focusing on business acumen, ethics and leadership, data command, technology, and communication. Upon completion of the course, the students program as an experienced professional, having overcome the challenges of solving actual organizational issues with real-time data-sets on multiple occasions.

#### Unit-I:

Business enterprise Organization, Its functions and core business processes, Key purpose of IT in Business, Enterprise application (ERP/CRM.etc), Characteristics of Internet, Information users and their requirements.

#### Unit - II :

Introduction, Getting to know structured data-Characteristics, where does it come from, hassle free retrieval, unstructured data-How to manage, How to store, How to extract, semi structured data- How to manage, How to store, How to extract, model, difference between semi structured and structured data.

#### Unit-III :

OLTP-Queries, advantages, challenges, OLAP-one dimensional, two dimensional, three dimensional data, different OLAP architecture, Data models of OLTP and OLAP, Role of OLAP tools in BI architecture, LAP operations on multidimensional data.

#### Unit – IV:

Need for Data warehouse, Definition of Data warehouse ,Data Mart, Then an ODS, Goals of Data Date Warehouse, Goals of Data Warehouse, Constituents a Data warehouse, Data sources, Data mapping, Data staging, Data Integration, Data Integration Technologies, Data qualities, Data profiling, A case study from the health care domain.

#### Unit-V:

BI component frame work-Business layer, operation layer, Implementation Layer.BI for management, process improvement, performance improvement, Customer experience improvement, BI-users, Managing and maintenance of BI systems Managing operations for business continuity.

#### **Unit-VI**:

9 Hours

# 9 Hours

9 Hours

# Exam Marks : 70

## 9 Hours

# 9 Hours

## 9 Hours

Decision Making System, how to summarize, analyse and interpret data to facilitate decision making, Categorical and Numerical Data, Statistical Analysis , Statistical Tests.

#### **Text Book**

1. Fundamentals of Business Analytics-R.N.Prasad and Seema Acharya,2nd edition,2016,Wiley.

#### **REFERENCE BOOKS**

1. Business Analytics: Data Analysis & Decision Making - Standalone book 6th Edition by S. Christian Albright (Author), Wayne L. Winston (Author)Publisher: Cengage Learning; 6 edition (April 27, 2016).

2. Business Analytics: Data Analysis & Decision Making, S. Christian Albright/Wayne

L. Winston, 6th Edition,1st September 2019,Cengage Learning India Pvt. Ltd.

#### **6BC-P1 Business Analytics LAB**

No of Hours : 44

**Internal Marks : 15** 

Exam Marks: 35

#### **Course Objectives/Course Description:**

Apply principles and skills of economics, marketing, and decision making to contexts and environments in data science.Build and enhance business intelligence capabilities by adapting the appropriate technology and software solutions.

#### Learning Outcome:

Upon completion of the course, the students Analyze the economic and marketing environment's impact on business operations and objectives. Analyze the relationship between price and cost as determinants of supply and demand. Apply the principles and techniques of database design, administration, and implementation to enhance data collection capabilities and decision-support systems.

#### **1. TO IMPORT DATA INTO EXCEL FILE**

- a) Retrieve a file to excel.
- b) Graphic displays for qualitative data (Pareto diagrams, Dotplots and Histograms).

#### 2. NUMERICAL PRESENTATION OF UNIVARIATE DATA

a) Measures of central tendency and dispersion (mean, median, mode and midrange).

- b) Frequency Distributions.
- c) Box-And-Whisker Display.

#### 3. PRESENTATION OF BIVARIATE DATA

- a) Tabular presentation of Bivariate data (Pivot table & chart, scatter diagrams).
- b) Interpretation of the correlation coefficient.
- c) Linear Regression.

#### 4. RANDOM NUMBERS AND PROBABILITY

- a) Random numbers generation.
- b) The Binomial Probability Distribution.
- c) Cumulative Probabilities.

#### 5. ESTIMATION AND HYPOTHESIS TESTING

- a) Confidence Intervals.
- b) Hypothesis Testing.
- c) Z-estimate and T-estimate proportion.
- d) Confidence Intervals.

**6.** In "1.2 Two\_Novels.ipynb" discussed in the class, you found that Huck's name is mentioned the least because the story is told in first person. Find counts of Huck as subject ('I') and object ('me') and add the plots to those of Jim, Tom, and Huck.In the two novels, count the number of occurrences of other subject and object occurrences: he, his, she, her, they, them, we, us. Plot the cumulative counts. Look for patterns.

1. Draw similar plots for occurrences of names in Little Women.

- 2. For the two novels,
  - i. Count the number of sentences by chapter.
  - ii. Lengths of chapters.
  - iii. Average length of sentences by chapter.
  - iv. Average length of words by chapter.

#### 7 Perform the Following analysis on employee Table

- a) How many employees are skilled in BI?
- b) The count of employees skilled in
- c) How many employees belong to D3?
- d) The count of employees who belong to
- e) Which location is employee, E103 based out of?
- f) Location for Employee
- g) What is average experience for employees of Dept, D1
- h) Average experience for employees of Dept.
- i) What is the maximum experience that any employee has for BI?
- j) Maximum experience for an employee in
- k) What is the minimum experience that any employee has for Java?
- I) Maximum experience for an employee in
- m) How many employees are skilled in BI and belong to Dept, D1?
- n) The count of employees skilled in
- o) How many employees are skilled in BI or Java?
- p) The count of employees skilled in BI or Java
- q) How many employees are skilled in (BI and have Dept as D1 )or (have Dept as D3)
- r) The count of employees skilled in (BI and have Dept as D1) or (have Dept as D3)
- s) How many employees are skilled in (BI and have Dept as D1) or skilled in (Oracle and have dept as D3)
- t) The count of employees skilled in (BI and have Dept as D1) or skilled in (Oracle and have dept as D3)
- u) How many employees are based out of city whose name ends in a "e"?

## **6BC-P2: Project Work LAB**

#### No of Hours : 88

#### **Internal Marks : 30**

Exam Marks: 70

**Course Description:**Students should develop a project in a group of two members. They should implement their projects in college using advanced RDBMS package and advanced technologies like .NET and J2EE. The students have to collect data outside practical hours. Project may be taken outside but must be implemented in the college. Internal marks can be awarded by the guide by evaluating the performance of the students during the course of project work.

**Course Objectives:**The course is designed to give a real-time development and industry exposure to the students.

**Learning Outcome:**The student experiences and learns the industry software development methodologies.

# MANDATORY PAPERS - NON CORE Syllabus

# MC1:Indian Constitution And Human Rights

Lecture Hrs : 54	Internal Marks : 30	Exam Marks : 70			
Course objective :					
The syllabus covers all the basic	concepts of IC. If a student	decides to pursue his/her			
career in Politics and Public sect	or s/he will have the knowle	dge that is necessary. No			
matter what course a student pu	rsues, IC is essential for all bu	siness and service sectors.			
It will equip them for competitive	exams like KAS and IAS.				
Unit-I: Introduction		12 Hours			
Salient Features of Indian Const	titution,Preamble,Fundament	al Rights and undamental			
Duties, Directive Principles of Stat	e Policy,Amendment of the C	onstitution			
Unit - II : The Legislature and E	xecutive	12 Hours			
Lok Sabha and Rajya Sabha - Cor	nposition, Powers and Function	ons,Law-making Process			
President - Election Procedure, Powers and Functions, State Governor – Powers and					
Functions, Prime Minister and Chi	ef Minister– Powers & Functi	ons			
Unit-III : The Judiciary 12 Hours					
The Supreme Court - Composition, Powers and Functions, High Court - Composition,					
Powers and Functions, Judicial Activism and Public Interest Litigation					
Unit-IV : Party System and Electoral Process6 Hours					
Party System in India, Election Commission – Powers and Functions, Electoral Reforms					
Unit-v : Human Rights and	Accountability	12 Hours			
Meaning, Scope and Importance	e,Protection of Human Righ	ts:National Human Rights			
Meaning, Scope and Importance	e,Protection of Human Righ	ts:National Human Rights			

Commission,State Human Rights Commissions,Non-Governmental Organizations,Accountability in public life,Right to Information Act, 2005

#### **REFERENCE BOOKS**

**1.**Durga Das Basu; Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd., New Delhi

2. M.V. Pylee; Indian Constitution

3. Durga Das Basu; Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi

4. K.K.Ghai; Indian Constitution, Kalyani Publishers

5. Granville Austen; Working of the Indian Constitution

#### **MC2:Human Resource Management**

#### Lecture Hrs : 27

Internal Marks :15

**Course Objective:**Explain the importance of human resources and their effective management in organizations. Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs. Describe the meanings of terminology and tools used in managing employees effectively. Analyze the key issues related to administering the human elements such as motivation, compensation, appraisal, career planning, diversity, ethics, and training.

#### **Unit-I:Introduction to Management and HRM**

Definition of Management , Principles and Levels of Organization-Functions of Management meaning , Importance, Objectives and Functions of Human Resource Management – Nature and scope of Human Resource Management – Systems of HRM- Duties and of Responsibilities of Human Resource Manager

#### Unit - II :Human Resources Planning

Meaning and Importance's of Human Resource Planning- factors affecting Human Resource planning-Demand and Supply Forecasting- Estimating the net Human Resource requirement.

#### **Unit-III : Recruitment and Selection**

Meaning and Objectives of Recruitment – Factors affecting Recruitment applicant pool- Methods of Recruitment- Methods and objective of Selection – Process of Selection- Uses of test in Selection – Placement- Problems in making effective Placement.

#### **REFERENCE BOOKS**

- Biswananth Ghosh- Human Resource Development and Management, 2004,Vikas Publishing House.
- Subba Rao- Personnel and Human Resource Management
- Aswathappa K- Human Resource Management
- Richard Rudman- Performance planning and Review, 2003, Allen and Unwin
- Allen B.Clardy Managing Human Resources Exercises, Experiments and Applications Work book Lawrence Erlbaum Assoicates, 1996.
- Cases In HRM- Dr. D.Gopal Krishna 2014, IK International Publishers, New Delhi.
- Rudra Basavaraj- Personnel management in India.
  VSP Rao- Human Resource Management Text and Cases.

#### END SEMESTER EXAMINATION PATTERN

Part A:Multiple choice questions15 x 1 = 15 marksPart B:Four to be answered from Six questions4 x 5 = 20 marksThe distribution of marks for the CONTINUOUS INTERNAL ASSESMENT1.Test10 marks2.Attendance05 marksTotal15 marks

#### 7 Hours

#### **10 Hours**

#### Exam Marks : 35

**10 Hours** 

#### **MC3:Value Education**

Lecture Hrs :27	Internal Marks : 15	Exam Marks : 35
<b>Objectives:</b> Values are timeles and righteous conduct which an imbibe the right values from our of reasons, value systems are un Value Education as a paper to be	is truths. They represent no re handed down from gener r elders, parents and teacher der threat today, necessitation taught in the classroom.	orms of decency; civility ation to generation. We rs. However for a variety ng the need to introduce
Unit I: Introduction	0	9 Hours
Definition, Concept and Classifica Need for Value Education Challenges of Value Adoption	tion of Values	
Unit II:Personality Development	t and Values of Life	9 Hours
Leadership qualities. Principles of Integrity, Character I Values in everyday life. Timeless Truths/ good character q	Development , Self-Confidence ualities – Honesty, Trust, Mor	e and Self-Esteem. ality, Integrity,
Reliability, Empathy, Forgiveness	s- Love.	0 Hours
Time Management/ Social Commi Environmental Awareness/ Civic S Positive thinking and emotional m	itment. Sense aturity.	5 Hours
<b>REFERENCE BOOKS</b>		
1) M.G.Chitakra, <i>Education and E</i> Delhi, 2003.	Human Values, A.P.H. Publish	ing Corporation, New
2) NCERT, <i>Education in Values</i> ,	New Delhi, 1992.	

- 3) Swami Budhananda, *How to Build Character: A Primer*, Ramakrishna Mission, New Delhi, 1983.
- 4) Swami Vivekananda, Youth and Modern India, Ramakrishna Mission, Chennai.
- 5) M.K.Gandhi, *My Experiments with Truth*, Navjivan Publishing House, Ahmedabad.
- 6) Rameshwari Pandya & Anuradha Mathur, *Imbibing Value Education: Various Perspectives*, Kalpaz Publications, New Delhi, 2003.
- 7) Dhankar, N, Value Education, A.P.H. Publishing Corporation, New Delhi, 2010.

#### END SEMESTER EXAMINATION PATTERN

Part A:Multiple choice questions15 x 1 = 15 marksPart B:Four to be answered from Six questions4 x 5 = 20 marksThe distribution of marks for the CONTINUOUS INTERNAL ASSESMENT1.Test10 marks2.Attendance05 marksTotal15 marks

# **MC4: Communicative English**

No of Hours : 28		Internal Marks : 15	Exam Marks: 35		
<b>Objectives:</b> The co	ourse trains st	udents to engage in the English lar	iguage confidently.		
It is also useful for	students to l	earn soft skills like facing interview	vs, making		
presentations and	participating	g in group discussions.			
Part A: Listening SI	kills		16 Hours		
Phonetics—Vowel	Sound		4 Hours		
Consonant Sounds			4 Hours		
Academic Listening	5		4 Hours		
Ted Talks and Shor	t Speeches		4 Hours		
Part B: Speaking Sl	kills		6 Hours		
Pick And Speak			2 Hours		
Debate			2 Hours		
Panel Discussion			2 Hours		
Group Discussion			2 Hours		
Part C: Academic	PPT Presen	tation Skills	6 Hours		
Total no of teach	ing hours		28 Hours		
	Sc	heme of evaluation			
Internal Assessme	nt marks	Presentation skills in group			
		(30 minutes duration)			
1.Test	05 marks	PPT	05 marks		
2.Attendance	05 marks	Structure of the	05 marks		
3. Presentation	05 marks	Non-verbal Communication	05 marks		
		Creativity	05 marks		
		Group Dynamics	05 marks		
		Time Management	05 marks		
		Ability to answer questions	05 marks		
Total	15 Marks	Total	35 Marks		

#### **MC5:Environmental Science**

#### Internal Marks : 15

**Course Objective:** This course able to Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving. Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

Unit-I: Multi-Disciplinary Nature Of Environmental Studies

Definition, Scope and Importance Need for public awareness

#### Unit - II : Natural resources and associated problems

Forest resources: use and importance, deforestation with one case study. Timber extraction, mining, dams and their effect on forests

Water resources: Use and over utilization of surface and ground water, floods, droughts, conflict over dams, -advantages and disadvantages.

Mineral resources; Use and exploitation, Environmental effectson extraction of minerals with case study.

Energy resources: Renewable and non renewable energy sources, use of alternate energy sources and case study.

#### Unit-III : Bio diversity and its conservation

Introduction, definition, value of bio diversity – consumptive use, productive use, social, ethical, aesthetic and option values, hot spots of biodiversity.

Threats to biodiversity: Endangered and endemic species of India, Red Data book

Conservation of biodiversity: In-situ and Ex-situ Conservation of biodiversity.

#### **Unit – IV: Environmental pollution**

Definition, causes, effects and control measures with one case study of

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

#### 5) Radioactive pollution

Lecture Hrs:27

#### **Unit-V : Social issues and Environment**

From unsustainable to sustainable development ,Urban problems related to energy

Water conservation ,Rain water harvest ,Watershed management ,Solid waste management ,Global warming , Acid rain ,Depletion of Ozone layer , Nuclear accidents ,Environment protection Act: Air, Water, Wildlife and forest conservation Act

#### **REFERENCE BOOKS**

- ➤ A text book on Environmental studies Dr D.K.Asthana, Dr Meera Asthana.
- ➤ A text book on Environmental studies B.S.Raman.
- ➤ A text book on Environmental studies Dr N.Nandini.
- A text book on Environmental studies Dr J.P.Sharma
- MCQs on Environmental studies Dr D.K.Asthana, Dr Meera Asthana.
- ➢ Parisara Adhyayana − Dr T.Devaraj.
- Parisara Adhyayana Byrappa.
- Rameshwari Pandya & Anuradha Mathur, Imbibing Value Education: Various Perspectives, Kalpaz Publications, New Delhi, 2003.

Dhankar, N, Value Education, A.P.H. Publishing Corporation, New Delhi, 2010.

#### END SEMESTER EXAMINATION PATTERN

Part A: Multiple choice questions	$15 \ge 1 = 15 $ marks
Part B: Four to be answered from Six questions	$4 \ge 5 = 20 \text{ marks}$

#### 6Hours

8 Hours

6 Hours

# 8 Hours

2 Hours

Exam Marks : 35

# **Question Paper Pattern**

Internal Test – Theory- Hindi/Sanskrit					
Duration: One Hour	Min. Marks : 11	Max. Marks 30			
Answer any Two out of Four questions	2 x 5 =10				
Answer any One out of Two questions	Answer any One out of Two questions 1 x 10 = 10				
Answer All the questions	Answer All the questions $10 \ge 10$				
End Semester Examination – Theory – Hindi/Sanskrit					
Duration: 3 Hours	Min. Marks : 24	Max. Marks 70			
Answer any Two out of Four questions		2 x 10 = 20 Marks			
Answer any Two out of Four questions $2 \ge 05 = 10 \text{ M}$					
Answer any Four out of Six questions	4x 05 =20 Marks				
Translation 10 Marks					
Grammar Exercise from unseen passage 10 Marks					

Internal Test – Theory- Kannada					
Duration: One Hour	Min. Marks : 11	Max. Marks 30			
Answer any Three out of Four questions	Answer any Three out of Four questions $3 \ge 2 = 6$				
Answer any One out of Two questions		1 x 4 = 4			
Answer any Two out of Three questions		2 x 5 = 10			
Answer any One out of Two questions		1 x 10 = 10			
End Semester Exa	End Semester Examination – Theory - Kannada				
<b>Duration: 3 Hours</b>	Min. Marks : 24	Max Marks 70			
		Multi Multi No 70			
Answer any Three out of Five questions		3 x 2 = 6			
Answer any Three out of Five questions Answer any Three out of Five questions		$3 \times 2 = 6$ $3 \times 3 = 9$			
Answer any Three out of Five questions Answer any Three out of Five questions Answer any Five out of Seven questions		3 x 2 = 6 3 x 3 = 9 5 x 5 = 25			

Internal Test – Theory – Fundamental Accounting					
Duration: One Hour	Min. Marks : 11	Max. Marks 30			
Answer any Six out of Eight questions		6 x 2 = 12			
Answer any One out of Two questions1 x 4 = 04					
Answer any One out of Two questions	Answer any One out of Two questions1 x 14 = 14				
End Semester Examination – Fundamental Accounting					
Duration: 3 Hours	Min. Marks : 24	Max. Marks 70			
Answer any Eight out of Eight questions	8 x 2 = 16				
Answer any Three out of Six questions	4 x 3 = 12				
Answer any Three out of Five questions	3 x 14 = 42				

	Internal Tes	st – Theory – Computer S	Science		
<b>Duration: On</b>	e Hour	Min. Marks : 11	Max. Marks 30		
Answer any Five out of Six questions5 x 6 = 30 Marks					
E	End Semester Exa	mination – Theory- Comp	uter Science		
Duration:3 HoursMin. Marks : 24			Max. Marks 70		
Section A :	Answer any Ten	out of Twelve questions	10 x 2 = 20		
Section B:	Answer any five o	ut of Seven questions	5 x 10 = 50		
	Internal	Test – Theory – Mathema	atics		
<b>Duration: On</b>	e Hour	Min. Marks : 11	Max. Marks 30		
Answer any Six	out of Eight question	ons	6 x 5 = 30		
	End Semester E	Examination – Theory- Ma	thematics		
Duration:	3 Hours	Min. Marks : 24	Max. Marks 70		
Answer any Fiv	ve out of Eight que	estions	$5 \times 2 = 10$		
Answer any Two out of Four questions $2 \times 5 = 10$					
Answer any Two out of Four questions $2 \times 5 = 10$					
Answer any Tw	Answer any Two out of Four questions $2 \times 5 = 10$				
Answer any Fou	ur out of Seven que	stions	$4 \times 5 = 20$		
Answer any Tw	Answer any Two out of Four questions $2 \times 5 = 10$				
	Intern	al Test – Theory – Englis	h		
<b>Duration: On</b>	e Hour	Min. Marks : 11	Max. Marks 30		
Answer any Th	ree questions		3 x 10 = 30		
End Semester Examination – Theory- English					
Duration:	3 Hours	Min. Marks : 24	Max. Marks 70		
Part- A : Text:					
Answer Any On	e the following que	stion	1x10=10		
Answer Any On	Answer Any One the following question1x10=10				
Answer Any One the following question1x10=10					
Part -B:- Lang	Part –B:- Language: 1x10=10				

1x10=10

1x10=10

1x03=03

1x02=02

1x05=05

Answer Any One the following question

Answer Any One the following question
# **Scheme of Evaluation**

# **Internal Assessment**

### Two tests must be scaled down to 10 Marks each.

Sl.No.	Marks secured in the test	Marks to be allotted
1.	1 to 6	02
2.	7 to 12	04
3.	13 to 18	06
4.	19 to 24	08
5.	25 to 30	10

Sl.No.	Attendance secured in	Marks to be allotted
	Percentage	
1.	96 - 100%	05
2.	91-95%	04
3.	86 to 90%	03
4.	81 to 85%	02
5.	75 to 80%	01

## Theory

Sl.No.	Procedure	Max.Marks 30
1.	Average of two tests	20
2.	Assignments or Seminar	05
3.	Attendance	05

## Practical: Programming Lab

Sl.No.	Procedure	Max. Marks 15
1.	Writing one program	04
2.	Execution of program	05
3.	Viva-voce	03
4.	Attendance	03

#### **Project Work**

Sl.No.	Procedure	Max. Marks 15	Max. Marks 30
1.	Demonstration & Presentation	04	08
2.	Design and Coding	05	10
3.	Viva-voce	03	06
4.	Attendance	03	06

## **End Semester Practical Examination**

## **Programming Lab**

Sl.No.	Procedure	Max. Marks 35
1.	Writing two programs( one from each section)	10
2.	Execution of program	16(One program)
3.	Viva-voce	06
4.	Record	03

### **Project Work**

Sl.No.	Procedure	Max. Marks 35	Max. Marks 70
1.	Demonstration & Presentation	10	20
2.	Design and Coding	15	30
3.	Viva-voce	05	10
4.	Project-Report	05	10

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