P. D. E. A's



Prof. Ramakrishna More Arts, Commerce and Science College Akurdi Pune-411044

Affiliated to



Savitribai Phule Pune University [SPPU]

B.BA (Computer Applications)

(Three Years BBA(CA) program)

Choice Based Credit System [CBCS]

Under Autonomy and NEP-2020

> From Academic Year 2023-2024

> > Syllabus

First Year Graduate and Postgraduate Computer Science

Board of Studies BBA(computer Applications)

P. D. E. A's. Prof. Ramkrishna More

Arts, Commerce and Science College, Akurdi, Pune-411044

Affiliated to

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Choice based Credit System, Under Autonomy and NEP-2020

Implemented from Academic Year 2023-24

Rules and Regulations

- National Credit Framework (NCrF): For creditisation and integration of all higher education qualifications leading to a certificate/ diploma/ degree with multiple entry and exit options, college will refer to National Credit Framework (NCrF) which encompasses the qualification frameworks for higher education, vocational and skill education and school education, namely National Higher Education Qualification Framework (NHEQF), National Skills Qualification Framework (NSQF) and National School Education Qualification Framework (NSEQF) respectively.
- 2. Structure of Four years multidisciplinary UG Programme and Five Years Integrated Multidisciplinary Master's Degree Programmes with Multiple Entry and Exit Options at Different Levels:
 - (i) Students will have the flexibility to enter four years multidisciplinary Under Graduate Programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
 - (ii) Students will get a Certificate after a One year programme (minimum 40 Credits), a Diploma after two years (minimum 80 Credits), a Bachelor's degree after three years (minimum 120 Credits), and a Bachelor's degree with Research or Honours after Four years (minimum 160 Credits).
- 3. Qualification Type and Credit Requirements of Four Years Multidisciplinary Degree Programme with Multiple Entry and Exit Options
 - (i) Details of qualifications, minimum credit requirements, exit credit courses, year and semester are as under:

Lev els	Qualification Title	Cre Requ nt	edit ireme ts	Semest er	Yea r
		Minimu	Maxim		
1 5	LIC Cartificato	40	44	2	1
4.5	OG Certificate	40	44	2	I
5.0	UG Diploma	80	88	4	2

5.5	Three Years Bachelor's degree	120	132	6	3
6.0	Bachelor's degree Honour's with Major	160	176	8	4

	Bachelor's degree Honour's with Major	160	176	8	4
7.0	Master's Degree	200	220	10	5
8.0	Ph. D.				-
					-
					-
					-

- (ii) An exit 6-credit bridge course(s) lasting two months, including at least 6-credit job specific internship/apprenticeship that will help the graduates acquire job-ready competencies required to enter the workforce will be an additional requirement for the award of the undergraduate Certificate/ Diploma/ three year Bachelor's Degree.
- (iii) On exit, the students will have the option to re-enter the programme in the college, or in a different higher education institution. Re-entry at various levels for lateral entrants in academic programmes should be based on the earned and valid credits as deposited and accumulated in the Academic Bank of Credits (ABC) through Registered Higher Education Institutions (RHEI) and proficiency test records.
- (iv) Eligibility for admission to the fourth year of four-year **Honours with Research Degree Programmes** as per UGC guidelines: Minimum CGPA of 7.5 or minimum 75% at three-year degree.
- (v) PG curriculum, as illustrated below, have flexibility a) One-year Post-Graduate Diploma (PGD), b) Two year Post-graduate Programme and c) 5 Years Master's degree programmes with multiple Entry and Exit options at different levels.
- (a) Post-Graduate Diploma (PGD): Programme duration- One year (2 semesters) after any bachelor's degree, min. 40 credits
- (i) UGC: 1-Year (2 semesters) Post-Graduate Diploma (PGD) after 3-years Bachelor's degree:
 - Level 6.0
- (ii) UGC: 1-Year (2 semesters) PGD after 4 years Bachelor's degree (Honors/ Research): Level 6.5
- (b) Master's Degree:
- (i) UGC: 2-Years (four semesters) Master's Degree after obtaining a 3-years Bachelor's degree, Minimum 40 credits/year, second year devoted entirely to research, PG 2nd year: Level 6.5

OR

- (i) 1-Year (two semesters) Master's Degree after obtaining a 4-year Bachelor's degree (Honours/Research): Minimum 40 credits: Level 6.5
- (c) Level 8 represents Ph. D. Research Degree.
- (d) A 5-year Integrated Bachelor's and Master's programme shall have a minimum of 220 credits.
- (e) Master's and doctoral programmes, while providing rigorous research-based specialization, should also provide opportunities for multidisciplinary work, in academia, government, research institutions, and industry.

- 4. Lateral Entry/ Re-entry at higher Levels after exit from lower levels of four years multidisciplinary UG degree programme:
 - (i) The credit points earned and accumulated shall be used to determine the eligibility for taking admission to various programs at multiple levels, subject to fulfilment of the broad principles laid down under NCrF. Students who leave with a Certification, Diploma, or a Basic Bachelor's Degree will be eligible to re-enter the programme at the exit level to complete or progress to the next level through lateral entry mode. Depending upon the academic and physical facilities available, the State Universities/ Autonomous Colleges (Higher Education Institutions or HEI) may earmark specific seats/ intake for lateral entry into the second year/ third year/ fourth year of a four years multidisciplinary UG degree programme as approved by Professional Standard Setting Bodies (PSSB/Govt. of Maharashtra/ statutory council of affiliating University plus any consequential vacancies caused by exits to an ongoing programme (four-year Degree Programme and Integrated Master's or second year Master's). Lateral entry or Re-entry is open to those students if he/she has either –

(a)

successfully completed the first year/second year/third year of the particular four years

multidisciplinary degree programme in any ABC registered HEI with valid credits in ABC

and re-entering into the second year/third year/fourth year, respectively of the same four years degree programme of any ABC registered HEI, within stipulated/ permissible period of years as decided by Statutory Councils of that HEI

OR

- (b)Already successfully completed a multidisciplinary four-year first-degree programme and is desirous of and academically capable of pursuing another multidisciplinary four years first-degree programme in an allied subject.
- (ii) A student will be allowed to enter/re-enter only at the odd semester. Re-entry at various levels for lateral entrants in academic programmes should be based on the earned and valid credits as deposited and accumulated in Academic Bank of Credits (ABC) through Registered Higher Education Institutions (RHEI) and proficiency test records. However, in terms of the admission eligibility requirements, the student shall belong to the same faculty/ discipline in terms of Major Subject i.e., the Major subject of his earlier Programme and the Major subject of the new Programme for which he is seeking admission must be from the same faculty/discipline. Reservation for lateral entry will be executed as per the Government of Maharashtra norms.
- 5. Distribution of Credits across Multidisciplinary Four Years Degree Programme:
 - (i) Four-year multidisciplinary degree programme with Honours/ Specialization Degree will have Internship and Core /Major Courses with a minimum of 22 credits per sem. in the Fourth Year.
 - (ii)Four-year multidisciplinary degree programme with Research will have Research Projects, Seminars, Dissertations and Internships with a minimum of 22 credits per Sem. in the Fourth Year.
 - (iii) Students shall select a 'Major or Core Subject/ Discipline' and a 'Minor Subject/Discipline' from the lists of various Subject Combinations and Options provided the Colleges. In general, for the four years multidisciplinary bachelor's degree programme, the distribution of credits will be as follows:
 - (a) Disciplinary/interdisciplinary Major/ Core Subject (minimum of 68 credits)- Mandatory and Elective Courses
 - (b) Disciplinary/interdisciplinary Minor Subject (maximum of 22 credits)
 - (c) Skill based/Vocational studies corresponding to the Major/ Core Subject (8 credits)
 - (d)Field projects/internship/apprenticeship/community engagement and service corresponding to the Major/ Core Subject (14-22 credits) with a maximum of six credits per Semester
 - (e) Generic/ Open Electives through Baskets of Elective Courses (12 credits),
 - (f) Ability Enhancement Courses including Languages, Literature and Environmental Studies (12 credits),

(g) In-built modules on the Indian Knowledge System (IKS) in Major/ Core Subject at Level

4.5 – 2 credits

(h) Value-based Education, Life Skills and Professional Ethics: Co-curricular Courses such as Sports and Culture, NSS/NCC and Fine/ Applied/Visual Arts (8 credits).

Student can earn some credits (SEC/VSC/GE/OE) in the form of online from-

- (i) The National Skills Qualifications Framework (NSQF) organizes qualifications for Vocational and Skill Courses in a series of 8 levels based on professional knowledge, professional skills, core skills and responsibilities, in the increasing order of complexity and competency.
- (ii) University Grants Commission (Credit Framework For Online Learning Courses through Study Webs of Active-Learning for Young Aspiring Minds) Regulations, 2021, permits up to 40 per cent of the total courses being offered in a particular programme in a semester through the Online Learning Courses offered through the Study Webs of Active- Learning for Young Aspiring Minds (SWAYAM) platform.
- 6. Examination and Assessment Process:
 - (i) The basic principle of the credit framework is that credits are a function of the successful completion of a program of study/ vocational education/ training and assessment. No credit can be earned by the student unless the student is assessed for the achievement of the desired competencies and outcome of a program.
 - (ii) Exit options are provided with certification, diploma and basic Bachelor's degrees to the students at the end of the second, fourth and sixth semesters of a four years multidisciplinarydegree programme. Students will receive a Bachelor's degree with Honours/ Research on successfully completing of all eight semesters of the UG Program either at a stretch or with opted exits and re-entries.
 - (iii) For the smooth success of four-year multidisciplinary degree programme with multiple entry and exit systems, the examination mode will be based on the combination of innovative trends in formative (informal and formal tests administered during the learning process) and summative (evaluation of students learning at the end of an instructional unit) examination modes. This is in line with the UGC Report on 'Evaluation Reforms in Higher Educational Institutions (2019)'.
 - (iv) Evaluation of each students in each course will be done as follows
 - a. Each theory or practical course will be of 2 credits = 50 mark
 - b. Internal evaluation 30% weightage (15 mark) External evaluation 70% weightage
 - c. Students should secure 40% marks in each type of evaluation for successful completion of a course (student should secure at least 6 marks in internal and 14 marks in external evaluation).
 - (v) Evaluation Pattern.
 - a. Internal evaluation Two written test, each of 20 marks will be conducted i. e. two tests on two modules. 1st assignment after completing 6 weeks of teaching and 2nd on completion of 13th week of teaching. Question paper should be designed so that evaluation of CO, PO, PSO can be performed. 10 marks out of 15 will be assigned from these written tests. Remaining 5 marks will be assigned from other types of evaluation such as seminars, orals, poster presentation, open book challenging tests, surprise test, objective test on whole syllabus of the course (at least 40 questions of objective type must be designed), etc. for 5 marks at least two different types technique must be utilized.
 - **b. External Evaluation** External evaluation will be done at the end of semester. For theory, 35 marks written examination will be conducted and time of examination will be 2-hours.

(i) Declaration of result is based on the Semester Grade Point Average (SGPA) earned towards the end of each semester or the Cumulative Grade Point Average (CGPA) earned at the completion of all eight semesters of the programme and the corresponding overall alpha-sign or letter grades as given in Table 2. If some candidates exit at the completion of the first, second or third year of the four years Undergraduate Programmes, with Certificate, Diploma or Basic Degree, respectively, then the results of successful candidates at the end of the second, fourth or sixth semesters shall also be classified on the basis of the CGPA obtained in the two, four, six or eight semesters, respectively. Successful candidates at the end of the tenth semester of the integrated Master's Degree Programmes shall also be classified on the basis of CGPA obtained in the ten semesters of the Programmes. Likewise, the successful candidates of one year or two semesters Master's Degree Programme are also classified on the basis of two semesters of the Master's Degree Programme.

Table-2: Grades on degree certificate/mark sheet will be assigned to the students as per

Semester GPA/ Program CGPA Semester/Program	% of Marks	Alpha-Sign / Letter Grade Result
9.00-10.00	90-100	O (outstanding)
8.00 - <9.00	80.00 – <90.00	A+ (Excellent)
7.00 - <8.00	70.00-<80. 00	A (Very Good)
6.00 - <7.00	60.00-<70. 00	B+ (Good)
5.50 - <6.00	55.00-<60. 00	B (Above Average)
5.00 - <5.50	50.00-<55. 00	C (Average)

	-		
the	fol	lowing	table

4.00 - <5.00	40.00-<50. 00	P (Pass)
Below 4.00	< 40	F (Fail)
Ab		Absent

- (ii) A student obtaining Grade F shall be considered failed and will be required to reappear in the examination. For non-credit courses 'Satisfactory' or "Unsatisfactory' shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.
- 8. Award of Major and Minor Degree:
 - (i) A student pursuing four-year multidisciplinary UG programme will be awarded an appropriate Honours/ Research degree in Major/ Core Subject on completion of VIII Semester with the minimum of 176 credits if he secures in that Subject at least 50% of the total credits for that programme. He shall thus study the specific number of Mandatory Core Courses, Core Electives, Vocational and Skill Courses and Field projects/ Internships connected to Core Subjects in eight semesters so as to cover at least 50% of the total credits.
 - (ii) In case of Research Degree, a student shall pursue research project and write dissertation in that Major in the VII and VIII semesters.

On the basis of above rules and regulations under NEP-2020 following course frame work is adopted by the Prof. Ramkrishna More Arts, Commerce and Science College, Akurdi, Pune-411044 for the completing of four years honours degree in Major and Minor subjects.

- 9. Distribution of Credits across Four Years Degree Programmes:
 - In general, for the four years' bachelor's degree programme, the distribution of credits will be as follows:
 - (a) Major (Core) Subject comprising Mandatory and Elective Courses:
 - i. Minimum 50% of total credits corresponding to Three/Four year UG Degree-Mandatory Courses offered in all Four years;
 - ii. 2 credit course on Major Specific IKS shall be included under Major;
 - iii. Elective courses of Major will be offered in the third and/or final year.
 - iv. Vocational Skill Courses, Internship/ Apprenticeship, Field Projects, Research Projects connected to Major first to fourth year.
 - (b) Minor Subject: 18-20 Credits
 - i. The Minor subjects may be from the different disciplines of the same faculty of DSC Major (Core) or they can be from different faculty altogether.
 - ii. The credits of Minor subjects shall be completed in the first three years of UG Programme.
 - (c) Generic/ Open Elective Courses (OE): 10-12 credits
 - i. It is to be offered in I and/or II year
 - ii. Faculty-wise baskets of OE shall be prepared by University/ Autonomous Colleges.
 - iii. OE is to be chosen compulsorily from faculty other than that of the Major.
 - (d) Vocational and Skill Enhancement Courses (VSEC): 14-16 credits
 - # Vocational Skill Courses (VSC): 8-10 credits, including Hands on Training corresponding to the Major and/or Minor Subject:
 - i. To be offered in first to three years;
 - ii. Wherever applicable vocational courses will include skills based on advanced laboratory practicals of Major
 - # Skill Enhancement Courses (SEC): 06 credits
 - i. To be offered in I and II year;
 - ii. To be selected from the basket of Skill Courses approved by University/ Autonomous Colleges
 - (e) Ability Enhancement Courses (AEC), Indian Knowledge System (IKS) and Value Education Courses (VEC): 14 Credits

• AEC: 08 credits

- i. To be offered in I and II year
- ii. English: 04 Credits
- iii. Modern Indian Language: 04 credits
- iv. To be offered from the Basket approved by the College;

The focus for both languages should be on linguistic and communication skills.

o IKS: 2 Credits

 $i.\ensuremath{\,\text{To}}$ be offered in I Year

ii. Courses on IKS to be selected from the basket of IKS courses approved by the Colleges $_{0}$ VEC: 04 Credits

- i. To be offered in I year
- ii. Value Education Courses (VEC) Environmental Science Education (Compulsory), Understanding India, and Digital and Technological Solutions.

(f) Field Projects/ Internship/ Apprenticeship/ Community Engagement and Service corresponding to the Major (Core) Subject, Co-curricular Courses (CC) and Research Project

o Internship/Apprenticeship corresponding to the Major (Core) Subject: 8 Credits

• Field Projects/Community Engagement and Service corresponding to the Major (Core) Subject: minimum 4-6 credits

To be offered in II, and III years of UG Degree Programmes.

 Co-curricular Courses (CC) such as Health and Wellness, Yoga education sports, and fitness, Cultural Activities, NSS/NCC and Fine/ Applied/ Visual/ Performing Arts: 8 credits. To be offered in I and/or II year

o Research Projects: 12 credits

To be offered in the final year for 4-year Honours with Research UG Degree

The UGC Regulations, 2021 permit up to 40% of the total courses being offered in a particular programme in a semester through the Online Learning Courses offered through the SWAYAM platform and/or other State Level Common Platforms which can be developed in due course with the participation of different Universities/ HEIs.

Abbreviations: Generic/ Open Electives: **GE/OE**; Vocational Skill and Skill Enhancement Courses: **VSEC**; Vocational Skill Courses: **VSC**; Skill Enhancement Courses: **SEC**; Ability Enhancement Courses: **AEC**; Indian Knowledge System: **IKS**; Value Education Courses: **VEC**; **OJT**: On Job Training: Internship/ Apprenticeship; Field projects: **FP**; Community engagement and service: **CEP**; Co-curricular Courses: **CC**; Research Methodology-**RM**; Research Project: **RP** Note: The Credit Distribution Table given above is illustrative only. The Universities/ Autonomous Colleges may suitably modify within the broader framework of credit distribution across six verticals.

Graduate and Honors Degree Course Framework under Autonomy as per NEP-2020 If not mentioned, each proposed course (theory/practical) is of 2 credits

S e m	Maj or Cou rses	Maj or Elec tive Curs es	Mi nor Cu rse s	vsc	IKS	FP/O JT/ CE P	GE/OE	SEC	A E C	V E C	c c	Tot al Cre dits
				First	Year Ce	rtificate Co	burse					
I	2 theory + 1 Practica I	0	0	1 Theo ry	1 The ory	0	1 theory + 1 Practica I	1 theory / practi cal	1 th eo ry	1 th eo ry	2 Cr ed it	22
	2 theory + 1 Practica I	0	1 Theo ry	1 Practi cal	0	0	1 theory + 1 Practica I	1 theory / practi cal	1 th eo ry	1 th eo ry	2 Cr ed it	22
				Secon	d Year G	raduate D	iploma					
	3 theory + 1 Practica I	0	1 Theory + 1 Practica	1 Theo ry	0	FP (2 Credit)	1 theory	0	1 th eo ry		2 Cr ed it	22
	3 theory + 1 Practica I	0	1 Theory + 1 Practica	0	0	CEP (2 Credit)	1 Practic al	1 theory / practi cal	1 th eo ry		2 Cr ed it	22
				Third	Year G	aduate De	gree			•	•	
V	3 theory + 2 Practica I	1 Theory + 1 Practica	1 Theory + 1 Practica	1 Practi cal	0	FP/C EP (2 Credit)	0	0	0	0	0	22
I	3 theory + 2 Practica I	1 Theory + 1 Practica I	1 Theory + 1 Practica	0	0	OJT (4 Credit)	0	0	0	0	0	22
			V	and VIII S	Semeste	r honours aior	degree with					
V II	5 theory + 2 Practica I	1 Theory + 1 Practica	RM 4 Credi ts	0	0	0		0	0	0	0	22
VI II	5 theory +	1 Theory +	0	0	0	OJT	0	0	0	0	0	22

2 Practica I	1 Practica				(4 Credit)						
-		VI	and VIII S	Semeste res	r honours earch	degree with	Ì	-		-	
4 theory + 1 Practica I	1 Theory + 1 Practica	RM 4 Credi ts	0	0	RP (4 Credit)	0	0	0	0	0	22
4 theory + 1 Practica I	1 Theory 1 Practica	0	0	0	RP (8 Credit)	0	0	0	0	0	22

Post Graduate Degree Course Framework under Autonomy as per NEP-2020 If not mentioned, each proposed course (theory/practical) is of 2 credits

S e m	Majo r Cours es	Major Elective Curses	Minor Curs es	V S C	I K S	FP/OJT/C EP	GE/ OE	S E C	A E C	V E C	с с	Tot al Cred its
					F G	, -l				•		
VII	5 theory + 2 Practica	1 Theory + 1 Practical	RM 4 Credi ts	0	0	0		0	0	0	0	22
VII I	5 theory + 2 Practica	1 Theory + 1 Practical	0	0	0	OJT (4 Credit)	0	0	0	0	0	22
					G G	-l						
IX	5 theory + 2 Practica I	1 Theory + 1 Practical	0	0	0	Researc h Proj ect (4 credit s)		0	0	0	0	22
X	5 theory + 2 Practica	1 Theory + 1 Practical	0	0	0	OJT (4 Credit)	0	0	0	0	0	22

Definitions:

- 1. One semester = 15 weeks
- 2. 1-credit theory = 15 hours i.e. for 1 credit, 1 hour per week teaching is to be performed.
- 15 hours of 1-credit are splinted as 12 hours actual teaching + 3 hours Tutorial (practice problem solving sessions, repeated discussion on difficult topics, discussion on student's difficulties, questions discussion and internal evaluation)
- **3. 1-credit practical** = 30 hours. Thus, 1 credit practical = 2 contact hours in laboratory per week. 30 hours splinted as 24 hours actual table work and 6 hours for journal competition, oral on each practical and other internal evaluation.
- 4. Each theory course of any type (major, minor, VSC, VEC, OE/GE, VEC, SEC, CC, etc.) is of 2 credits.
 - a. **Theory per semester:** Contact hours = 24 teaching + 6 tutorials (problem solving sessions, repeated discussion on difficult topics, difficult solution, questions discussion and internal evaluation)
 - b. Each course will be of two modules, One module = 15 hours
 - c. Each module may consist of one or more than one chapter.
- 5. Each practical course of any course is of 2 credits = 60 hours per semester

a. Minimum 12 laboratory sessions will be conducted in one semester. Each laboratory sessions will be of 4 hour.

NEP-2020:First Year UG Major-BBA(CA)

		Maj	or Course	28
Semester	Course code	Generic Nam	e	Title of the paper
Ι	BBACAT- 111	BBACA theory paper-1		Programming in C
	BBACAT- 112	BBACA theory paper-2		Database Management System
	BBACAP- 113	BBACA practical paper-	1	Lab Course on Programming in C and DBMS
II	BBACA- 121	BBACA theory paper-3		Website Development using HTML and CSS and JavaScript
	BBACA- 122	BBACA theory paper-4		Business Communication
	BBACA- 123	BBACA practical paper-	2	Lab Course on HTML , CSS and JavaScript
III	BBACA- 231	BBACA theory paper-5		Data Structure using C
	BBACA- 232	BBACA theory paper-6		Big Data and Machine Learning
	BBACA- 233	BBACA theory paper-7		Business Mathematics
	BBACA- 234	BBACA practical paper-	3	Lab Course on Data Structure and Big Data
IV	BBACA- 241	BBACA theory paper-8		Object Oriented Programming using C++
	BBACA- 242	BBACA theory paper-9		Operating system
	BBACA- 243	BBACA theory paper-10)	Financial Accounting
	BBACA- 244	BBACA practical paper-	4	Lab Course on Object Oriented Programming C++
V	BBACA- 351	BBACA theory paper-1	1	Object Oriented Programming using Java
	BBACA- 352	BBACA theory paper-12	2	Python Programming
	BBACA- 353	BBACA theory paper-13	3	Digital Marketing
	BBACA- 354	BBACA practical paper-	5	Lab Course on Programming in Java
	BBACA- 355	BBACA practical paper-	6	Lab Course on Python Programming
VI	BBACA- 361	BBACA theory paper-14	1	Advanced Java
	BBACA- 362	BBACA theory paper-1	5	Computer Communication and Networks
	BBACA- 363	BBACA theory paper-16	5	Internet Programming using PHP
	BBACA- 364	BBACA practical paper-	7	Lab Course on Advanced Java
	BBACA- 365	BBACA practical paper-	8	Lab course Internet Programming using PHP
	•	•		
		Ma	jor Electiv	e
V	BBACAET-356A	Elective BBACA Paper-1-A	Theory	Software Engineering And Testing
	BBACAET-356B	Elective BBACA Paper-1-B	Theory	Cyber Security

	BBACAEP-357A	Elective BBACA Practical	Data Analytics using Advanced Excel						
	BBACAEP-357B	Elective BBACA Practical Paper-1-B	Data Analytics using PowerBI						
VI	BBACAET-366A	Elective BBACA Theory Paper-2-A	Dot Net (C#) Framework						
	BBACAET-366B	Elective BBACA Theory Paper-2-B	Android Programming						
	BBACAEP-367A	Elective BBACA Practical Paper-2-A	Lab Course on Dot Net Framework						
	BBACAEP-367B	Elective BBACA Practical Paper-2-B	Lab Course on Android Programming						
		Vocational Skill Courses (VSC)) Related to Major						
I	BBACAVT-111	Vocational BBACA theory-I	Organizational Behavior and Human Resource Management						
II	BBACAV -121	Vocational BBACA Practical-I	Business Analytics Using Tableau						
III	BBACAV-231	Vocational BBACA theory-II	Object Oriented Software Engineering						
IV V	BBACAVSP-351	 Vocational BBACA Practical-II							
		Minor Course	28						
Ι									
II	BBACAMIT-121	Minor BBACA Theory-1	Statistics for Data science						
III	BBACAMIT-231	Minor BBACA Theory-2	Computer Fundamentals and MSOffice						
	BBACAMIP-232	Minor BBACA Practical-1	Practical on Computer Fundamentals and MSOffice						
IV	BBACAMIT-241	Minor BBACA Theory-3	Principles of Management						
	BBACAMIP-242	Minor BBACA Practical-2	Practical on Financial accounting						
V	BBACAMIT-331	Minor BBACA Theory-4	Internet of Things / Block chain						
	BBACAMIP-332	Minor BBACA Practical-3	Practical on Internet of Things / Block chain						
VI	BBACAMIT-341	Minor BBACA Theory-5	Business Accounting						
	BBACAMIP-342	Minor BBACA Practical-4	Practical on Business Accounting						
	L	IKS Related to Computer Ap	oplication Major						
Ι	BBACAIKST-111	Indian Knowledge System BBACA Paper	Vedic Mathematics						
		SEC for Computer Ap	oplication						
Ι	BBACASECT-111	Skill Computer Application Theory-I	Basic programming skills using Scratch						

II	BBACASEP-121	Skill Computer Application	Website development			
IV	BBACASET-121	Skill Computer Application Theory-I	Communication Skills and Personality Development			
OE/GE						
Ι	BBACAOET-111	OpenElectiveBBACA Theory	E-Commerce			
Ι	BBAOEP-112	OpenElectiveBBACA Practical	Corporate Social responsibility			
II	BBACAOET-121	OpenElectiveBBACA Theory	Basics Of Hardware & Networking			
II	BBAOET-122	OpenElectiveBBACA Theory	Business Mathematics			

Syllabus Semester I

Course Code:-BBACAT- 111 Course Name:-Programming in C Credits allotted: - 02

Module-1

Chapter 1:Introduction to C language

1.1 Basic Structure of C Programming

- 1.2 Language Fundamentals Character set, Tokens Keywords and Identifiers Variables and Data types
- 1.3 Operators

Types of Operators Precedence and Associativity Expression 1.4 Managing I/O operations printf(),scanf() getch(),getchar()

Reference Books: E. Balagurusamy, Programming in ANSI C, 7th Edition, Tata McGraw Hill (Page Numbers-1 to 84)

Herbert Schildt, C: The Complete Reference, 4th Edition (Page Numbers 1 to 64)

Chapter 2: Decision Making and Looping

- 2.1 Introduction
- 2.2 Decision making structure If statement If-else statement

Course Type-Theory Lectures allotted-30 Nested if-else statement Conditional operator Switch statement

2.3 Loop control structures While loop Do-while loop For loop Nested for loop
2.4Jump statements Break, Continue

Goto, Exit

Reference Books:Let us C-Yashwant Kanetkar, BPBpublication.(Page Numbers:- Page No:-29-139)

Herbert Schildt, C: The Complete Reference, 4th Edition (Page Numbers :- 64 To 93)

Module-2

Chapter 3: Arrays, Strings and Pointers

3.1 Derived data types in C

Arrays - declaration

Initialization and access of One-dimensional and Two dimensional arrays Sorting and searching arrays.

3.2 Handling of Strings

Declaring and Initializing String variables Reading Strings from terminal, Writing Strings to screen Arithmetic Operations on characters, String handling functions - strlen, strcmp, strcpy, strstr and strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric etc.

3.3 Pointers

Understanding Pointers Accessing the address of a Variable, Declaring and Initializing Pointers, Accessing a Variable through its Pointer, Pointers and arrays Pointer and strings

Reference Books:

E. Balagurusamy, Programming in ANSI C, 7th Edition, Tata McGraw Hill (Page Numbers-229 to 252 and 351 to 373)

Herbert Schildt, C: The Complete Reference, 4th Edition (Page Numbers: 96 To 147)

Chapter 4:Functions in C

4.1 User-defined functions Need for user-defined functions Declaring, defining and calling C functions Return values and their types Call by value and call by reference Storage classes

4.2 Recursion

Definition, example programs

Reference Books:Let us C-YashwantKanetkar, BPBpublication .(Page Numbers:- Page No:-135-151)

Herbert Schildt, C: The Complete Reference, 4th Edition (Page Numbers: 148 To 172)

Text Book:

- 1. E. Balagurusamy, Programming in ANSI C, 7th Edition, Tata McGraw Hill
- 2. Let us C-Yashwant Kanetkar, BPB publication.

Reference Books:

- 1. Herbert Schildt, C: The Complete Reference, 4th Edition
- 2. Brain W. Kernighan, C Programming Language, 2nd Edition, Prentice Hall Software

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- 1. Describe the fundamentals of C Programming Language.
- 2. Apply appropriate Control structures to solve problems.
- 3. Describe the concept of Arrays and Strings.
- 4. Write User defined functions and apply concept of recursion to solve problems.
- 5. Describe the concept of Pointers.
- 6. Implement functions towards performing different operations.

Course Code:-BBACAT- 112 Course Name:-Database Management System Credits allotted: - 02

Module 1

Chapter1:-Database Concepts & Data Modeling
1.1 Introduction
Logical and Physical Files
Logical and Physical Files Definitions
1.2 Basic File Operations
Opening Files
Closing Files
Reading and Writing
Seeking
1.3 File Organization
Field and Record structure in file
Record Types
Types of file organization: Sequential, Indexed, Hashed

Course Type-Theory Lectures allotted-30

10

1.4 Indexing What is an Index? When to use Indexes? Types of Index: Dense Index, Sparse Index 1.5 Introduction Definition of DBMS Applications of DBMS File processing system Vs DBMS Advantages and Disadvantages of DBMS 1.6 Users of DBMS **Database Designers** Application programmer Sophisticated Users End Users 1.7 Views of Data 1.8 Data Models **Object Based Logical Model Object Oriented Data Model** 1.9 Entity Relationship Data Model Record Base Logical Model **Relational Model** Network Model Hierarchical Model 1.10 Entity Relationship Diagram(ERD)

Reference Books: Database System Concepts Seventh Edition By Henry Korth and A. Silberschatz((Page Numbers:- Page No:-1-35)

Chapter2: Relational Model And Structured Query Language (SQL)

2.1 Tuple, Attribute, Cardinality, Degree of relationship set, Domain

2.2 Keys

Super Key, Candidate Key, Primary Key, Foreign Key

2.3 SQL(StructuredQueryLanguage)

- a. Introduction, History of SQL
- b. Basic Structure
- c. DDL Commands
- d. DML Commands
- e. Simple Queries
- f. Nested Queries
- g. Aggregate Functions
- 2.5 Introduction to Normalization

Reference Books:Database System Concepts Seventh Edition By Henry Korth and A. Silberschatz((Page Numbers:- Page No:-1-35)

Chapter 3: Introduction To RDBMS & PL-SQL

- 3.1 Introduction to popular RDBMS product.
- 3.2 Difference Between DBMS and RDBMS
- 3.3 PL/SQL

Overview of PLSQL Data Types PLSQL Block & Exception Handling Stored Functions Cursor Trigger rence Books: Database System Concer

Reference Books: Database System Concepts Seventh Edition By Henry Korth and A. Silberschatz((Page Numbers:-Page No:-1-35)

Chapter 4: Transaction management and Concurrency control

4.1 Transaction Concept, Transaction Properties, Transaction States
4.2 Concurrent Execution
4.3 Serializability
4.4 Lock Based Protocol,

4.5 Deadlock

4.6 Recovery in Databases

Reference Books: Database System Concepts Seventh Edition By Henry Korth and A. Silberschatz

((Page Numbers:- Page No:-1-35)

Course Outcome(CO):

After completing this course satisfactorily, a student will be able to:

- 1. Describe the fundamental elements of relational database management systems
- 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design
- 3. Explain relational algebra and SQL.
- 4. Design ER-models to represent simple database application scenarios
- 5. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
- 6. Improve the database design by normalization.

Course Code:-BBACAVT- 111 Course Name:-Organizational Behavior & HRM Credits allotted: - 02

Course Type-Theory Lectures allotted-30

Module-1

Chapter 1:Introduction to Organizational Behavior

1.1 Definition, concept, scope, Models of OB, Major trends in OB:-Total Quality management, Cultural diversity, Organizational change, Stress Management: Sources of Stress, Effects of Stress & Stress Management, Work life Balance and Quality of Work Life

Reference Books: Organizational Behavior by L.M.Prasad, Publisher-Sultan Chand & Sons. (Page Numbers:- 32-47 and 178-184)

Chapter 2:Introduction to HRM

2.1Definition, Concepts, scope, importance Functions, Objectives & limitations, , Role of HR Manager , Areas in which Human Resource Manager can be of assistance

Reference Books: Personnel and HRM by P. Subba Rao, Himalaya Publishing House (Page Numbers:- 1-27)

Module-2

Chapter 3:Procurement

HRP-Concept, Definition, Merits & Demerits, process, influencing factors of HRP Recruitment-Concept, Definition, sources of recruitment and their utility in identifying vacancies, methods, E-recruitment, Selection- Concepts, definition, process, Types of interviews and frequently asked interview questions from the candidate at each step and how to answer them, E- selection

Reference Books:Personnel and HRM by P. Subba Rao, Himalaya Publishing House (Page Numbers:- 67-81, 82-95 and 96-114)

Chapter 4: Training & Development

Training & Development- Concept, definition, importance, Methods, ETraining, Recent trends in Training

Reference Books:Personnel and HRM by P. Subba Rao, Himalaya Publishing House (Page Numbers:- 152-169, 180-185 and 430-446)

Text Books:

Human Resources Management. –L.M. Prasad Sultan and Chand Publishing Company New Delhi Human Resources Management. K. Ashwathappa – Tata McGraw Hill New Delhi

Course Outcome(CO):

After completing this course satisfactorily, a student will be able to:

- 1. To develop the understanding of the concept of human resource management.
- 2. To understand the concept of Job Analysis various functions of human resource.
- 3. To understand the concept of Career Planning and Job Satisfaction
- 4. Define fundamental Concept of Organizational Behavior
- 5. Describe Models and emerging aspects of Organizational Behavior
- 6. Explain the concept of Attitude, Values and Motivation in Organization

Course Code:-BBACAIKST-111 Course Name:-Vedic Mathematics Credits allotted: - 02

Course Type-Theory Lectures allotted-30

Module-1

Unit 1: Addition and Subtraction

- 1. History of Vedic maths,
- 2. why Vedic maths,
- 3. salient features of Vedic maths,
- 4. Vedic maths formulas,
- 5. 16 sutras, 13 sub sutras,
- 6. terms and operations.
- 7. High speed addition by using the concept of computing the whole and from left to right,
- 8. super-fast subtraction by Nikhilam
- 9. Sutram from basis 100,1000,10,000.

Reference Books:Sri Bharatikrishna Tirthaji,"Vedic Mathematics",Published by Motilal Banarsidass, 1965.ISBN 81-208-0163-6. (Page no. 1 to 14)

Unit 2: Multiplication By Sutram

Multiplication by Urdhavtrighbhyam sutram,

- 1. Multiplication by Vinculum sutram,
- 2. Multiplication by Nikhilam sutram,
- 3. Fast multiplication by 11, multiplication of numbers consisting of all 9s,
- 4. Multiplication of numbers nearest to the base 10, and
- 5. Multiplication of numbers with sub base 50,500,5000.

Reference Books:Sri Bharatikrishna Tirthaji,"Vedic Mathematics",Published by Motilal Banarsidass, 1965.ISBN 81-208-0163-6. (Page no. 15 to 30)

Module-2

Unit 3: Squares and Cubes By Sutram

- 1. Meaning of Ekadhiken Sutram and its applications in finding squaring of numbers ending in 5
- 2. Squares by Anurupeyana Sutram,
- 3. Square by Yavdunam thavadunikritya vargamcha yojyet sutram,

- 4. Squaring by Dwandvayoga sutram,
- 5. Squaring numbers nearest 50, square roots of perfect square,
- 6. General method of square roots,
- 7. Cubes by Anurupeyana sutram,

Reference Books:Sri Bharatikrishna Tirthaji,"Vedic Mathematics", Published by Motilal Banarsidass, 1965.ISBN 81-208-0163-6. (Page no. 31 to 52)

Unit 4: Division By sutram

- 1. Decimals and fractions, division by Nikhilam sutram,
- 2. Division of 1/19, 1/29 by ekadhikenpurven sutram,
- 3. Division by Paravartya sutram,
- 4. Division by Anurupeyana sutram.Ratio
- 5. Proportion, percentage, Profit and Loss.

Reference Books:Sri Bharatikrishna Tirthaji,"Vedic Mathematics", Published by Motilal Banarsidass, 1965.ISBN 81-208-0163-6. (Page no. 55 to 78)

Text books :

1. Williams K.R. "Discover Vedic Mathematics" Vedic Mathematics Research Group,

1984.ISBN 1-869932-01-3.

Reference books:

2. Sri Bharatikrishna Tirthaji,"Vedic Mathematics", Published by Motilal Banarsidass, 1965.ISBN 81-208-0163-6. 3. Wiliams K.R. and M.Gaskell "The Cosmic Calculator". Motilal Banarsidass

.2002.ISBN 81-208-1871-7.

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- CO 1: Develop the understanding of objectives and features of Vedic maths and recognize the meaning of mathematical sutras in Sanskrit.
- CO 2: Understand the concept of addition and subtraction using completing the whole and from left to right.
- CO 3: Manage to solve the multiplication using vertically and crosswise and one more than the previous one method and demonstrate multiplication by 11, 12 and 13 by using Vedic sutras of multiplication.
- CO 4: Distinguish between squaring numbers ending in 5 and squaring numbers near number 50 and manage to simplify algebraic squaring.
- CO 5: Apply reverse squaring to find square root of number ending in 5 and manage to solve the square root of perfect square.

CO 6: Identify cube and cube roots, understand and apply division by 9 and understand the concept of division by using straight division.

Course Code:-BBACAOET-111 Course Name:-E-Commerce Credits allotted: - 02

Course Type-Theory Lectures allotted-30

Module-1

Unit 1: Introduction to Electronic Commerce

- 1. What is E-Commerce (Introduction and Definition)
- 2. Main activities E-Commerce
- 3. Goals of E-Commerce
- 4. Functions of E-commerce
- 5. Advantages and Disadvantages of E-commerce
- 6. Scope of E-commerce
- 7. Electronic commerce Applications

Reference Books:E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.(Page no. 1 to 24)

Unit 2: Internet and Extranet

- 1. Definition of Internet
- 2. Adv and Dis adv of the Internet
- 3. Component of a Intranet Information technology structure
- 4. Development of a Intranet
- 5. Extranet and Intranet Difference
- 6. Role of Intranet in B2B Application

Reference Books:E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.(Page no.)

Module-2

Unit 3 : Electronic payment System

- 1. Introduction
- 2. Types of Electronic payment system
- 3. Payment types
- 4. Traditional payment
- 5. Value exchange system
- 6. Credit card system
- 7. Electronic funds transfer
- 8. Paperless bill
- 9. Modern payment cash
- 10. Electronic cash

Reference Books:E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.(Page no.)

Unit 4: E-com Security

- 1. E-commerce security environment
- 2. Security threats in E-com environment
- 3. Malicious code and unwanted programs
- 4. Hacking and cyber vandalism
- 5. Credit card fraud/Theft
- 6. Spoofing

Reference Books:E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.(Page no.)

Text Book:

- 1. WebCommerceTechnologyHandbook, byDanielMinoli, EmmaMinoli, McGraw-Hill
- 2. Frontiers of electronic commerce ece by Galgotia.

Reference Book

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

CO1 : Understand the basic concept of E-commerce.CO2: Describe the concept of internet and extranet.CO3: Analyze the electronic system for payment.CO4:Apply e payment system.CO5:Understand cyber security concepts.CO6:Describe to avoid credit fraud and theft.

Course Code:-BBACASECT- 111 Course Name:-Basic Programming skills using Scratch Credits allotted: - 02 Course Type-Theory Lectures allotted-30

Module-1

Chapter 1: Introduction to Scratch

- Introduction to Scratch
- Basic Interface- Block Palette, Script Area, Sprite List, Stage
- Operators and Variables
- Creating Scripts
- Creating Shapes and Message

Reference Books: Learn to Program with Scratch by Majed Marji (Page No:1 to 23)

Chapter 2: Blocks Types and Categories

Types of Blocks-

Hat Blocks, Cap Blocks Stack Blocks Reporter Blocks Conditional Blocks Looping Blocks • Blocking Categories -

Control Blocks

Sensing Blocks Variable Blocks Look Blocks

Reference Books: Learn to Program with Scratch by Majed Marji (Page No:3 to 7)

Module-2

Chapter 3: Motion Blocks

- Move Block, Turn Block, Pen Block
- Dancing Girl
- Jumping Ball

Reference Books: Learn to Program with Scratch by Majed Marji (Page No:25 to 7)

Chapter 4: Animation

- Animation module (create simple animations with basic loops)
- Aquarium
- Dahi Handi
- Flying Butterfly using controls of keys
- Movement of the earth around the sun along with axis

Text Book:

Basic Scratch: An introduction to the Scratch programming language Kindle Edition Scratch in Easy Steps by Sean McManus

Reference Book:

Learn to Program with Scratch by Majed Marji

Reference Link:

https://scratch.mit.edu/

Course Outcome(CO):

The students will be able to:

- CO.1: Apply Thinking and problem solving skills.
- CO.2 Apply multiple processes and diverse perspectives to explore alternative solutions.
- CO.3 Students design, modify, and create games and movies using programming in Scratch.
- CO4: Repeat the sequence of instructions using a control statement.
- CO5: Apply code reusability with looks.
- CO6: Implementation stories and games using scratch.

SEMESTER-II

Course Code : BBACA- 121CoCourse Title: Website Development using HTML and CSS and JavaScriptLeoCourse Credits: 0202

Course Type-Theory Lectures allotted-30

Module 1

Unit 1: Introduction to HTML No. of Lectures :7

What is HTML HTML Documents Basic structure of an HTML document Creating an HTML document Mark up Tags Heading-Paragraphs Line Breaks HTML Tags

Reference Book: HTML & CSS: The Complete Reference, Fifth Edition (page numbers: 55-106)

Unit 2: Elements of HTML No. of Lectures :8

Introduction to elements of HTML Working with Text Working with Lists, Tables and Frames Working with Hyperlinks, Images and Multimedia Working with Forms and controls.

Reference Book: Mastering HTML, CSS & Javascript Web Publishing (page numbers(57 to 80)

Module 2

Unit 3 : Introduction to Cascading Style Sheets No. of Lectures: 7

Concept of CSS Creating Style Sheet CSS Properties CSS Styling (Background, Text Format, Controlling Fonts) Manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS Working with Lists and Tables

Reference Book: Mastering HTML, CSS & Javascript Web Publishing (page numbers(121 to 385)

No. of Lectures: 8

Introduction to Java Script Identifier & operator, control structure, functions Document object model(DOM) DOM Objects (window, navigator, history, location)

Reference Book: Mastering HTML, CSS & Javascript Web Publishing (page numbers(471 to 491)

Text books :

 Complete HTML- Thomas Powell
 HTML and JavaScript – Ivan Bayross Reference books:
 HTML & CSS: The Complete Reference, Fifth Edition Mastering HTML, CSS & Javascript Web Publishing

Course Outcome(CO):

The students will be able to:

- 1. Create HTML5 documents.
- 2. Add content to an HTML page using HTML elements.
- 3. Use hyperlinks to connect various HTML pages together.
- 4. Create user input using forms.
- 5. Create CSS stylesheets.
- 6. Lay out HTML elements using CSS margin and padding.
- 7. Implement program logic using JavaScript.

Course Code : BBACAT- 122 Course Title: Business communication Course Credits: 02 Module 1 Course Type-Theory Lectures allotted-30

Unit 1: Introduction to Communication No. of Lectures :7

Role of Communication in social and economic system Need for effective communication Meaning and definition Principles of effective communication Barriers to communication and over comings

Ref. book: Sinha K.K Publisher: Galgotia. (Pg.no. 5 to 45.)

Unit 2: Methods and types of Communication No. of Lectures :8

Written communication, Forms of written communication. Qualities, difficulties in written communication, Constraints in developing effective written communication Merits and Limitations of written communication Listening Written communication, Forms of written communication. Qualities, difficulties in written communication,

Ref. book: Sinha K.K Publisher: Galgotia. Pg.no. 50 to 95.

Module 2

Unit 3 : Business Correspondence No. of Lectures:7

Concept, Need and functions of Business. Correspondence, Types of Business letters, Layout Drafting of business, Sales Letter Orders sales circulars and business promotion letters Written methods & types of communication

Ref. book: Sinha K.K Publisher: Galgotia. Pg.no. 100 to145

Unit 4: Analysis of different Media of Communication No. of Lectures :8

Fax communication Voice mail, Emails and Teleconferencing Communication through social media

Ref. book: Sinha K.K Publisher: Galgotia. Pg.no.150 to 195

Text Books:

Business Communication Meenakshi Raman , Prakash Singh Oxford Business Communication HomaiPradhan , N.S. Pradhan Himalaya Publishing House

Course Outcome(CO):

The students will be able to:

- CO1: Define basic concepts of communication and communication skills.
- CO2: Discuss the importance of effective communication in business.
- CO3: Describe various communication methods (written and oral) in different businesses.
- CO4: Achieve appropriate verbal and nonverbal communication skills.
- CO5: Demonstrate effective listening, speaking, reading and writing skills in communication
- CO6: Draft business letters, reports, circulars, emails, minutes and agenda of meetings and business proposals.
- CO7: Demonstrate various technologies and its use in business communication
- CO8 : Discuss various media of communication

Course Code: BBACAMIT-121 Course Title: Statistics for Data Science Course Credits: 02 Course Type-Theory Lectures allotted-30

Module 1

Unit 1: Introduction to statistics. No. of Lectures:8

Role of statistics. In informatics business science Tabulation, Data condensations and tabulation, Data Condensation and graphical Methods: Raw data, attributes and variables, classification, frequency distribution, cumulative frequency distributions. Graphs - Histogram, Frequency polygon. Diagrams - Multiple bar, Pie, Subdivided bar

Reference book: Fundamentals of Business Statistics By J.K. Sharma Pearson (Page numbers 50 to 81)

Unit 2: Measures of central tendency and dispersion No. of Lectures:6

Criteria for good measures of central tendency, Arithmetic mean, Median and Mode for grouped and ungrouped data, combined mean.

Reference book: Fundamentals of Business Statistics By J.K. Sharma Pearson (Page numbers 117 to 161)

Module 2

Unit 3 : Measures of Dispersion : No. of Lectures:8

Concept of dispersion, Absolute and relative measure of dispersion, Range, Variance, Standard deviation, Coefficient of variation, Quartile Deviation, Coefficient of Quartile deviation.

Reference book: Fundamentals of Business Statistics By J.K. Sharma Pearson (Page numbers 117 to 161)

Unit 4: Correlation and Regression(for ungrouped data) No. of Lectures:8

Concept of correlation, positive & negative correlation, Karl Pearson's Coefficient of correlation, Meaning of regression, Two regression equations, Regression coefficients and properties. Reference book: Fundamentals of Business Statistics By J.K. Sharma Pearson (Page numbers 300 to 365)

Text Books: Business Statistics By Girish Phatak Tech – Max 2 Statistics for Business By Dr. S. K. Khandelwal International Book House 3 Fundamentals of Business Statistics By J.K. Sharma Pearson

Reference Books:

- 1. Business Statistics By Mr. R. S. Bharadwaj, pub: Excel Book
- 2. Business Statistics by Richard Levin

Course Outcome(CO):

After completing this course satisfactorily, a student will be able to:

- CO1. Describe and discuss the key terminology, concepts tools and techniques used in business statistical Analysis
- CO2. Critically evaluate the underlying assumptions of analysis tools
- CO3. Understand and critically discuss the issues surrounding sampling and significance
- CO4. Discuss critically the uses and limitations of statistical analysis
- CO5. Solve a range of problems using the techniques covered
- CO6. Conduct basic statistical analysis of data.

Course Code: BBACAVT-121 Course Title: Business Analytics using Tableau Course Credits: 02 Course Type-Theory Lectures allotted-30

Module 1

Unit 1: Getting Started with Tableau No. of Lectures: 8

Getting Started with Excel Download and Install Tableau Public Load Data from Excel User Interface of Tableau Dimensions vs. Measures Discrete vs Continuous Application of Discrete and Continuous Fields Aggregation in Tableau

Reference Link: https://www.tutorialspoint.com/tableau_tableau_pdf_version.html

Unit 2: - Creating Charts in Tableau No. of Lectures: 6

Creating Charts in Tableau Bar Chart

Stacked Bar Chart Line Chart Scatter Plot Dual-Axis Charts Combined-Axis Charts Funnel Chart Cross Tabs Highlight Tables Maps Measure Names and Measure Values

Reference Link: https://www.tutorialspoint.com/tableau/tableau pdf version.html

Module 2

Unit 3 : Filters in Tableau No. of Lectures:8

Filters in Tableau Dimension Filter Date Filter Measure Filter Visual filter Interactive Filter Data Source Filter Context Filter

Reference Link: https://www.tutorialspoint.com/tableau_tableau_pdf_version.html

Unit 4: Applying Analytics to the worksheet and Dashboard in Tableau No. of Lectures:8

Applying Analytics to the Worksheet Sets Parameters Group **Calculated Fields Date Functions Text Functions** Bins and Histogram Sort Reference and Trend Lines **Table Calculations** Pareto Chart Waterfall Chart Dashboards in Tableau Dashboard Working with Layout Objects in Dashboard Making Dashboards Interactive Actions in Dashboard

https://www.tutorialspoint.com/tableau/tableau_tutorial.pdf

Course Outcome(CO):

After completing this course satisfactorily, a student will be able to:

- Co1: Create a data extract.
- Co2: Create groups and hierarchies in field data.
- CO3: Sort and filter data.
- Co4: Apply analytics using reference lines and box plots.
- Co5: Use sets to compare data subsets.
- Co6: Use the Tableau workspace to create visualizations
- Co7: Build a range of essential chart types for analysis.

Course Code:BBACAOET-121Course Title:Basics of Hardware & Networking

Course Type-Theory Lectures allotted-30

Course Credits: 02

Module 1

Chapter1: Computer Hardware Basics

- External hardware
 - o Input device
 - o Output device
- Internal hardware

o CPU

o hard disk drive,

- o ROM, RAM, etc
- Secondary Storage
 - o Magnetic Storage Devices
 - o Optical Storage Devices

Chapter 2: Computer Software Basics

• Types of Software-

Application software

- System Software
- Operating system
- Device driver
- Utility software

Reference Books: (Computer Fundamentals: Pradeep K.Sinha & Priti Sinha Page No.-2 to 56)

Module 2

Chapter3: Networking Fundamentals

Introduction (Types of Network, Topology, protocols, and Ports)

- Networking devices (Routers, Switches, Hub, Repeater, NIC Cards, Bridge)
- Networking Media (Wire, Wireless, Cables, Crimping, UTP)

Reference Books: (SMB University: Networking Fundamentals Page No.3 to 30)

Chapter 4: Basics of Network Security

- Introduction
- Need for Security
- Security Attacks
- Services and Mechanisms
- Network Protection Method

Reference Books: (Network Security ISOC NTW 2000 Page No.5 to 30)

Course Outcome(CO):

After completing this course satisfactorily, a student will be able to

- CO1: Identify the hardware components of a computer.
- CO2: Discuss the features of the hardware components of a computer.
- CO3: Identify the softwares running on a computer.
- CO4: Understand the concept of networking
- CO5: Understand different types of networks, various topologies and application of networks.

CO6 : Understand the fundamentals of Network security.

Text Books

Computer Basic Hardware & Network Kindle Edition by Jakkir Hussain (Author) .

Reference Books

- 1) Tools for Teaching Computer Networking and hardware Concepts, Nurull. Sarkar, NewZealand.
- 2) Introduction to PC Hardware and Troubleshooting First Edition by Mike Meyers, The

McGraw-Hill companies, 2003.