ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

Affiliated to Mahatma Gandhi University, Kottayam



CURRICULUM AND SYLLABI FOR THE PROGRAMME

B.VOC SOFTWARE DEVELOPMENT

Programme Code : BVSD

Under Credit and Semester System (2023 Admission Onwards)

St. Teresa's College (Autonomous)

Department of Computer Applications

1	Chairperson	Dr. Sabu M K	Professor	Department of Computer Applications,
				Cochin University of Science and Technology,
2	Faculty	Mrs Daii S	HOD	Department of Computer Applications
2	Member	Dillai	Accistant	St. Teresa's College (Autonomous)
	wiender	1 11141	Professor	Frakulam
3	Faculty	Mrs Sheeba	Assistant	Department of Computer Applications
5	Member	Emmanuel	Professor	St. Teress's College (Autonomous)
	Wienibei	Emmanuel	110105501	Ernakulam
4	Faculty	Mrs.Dhanya R	Assistant	Department of Computer Applications,
	Member		Professor	St. Teresa's College (Autonomous),
				Ernakulam
5	Faculty	Ms. Remya C J	Assistant	Department of Computer Applications
	Member		Professor	St Teresa's College (Autonomous)
				Ernakulam
6	Faculty	Ms. Mekha	Assistant	Department of Computer Applications
	Member	Jose	Professor	St Teresa's College (Autonomous)
				Ernakulam
7	Faculty	Ms. Archana	Assistant	Department of Computer Applications
	Member	Menon P	Professor	St Teresa's College (Autonomous)
				Ernakulam
8	Faculty	Ms. Veena	Assistant	Department of Computer Applications
	Member	Antony	Professor	St Teresa's College (Autonomous)
				Ernakulam
9	Faculty	Ms.Mary	Assistant	Department of Computer Applications
	Member	Andrews	Professor	St Teresa's College (Autonomous)
				Ernakulam
10	Faculty	Ms.Elizabeth	Assistant	Department of Computer Applications
	Member	Paul	Professor	St Teresa's College (Autonomous)
				Ernakulam
11	Faculty	Ms.Harsha K	Assistant	Department of Computer Applications
	Member	M	Professor	St Teresa's College (Autonomous)
				Ernakulam
12	Faculty	Ms.Megha	Assistant	Department of Computer Applications
	Member	George	Professor	St Teresa's College (Autonomous)
				Ernakulam
13	Faculty	Ms. Anjali	Assistant	Department of Computer Applications
	Member	Menon	Professor	St Teresa's College (Autonomous)
				Ernakulam
14	Faculty	Ms.Anjaly	Assistant	Department of Computer Applications
	Member	Muralidharan	Professor	St Teresa's College (Autonomous)
				Ernakulam

Board of Studies in Computer Applications

-				
15	Subject Expert- 1	Dr.Remesh Babu	Professor	Department of Information Technology, GEC Palakkad, Sreekrishnapuram
	Outside MG			
	University			
16	Subject	Dr. Binu P	Principal	Computer Science Department
	Expert- 2	Chacko	&	Prajyoti Niketan College
	Outside MG		Research	Puthukad, Thrissur
	University		Guide	
17	University	Dr. Jaseena K	Assistant	Department of Computer Applications
	Nominee	U	Professor	MES College Marampilly Aluva
				MES Conege, Marampiny, Aluva
18	Representati	Mr.Saj Janin J	Principal	Cognizant Technology Solution, Kochi
	ve from		Architect	
	Industry/			
	Corporate			
	Sector/			
	Allied field			
	related to			
	placement			
19	Alumni	Mrs. Sebby K	Sr. HSST	EMGHS, FortKochi
	Representati	X		
	ve			

PREFACE

The curriculum, which encompasses the totality of student experience, should ensure a collective and dedicated effort to birth an inspiring academic culture in a campus. It is this vision of quality knowledge, its production and transmission that has fueled the Teresian quest for essential and elemental student development. St. Teresa's College has taken meticulous care in the conception of the new well-balanced curriculum by retaining the fundamental prerequisites mentioned by the University/Higher Education Council. With the constraints of a prescribed syllabus in mind, we have created an academic sanctuary, where a deeper access to knowledge is achievable to students and teachers as well.

The Syllabus restructuring of 2023 instigates opportunities of real-world learning to equip a modern scholar with the practicality of experience. As an autonomous institution under Mahatma Gandhi University, St. Teresa's College offers a significant number of Programmes with definite placement windows to the learners. Student knowledge and training across a range of subject areas is efficiently enriched by engaging them in work-based learning, as provided by the revised and restructured curriculum.

The indefatigable effort taken by the teachers in developing Programmes and Course outcomes is commendable. The blossoming of the cognitive and intellectual skills of the scholars, the initiation of a research mentality, and pragmatic skill sets to venture out confidently into a professional space, are the core off-shoots that are anticipated. The curriculum should equip the students to be educators themselves, with a voice that echoes global effectiveness.

I congratulate the efforts taken by the Principal Dr. Alphonsa Vijaya Joseph and her team for restructuring the syllabus in keeping with the latest demands in academia. We trust that the syllabus will transform minds to embark upon higher academic summits and thereby mould learners who will make significant contributions to the world. We look forward to sharing the outcomes of our restructured curriculum and the positive changes that would reshape the academic lives of all our scholars.

Rev. Dr. Sr. Vinitha (Dr.Celine E) Manager

FOREWORD

The most significant characteristic of an autonomous college is its commitment to curriculum renewal or revision. Academic autonomy has granted the college the freedom to fine tune the syllabus keeping in mind the changing needs of the new generation of students, the new educational scenario in the global context and incorporation of skill-based curricula.

Revision of the syllabus implies responsibility and accountability and this in turn leads to excellence in academics and proactive governance. Education in the current scenario throws up a multitude of challenges and the curricula and syllabi ought to reflect the paradigm shift that has occurred in the various disciplines. A revision of the syllabus is implemented by modifying the curriculum after review to evaluate the effectiveness of the curriculum after it has been implemented and to reflect on what students did and did not get out of it. In line with the new educational policy, a big educational reform can be effected by restructuring of syllabi to maintain a high level of quality in the standard of education that we impart.

The three themes under Higher Education relevant to policy initiative for restructuring of the curriculum i.e., integrating skill development in higher education, linking higher education to society and integration of new knowledge are considered with utmost importance during revision of the syllabus.

Outcome-Based Education emphasizes that the learning process is innovative, interactive and effective, where the main goal is student achievement at the end of the learning period. St. Teresa's College in its pursuit of imparting quality education has adopted Outcome Based Education (OBE) system that involves restructuring of curriculum, academic processes, teaching methodologies, assessment and evaluation systems in education to reflect the achievement of high order learning. It is a student-centric instruction model that focuses on measuring student performance through outcomes that include knowledge, skills and attitudes.

The revised syllabus and curriculum is the result of the combined efforts of the members of the Board of studies, curriculum expert committee and the syllabus committee who worked as a team to revise the syllabus and curriculum in the stipulated period. Active consultations were held with various stakeholders to elicit multiple perspectives in higher education which were incorporated in the new curriculum.

With sincere gratitude I acknowledge the instinct support and constant guidance extended by Rev.Dr. Sr. Vinitha, Provincial Superior and Manager, Rev. Sr. Emeline, Director, Dr. Sajimol Augustine M., Senior Administrator, Smt. Betty Joseph, Vice-Principal and Dr. Beena Job, Dean of self-financed programmes. I specially thank the team headed by Dr. Betty Rani Isaac, the Heads of the Departments and all the faculty members for their diligence, commitment and exceptional contribution towards this endeavour.

Prof. Alphonsa Vijaya Joseph Principal

ACKNOWLEDGEMENT

I acknowledge with gratitude all the guidance and help given by our Manager, Rev. Dr. Sr. Vinitha CSST, Principal Dr. Alphonsa Vijaya Joseph, Director Rev. Sr. Emeline CSST, Senior Administrator, Dr. Sajimol Augustine M. Vice-Principal, Smt. Betty Joseph, Dean of Self Financing Programmes Dr.Beena Job, the IQAC team headed by Dr. Kala M.S during the course of restructuring of the syllabi. I also remember and acknowledge with gratitude all the members of the Board of Studies of Computer Applications for their constructive suggestions and contributions in restructuring the syllabi of all the courses in Computer Applications, Mathematics and Statistics. I am also grateful to all the members of the Curriculum Committee and the Syllabus Restructuring Committee of the college for their guidance during the syllabus restructuring process. Above all, I bow my head before God Almighty for all the guidance he has continuously given to us for all our endeavors.

Ms.Raji S Pillai

Head of the Department

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PREAMBLE

Information Technology (IT) industry in India is one of the fastest growing industries. Indian IT industry has built up valuable brand equity for itself in the global markets. IT industry in India comprises of software industry and information technology enabled services (ITES), which also includes business process outsourcing (BPO) industry.

Even the Government of India initiated a new move called *Digital India* to ensure that government services are made available to citizens electronically by improving online infrastructure and by increasing internet connectivity. All the enterprises and companies are automating their services, thus resulting a huge requirement of professionally and vocationally qualified and skilled workforce in almost all sectors including finance, Media and entertainment, research etc.

The B.Voc (SOFTWARE DEVELOPMENT) is designed in such a way that at the end of three years the student will be awarded a B.Voc. Degree and pursue the job roles of , Analyst, Application Maintenance Engineer, Deployment Engineer, Engineer Trainee, Junior Data Associate, Language Translator, QA Engineer etc.

However at the end of second and first year they will be awarded advanced diploma and diploma respectively and they can seek jobs in low level management areas.

UGC SPONSORED B.VOC PROGRAMMES

The University Grants Commission (UGC) had launched a scheme on 27 February, 2014 for skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points. Considering the implementation modalities, the guidelines of the scheme have been revised in the year 2015. The B.Voc. programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B.Voc to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

Objectives

- 1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
- 2. To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.
- 3. To provide flexibility to students by means of pre-defined entry and multiple exit points.
- 4. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
- 5. To provide vertical mobility to students coming out of
 - a) 10+2 with vocational subjects;
 - b) Community Colleges.

Governance and Coordination

An Advisory Committee will be set-up for effective governance and coordination of the courses under the scheme. The Advisory Committee will include the representative(s) of the affiliating university, relevant industries, relevant Sector Skills Council(s), and Nodal Officer of B.Voc Scheme. The Vice Chancellor of the university or his Nominee or Principal of the college, as the case may be, will be the Chairman of the Advisory Committee and the Nodal Officer will be the Member-Secretary. The Committee will meet periodically to review the functioning of the courses, as and when required, but at least once in six months. The Advisory Committee will also ensure the timely submission information to UGC and uploading of data in Skill Development Monitoring System (SDMS). Nodal Officer will submit quarterly progress report to UGC and copy of the same may also be endorsed to Head, Standards & Q.A., National Skill Development Corporation, Block A, Clarion Collection, ShaheedJeet Singh Marg, New Delhi - 110016.

Assessment

- a. The Skill component of the course will be assessed and certified by the respective Sector kill Councils. In case, there is no Sector Skill Council for a specific trade, the assessment may be done by an allied Sector Council or the Industry partner. The certifying bodies may comply with and obtain accreditation from the National Accreditation Board for Certification Bodies (NABCB) set up under Quality Council of India (QCI). Wherever the university/college may deem fit, it may issue a joint certificate for the course(s) with the respective Sector Skill Council(s).
- b. The credits for the skill component will be awarded in terms of NSQF level certification which will have 60% weightage of total credits of the course in following manner.

Name of the Course	NSQF Level Certificate	Cumulative Credits
Certificate	Level – 4	18 credits
Diploma	Level – 5	36 credits
Advanced Diploma	Level – 6	72 credits
B.Voc Degree	Level – 7	108 credits

- c. The general education component will be assessed by the concerned university as per the prevailing standards and procedures. The following formula may be used for the credit calculation in general education component of the courses:
 - General Education credit refers to a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Accordingly, one Credit would mean equivalent of 14-15 periods of 60 minutes each or 28 – 30 hrs. of workshops / labs.
 - ii. For internship / field work, the credit weightage for equivalent hours shall be 50% of that for lectures / tutorials.
 - iii. For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study shall be 50% of that for lectures / tutorials.

Outcome based education involves assessment and evaluation practices in education reflecting the attainment of expected learning and mastery in the programme. It is a systematic way to determine

if a programme has achieved its goal. This approach of learning makes the student an active learner, the teacher a good facilitator and together they lay the foundation for life-long learning. The process includes framing of specific course outcomes at various appropriate levels of taxonomy, mapping the course outcomes of each course with the Programme Specific Outcomes and finally calculating the course attainment based on the marks scored by the student in both the Internal and External assessments.

BVSD - B.VOC SOFTWARE DEVELOPMENT

PROGRAMME OUTCOMES (PO)

On completion of an undergraduate programme from St. Teresa's College (Autonomous) Ernakulam, students should be able to demonstrate the programme outcomes listed below:

PO 1. Disciplinary knowledge

• Demonstrate a mastery of the fundamental knowledge and skills required in the discipline to function effectively as an entry-level professional in the field.

PO 2. Scientific Temper

- Experiment with new approaches, challenge existing knowledge boundaries and take informed action to solve problems related to society.
- Identify, define, and deal with problems through logical, analytical and critical thinking acquired from different domains of knowledge.

PO 3. Research and Digital Competence

- Develop a research culture for lifelong learning and demonstrate competency in creating new knowledge.
- Analyze and choose from available data and information sources to communicate, collaborate and network through a range of digital media.

PO 4. Communication Skills

- Develop language proficiency through interactions embedded in meaningful contexts.
- Demonstrate communicative competence particularly using technology in social and global environments.

PO 5. Leadership, Teamwork and Interpersonal Skills

- Function effectively both as leader and/or member of a team.
- Collaborate and interact effectively with others.

PO 6. Moral, Ethical Awareness and Social Responsibility

- Demonstrate social and national responsibility.
- Engage in activities that contribute to the betterment of society, with a preferential option for the economically challenged and the marginalized.

B.VOC SOFTWARE DEVELOPMENT

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of an undergraduate programme in B.Voc. Software development, students should be able to demonstrate the programme specific outcomes listed below:

- **PSO1:** Express Technical Knowledge, Professional Skills and Competencies in the field of Software Development and IT enabled services. (Create)
- **PSO2 :** Interpret Financial, Software and Business Reports and Communicate Key findings to Stakeholders Effectively. (Analyse)
- **PSO3 :** Appraise ethics and values in various domains such as IT governance and sustainable practices. (Analyse)
- **PSO4 :** Solve Real Life Problems Using Mathematical, Statistical And Programming Tools. (Apply)
- **PSO5 :** Collaborate industry-standard project practices as a bridge to stable employment through internships. (Create)

STRUCTURE OF UGC -NSQF BVOC PROGRAMME

PROGRAMME DESIGN

The U.G. programme of B. Voc. Software Development shall include:

- (a) Language courses (English),
- (b) General Education Components,
- (c) Skill Components
- (d) Internship
- (e) Field Visits,
- (f) Project
- (g) Soft Skills and Personality Development Programmes
- (f) Study tours.

The number of courses for the restructured programme shall contain 14 compulsory skill (core) courses, 10 practical's, 3 internships, 1 project in the area of Skill, 16 general (complementary)courses and 2 common courses.

ELIGIBILITY

Eligibility condition for admission to BVoc programme shall be 10 +2 or equivalent in any stream.

Semester / Year	NSQF Level	
First Semester	Level 4 1. Collections Executive NOS REFERENCE ID: SSC/Q2214 Individuals in this job are responsible for reconciliation of customer accounts through payment follow ups, sending payment reminders, investigating and solving customers' problems, which may lead to delay in payments, communicate the right information to the customers. 2. Domestic Data Entry Operator NOS REFERENCE ID: SSC/Q2212 Maintain proper entry of required data of customers through use of various data entry softwares and techniques. 3. Domestic IT Helpdesk Attendant NOS REFERENCE ID: SSC/Q0110 Managing and resolving client queries / issues primarily through telephonic calls.	
Year 1	Level – 5 <u>Web Developer</u> <u>NOS REFERENCE ID: SSC/ Q 0503</u> Individuals at this job are responsible for designing and maintaining web-based applications that include static and dynamic content. This includes the design, layout and coding of a website.	

Job Roles proposed to be covered in each year (Along with NSQF level)

	1. Test Engineer		
	NOS REFERENCE ID: SSC/ Q 1301		
	Individuals in this job are responsible for		
	development and coordination of scheduled and		
	unscheduled test plans and conducting software		
	compatibility tests with programs, hardware, operating		
	systems, or network environments. The job involves		
	documenting, reporting and tracking software defects		
	using manual testing software.		
	2. <u>Technical Writer</u>		
	NOS REFERENCE ID: SSC/ Q 0505		
	Individuals at this job are responsible for creating		
	technical documentation related to an application like		
	job-aids, help documents and training materials. These		
	documents serve the core purpose of transferring		
	knowledge between the application development		
	teams and the user teams. The information may be		
	presented in the form of user guides for software		
	applications, reference manuals, training guides or		
	online help incorporated into software and operating		
	guides.		
	• <u>Office Assistant</u> : Administrative tasks, word		
	processing jobs and maintaining records in an		
	office.		
	• <u>DTP Operators: Operates</u> office equipment		
	such as printers, copy machines.		
	• Data Entry Operators: Can handle databases		
	for effective data manipulation.		
	• <u>Aksnaya e-centre personnel: Giving e-literacy</u>		
	training to ASHA worker, Anganvadi worker		
	etc.		
	- Droviding Assistance to common		
	o Providing Assistance to common		
	governance, a neument etc.		
	governance, e-payment etc.		
	<u>LEVEL - 0</u> 1 Master Trainer for Junior Software Developer		
Vear 2			
	Major responsibility being to prepare trainees		
	and anable them to progure and perform to a		
	and enable mem to produce, and perform to a		

	reasonable extent, at entry level jobs that exist in the IT Services Industry		
	 <u>Entrepreneurship:</u> Enable students to participate and pursue entrepreneurial opportunities arising out of e-governance 		
	opportunities arising out of e-governance.		
	3. <u>Business Process Outsourcer:</u> Enable to undertake and carry out data processing activities in computerized environments. Analyze business operations, trends, costs, revenues, financial commitments.		
	4. <u>Website Developer: Able</u> to develop websites for various applications		
	 <u>Software Tester:</u> Able to carry out Software testing and debugging activities 		
	 6. <u>Documentation support</u>: Involvement in 		
	 7. <u>Mobile Application Developer:</u> Developing various mobile applications 		
	 <u>Data Analyst:</u> Data analysis and Management Information system. 		
	9. <u>System Admin</u> : IT administration		
	<u>Level - 7</u>		
	1. <u>Analyst</u>		
	NOS REFERENCE ID: SSC/ Q 0701		
	Individuals at this job understand the client's business		
	requirements and translate them into technology		
	requirements for the technology consultants. They act		
	as facilitators in the process of solutioning and		
	2 Application Maintenance Engineer		
	NOS REFERENCE ID: SSC/ 0.0201		
Year 3	Individuals at this job are responsible for ensuring the		
	availability of an application or product for end users.		
	Such roles provide on-going/ad-hoc support for		
	software products or customized applications aimed		
	towards correction of faults/bugs or improvement of		
	performance		
	3. <u>Deployment Engineer</u>		
	NOS REFERENCE ID: SSC/ Q 0301		
	Individuals at this job are responsible for ensuring that		
	software systems are fully deployed, implemented and		

functioning and are configured with the appropriate
hardware requirements.
4. Engineer Trainee
NOS REFERENCE ID: SSC/ Q 0507
Individuals at this job are responsible for supporting
the work area/domain they are aligned to by assisting
in performing the key activities and tasks involved.
5. Junior Data Associate
NOS REFERENCE ID: SSC/ Q 0401
Individuals at this job are responsible for designing
and implementing processes and layouts for complex,
large-scale data sets used for modeling, data mining,
and research purposes. Responsibilities also include
designing and implementing statistical data quality
procedures around new data sources.
6. Language Translator
NOS REFERENCE ID: SSC/ O 0506
Individuals at this job are responsible for translating
software into different languages that end-users may
be well-versed with. These extend beyond regular
language translator roles as they require understanding
of the software languages and platforms.
7. QA Engineer
NOS REFERENCE ID: SSC/ Q 1302
Individuals in this job are responsible for coordination
with the support and operations teams to maintain
quality related schedules like audits, records and
reports. The job involves setting quality standards for
products, systems and processes within the
organization, followed by ensuring their effective
implementation.
8. <u>UI Developer</u>
NOS REFERENCE ID: SSC/ Q 0502
Individuals at this job are responsible for creating
complex user interfaces for a variety of applications,
such as computer programs, databases and websites.
9. <u>Software Developer</u>
NOS REFERENCE ID: SSC/ Q 0501
Individuals at this job are responsible for development
of software applications and interfaces as well as
enhancements to existing packaged applications or
pre-engineered templates. The job also involves

providing support to custom applications, debugging,		
maintenance and documentation.		
1.	Document Analyst: organize, analyze,	
	synthesize and summarize information	
	using appropriate analytical	
	methodologies. He/she needs to prepare	
	companies profiles, conducts financial	
	analysis & valuations, benchmarking,	
	collect data using techniques such as	
	questionnaires, surveys, interviews and	
	electronic data collection as part of the job.	
2.	Software Developer: Pursue opportunities	
	in software development firms in various	
	positions.	
3.	Entrepreneurship: Pursue self-employable	
	opportunities in business process services.	
4.	Software Analyst: Can carry out Software	
	Project planning activities.	
5.	Software Tester: Software coding testing	
	and debugging.	
6.	Technical Writer : Prepares manuals and	
	online help	
7.	Software Consultant	

<u>Reference : http://www.nsdcindia.org/nos</u>

PROGRAMME DESIGN

The B.Voc (SOFTWARE DEVELOPMENT) is designed in such a way that at the end of three years the student will be awarded a B.Voc. Degree and pursue the job roles of , Analyst, Application Maintenance Engineer, Deployment Engineer, Engineer Trainee, Junior Data Associate, Language Translator, QA Engineer etc.

However at the end of second and first year they will be awarded advanced diploma and diploma respectively and they can seek jobs in low level management areas.

wards	Duration
Certificate	6 Months
Diploma	2 Semesters (after I st year)
Advanced Diploma	4 Semesters (after 2 nd year)
Degree	6 Semesters



Figure 1 : Assessment of Skill Component under NSQF in Vocational Courses

NSQF Level	Skill Component Credits	General Education Credits	Total Credits for Award	Normal Duration	Exit Points / Awards
4	18	12	30	One Sem.	Certificate
5	36	24	60	Two Sem.	Diploma
6	72	48	120	Four Sem.	Advanced Diploma
7	108	72	180	Six Sem.	B.Voc Degree

Cumulative credits awarded to the learners in skill based vocational courses.

The curriculum in each of the years of the programme would be a suitable mix of general education and skill development components. As is evident from Table 2 above, the General Education Component shall have 40 % of the total credits and balance 60% credits will be of Skill Component. The Curriculum details should be finalized before introduction of the courses.

Levels Of Awards

B.Voc Software Development is a programme with multiple Exit points.

Awards	Duration
Certificate	6 Months
Diploma	2 Semesters (after I st year)
Advanced Diploma	4 Semesters (after 2 nd year)
Degree	6 Semesters

PROGRAMME STRUCTURE

The B.Voc Software Development shall include:

- a) Language courses (English and French)
- b) General Education Components
- c) Skill Components

- d) Internship
- e) Field Visits
- f) Project
- g) Soft Skills and Personality Development Programmes
- h) Study tours

Model III – B.Voc Software Development

А	Program Duration	6 Semesters
В	Total Credits required for successful completion of	180
	the Programme	
С	Credits required from Common Course I	8
D	Credits required from Skill course and General	172
	courses including Project	

COURSES

Courses with Credits

SI.NO	Courses	No	Credits
1.	Language courses (English and French)	4	16
2.	General Education Components	15	56
3.	Skill Components	24	91
4.	Internship	3	11
5.	Main Project	1	6
	Total	47	180

SCHEMES OF COURSES

The different types of courses and its number are as follows:

Common Course	2
General Components	16
Skill Components	25
Internship	3
Project	1

SCHEME OF DISTRIBUTION OF INSTRUCTIONAL HOURS FOR SKILL COURSES

Common Course	2
General Components	16
Skill Components	25
Internship	3
Project	1

COURSE CODE FORMAT

The programme is coded according to the following criteria.

- The first letter plus second letter/any letter from the programme ie. VSD for Vocational Software Development, CA for Computer Applications, MT for Mathematics, ST for Statistics and EN for English.
- 2. One digit to indicate the semester. i.e., VSD1 (BVoc Software Development, 1st semester)
- One letter from the type of courses such as, A for common course, S for Skill course and G for general course. ie.., VSD1S (BVoc Software Development, 1st semester Skill course), PR for project and I for Internship.
- 4. Two digits to indicate the course number. ie.., VSD1S01 (BVoc Software Development, 1st semester, Skill course, course number is 01)
- 5. The letter **B** to indicate **Bachelors Programme**.
- 6. VSD1S01B (BVoc Software Development, 1st semester, Skill course, courses number 01, and B for bachelors Programme)
- 7. 23 to indicate the year. ie.., VSD1S01B23
- The letter P denotes practical it should come after the code letter for the course ie...,SP (skill practical- eg. VSD1SP01B23)

- 9. The letter **PR** denotes project ie...BVoc Software Development Project **VSD6SPRB23.**
- The letter I denotes internship– It should come after the code letter for the course ie...,SI (Skill Internship- eg VSD2SI01B23)

DURATION OF PROGRAMME

- The duration of U.G. Programmes shall be 6 semesters.
- A student may be permitted to complete the programme, on valid reasons, within a period of 12 continuous semesters from the date of commencement of the first semester of the programme.
- Attendance: Students having a minimum of 75% average attendance for all the Courses only, can register for the examination.

DETAILED PROGRAMME STRUCTURE

B.Voc.	Software	Developmen	nt (Model	III)
D ., oc.	Solution	Developmen		

SE				Η	С	MAX	X.MAR
Μ	COURSE	COURSE CODE		R	R		KS
ES	ТҮРЕ		COURSE TITLE	S	Ε	IS	ESA
T				/	D	Α	
				W	I T		
к				E F	S		
				K	5		
	COMMON	EN1A01B23	Fine-Tune Your English	4	4	20	80
	COURSE - I		,				
	GENERAL	VSD1G01B23	Le Français Élémentaire	4	4	20	80
	GENERAL	CA1C01B23	Computer Fundamentals	4	4	20	80
			And Digital Principals				
Ι	SKILL	VSD1S01B23	Financial Accounting	4	4	20	80
	SKILL	VSD1S02B23	Problem Solving	4	4	20	80
			Techniques				
	SKILL	VSD1S03B23	Methodology Of	3	3	20	80
			Programming And C				
			Language				
	SVII I	VSD1SD01D22		4	4	20	80
	PRACTICAL	V 5D15F V1D25	S/W Lab - I	4	4	20	00
	IMICITCIL		(Programming In C				
		VGD1GD00D00	Language)	2	2	20	
	SKILL	VSD1SP02B23	S/W Lab – II (MS Office/	3	3	20	80
	TRACTICAL		Photoshop)		• •		
ΤΟΤΑ	AL HOURS AND O	EN2402D22	STER – 1	30	30	20	90
	COURSE - I	ENZAU3B23	Issues That Matter	4	4	20	90
	COURSE 1						
	GENERAL	VSD2G02B23	Le Français Intermediaire	4	4	20	80
п	GENERAL	VSD2G03B23	Company Law	4	4	20	80
ш	SKILL	MT2B03B23	Basic Mathematics	4	4	20	80
	SKILL	CA2C03B23	Database Management	4	4	20	80
			Systems				
	SKILL	VSD2S04B23	Object Oriented	3	3	20	80
			Programming Using C++				
	SKILL	VSD2SP03B23	S/W Lab III	4	4	20	80
	PRACTICAL		(Object Oriented				
			Programming Using C++)				

	SKILI	VSD2SD0/B23	C/W/Lab IV	2	2	20	80
	PRACTICAL	V SD2SI 04D25	S/W Lab IV	2	2	20	00
	SKILI	VSD2SI01B23	(Accounting with Tany)	1	1	20	80
	SKILL TOTAL HOL			1	1	20	00
	TOTAL HOU	URS AND CREDITS F	OR SEMESTER - 2	3 0	30		
	GENERAL	VSD3G04B23	Principles And Practices	4	4	20	80
			Of Management				
	GENERAL	VSD3G05B23	Human Rights	4	4	20	80
	GENERAL	ST3B04B23	Basic Statistics And SPSS	4	4	20	80
III	SKILL	CA3CO7B23	System Analysis And	5	5	20	80
			Software Engineering				
	SKILL	VSD3S05B23	Data Structures Using C++	4	4	20	80
	SKILL	VSD3SP05B23	Software Lab V	5	5	20	80
	PRACTICAL		(Data Structures Using				
			C++ Lab)				
	SKILL	VSD3SP06B23	Software Lab VI	4	4	20	80
	PRACTICAL		(Html and CSS)				
	TOTAL HOU	JRS AND CREDITS F	OR SEMESTER – 3	3	30		
	CENERAL	VSD4C06B23	Web Programming Using	0 4	4	20	80
	GENERAL	V 5D+G00D25		-	-	20	00
	GENERAL	VSD4G07B23	Advanced SOL With	4	4	20	80
			Oracle				
IV	GENERAL	VSD4G08B23	Indian Constitution	4	4	20	80
	SKILL	VSD4S06B23	Operating Systems	4	4	20	80
	SVII I	VSD/S07D22	Due en antiere Le Leere	4	1	20	80
	SKILL SKILI	VSD4507D23	Programming in Java	4	4	20	00 80
	PRACTICAL	V SD4SF 07 D25	S/W Lab	4	4	20	00
	SKILI	VSD/SD08P23	VII(Programming in Java)	2	2	20	80
	PRACTICAL	V SD451 00D25	S/W Lab VIII(PHP and	4	4	20	00
	SKILL	VSD4SI02B23	SQL)	4	4	20	80
		AL CREDITS FOR SE	MESTER - 4		30	20	00
	1011			0	50		
	GENERAL	VSD5G09B23	Environment Studies	4	4	20	80
	GENERAL	VSD5G10B23	Entrepreneurship	4	4	20	80
	GENERAL	VSD5G11B23	Linux Operating Systems	4	4	20	80
	SKILL	VSD5S08B23	Computer Networks	3	3	20	80
V	SKILL	VSD5S09B23	Python Programming	4	4	20	80
	SKILL	VSD5S10B23	Java Script And JQuery	3	3	20	80
	SKILL PRACTICAL	VSD5SP09B23	S/W Lab IX (Java Script)	4	4	20	80

	SKILL PRACTICAL	VSD5SP10B23	S/W Lab X (Python Lab)	4	4	20	80
	TOTAL HOURS AND CREDITS FOR SEMESTER - 5				30		
				0			
	GENERAL	VSD6G12B23	Business Ethics	5	4	20	80
	GENERAL	VSD6G13B23	Software Testing	5	4	20	80
VI	GENERAL	VSD6G14B23	Cloud Computing	5	4	20	80
• •	SKILL	VSD6S11B23	Machine Learning	5	6	20	80
	SKILL PRACTICAL	VSD6SPRB23	Main Project	5	6	20	80
	SKILL	VSD6SI03B23	Internship	5	6	20	80
TOTAL HOURS AND CREDITS FOR SEMESTER - 6			3	30			
	TOTAL	CREDITS FOR THE	PROGRAMME		180		

COURSES

SCHEME-SKILL COURSES

The different types of courses and its number is as follows:

Semester	Type of courses	No. Of Courses
1	Skill	5(2 Skill Practicals)
2	Skill	5(2 skill practical and 1 Internship)
3	Skill	4(2 practicals)
4	Skill	5((2 skill practicals and 1 Internship)
5	Skill	5(2 Skill Practicals)
6	Skill	3(1 project and 1 internship)

SCHEME-GENERAL COURSES

The different types of courses and its number is as follows:

Semester	Type of courses	No. Of Courses
1	General	2
2	General	2
3	General	3
4	General	3
5	General	3
6	General	3

EXAMINATIONS

The external theory examination of all semesters shall be conducted by the College at the end of each semester. Internal evaluation is to be done by continuous assessment.

Examinations have two parts: Internal or In-Semester Assessment (ISA) & External or End–Semester Assessment (ESA). The ratio between ISA and ESA shall be 1:4. Both internal and external marks are to be rounded to the next integer.

MARKS DISTRIBUTION FOR EXTERNAL EXAMINATION AND INTERNAL EVALUATION

Marks distribution for external and internal assessments and the components for internal evaluation with their marks are shown below:

Components of the internal evaluation and their marks are as below.

For all Theory courses,

- **a**) External examination: 80 marks
- b) Internal evaluation: 20 marks

Internal assessment components - Theory	Marks
Attendance	5
*Assignment	5
Test papers (2 x 5)	10
Total	20

ASSIGNMENT

- (i) *Assignment: for skill papers (III & IV Semester), the student must undertake a Project/ Field work/ Industrial Visit/ Internship and the report of the same should be submitted for evaluation. The marks awarded to this can be considered for assignment of any one skill paper.
- (ii) * Assignment (project/field work/ Industrial Visit) for Semester I & II- to be given by
 language teachers, report of which has to be submitted and for those programmes which do not

have additional language the students must undertake the assignment (project/field work/ Industrial Visit) for any one skill paper.

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Attendance:

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percentage of Attendance	Marks
90% or above	5
Between 85 and below 90	_ 4
Between 80 and below 85	3
Between 75 and below 80	2
75%	1
<75	0

FOR PROJECTS/ INDUSTRIAL VISIT AND COMPREHENSIVE VIVA - VOCE*:

The project topic shall be chosen from areas of current day interest using latest packages / languages running on appropriate platforms (Except the tools used in software development-I), so that the student can be trained to meet the requirements of the Industry. A project report should be submitted in hard bound complete in all aspects. For internal evaluation, the progress of the student shall be systematically assessed through various stages of evaluation at periodic intervals.

Projects which are preferably socially relevant/ industry oriented/ research oriented is to be undertaken by the students.

- (a) Marks of external Examination : 80
- (b) Marks of internal evaluation : 20

Components of Project I.V. and Viva – Evaluation External Marks

Dissertation (External)	50
Comprehensive Viva-voce (External)	30
Total	80

* Bonafide reports of the project work or Industrial Visit conducted shall be submitted at the time of examination.

All the four components of the internal assessment are mandatory.

Components of Project/ I.V Internal Evaluation	Marks
Punctuality	5
Experimentation / Data Collection	5
	5
Knowledge	5
Report	5
Total	20

IN-SEMESTER EXAMINATION

THEORY COURSES

Two internal test- papers are to be attended in each semester for each paper. The evaluations of all components are to be published and are to be acknowledged by the students. All documents of internal assessments are to be kept in the college for two years and shall be made available for verification by the university. The responsibility of evaluating internal assessment is vested on the teachers who teach the course.

PRACTICAL COURSES

All the four components of the ISA are mandatory.			
Components of Practical ISA	Marks		
Attendance	5		
Lab Involvement	2		
2 Practical Test	5+5=10		
Record	3		
Total	20		

END-SEMESTER EXAMINATION

THEORY COURSES

The End-Semester examination of all courses shall be conducted by the College on the close of each semester. For reappearance/ improvement, students can appear along with the next batch.

Pattern of Question Paper:

A question paper shall be a judicious mix of short answer type, short essay type / problem solving type and long essay type questions.

For each course the End-semester Assessment is of 3 hours duration. The question paper has 3 parts. Part A contains 12 short answer type questions of which 10 are to be answered. Part B contains 9 short essay questions of which 6 are to be answered. Part C has 4 long essay questions of which 2 are to be answered.

Part	No. of Questions	No. of questions to be Answered	Marks (for courses without practical)
A (Short Answer type)	12	10	$10 \ge 2 = 20$
B (Short Essay)	9	6	6 x 5 = 30
C (Long Essay)	4	2	2 x 15 = 30

Curriculum and Syllabi 2023 Admission Onwards

PRACTICAL EXAMINATION

An End Semester Practical Examination will be held for all practical courses with a maximum of 80 marks

GRADES

A 10-point scale based on the total percentage of marks (ISA + ESA) for all courses (theory, practical, project)

% of marks		Grade	Grade point
Equal to 95 and above	S	Outstanding	10
Equal to 85 and < 95	Α	Excellent	9
Equal to 75 and < 85	Α	Very good	8
Equal to 65 and < 75	B ⁺	Good	7
Equal to 55 and <65	В	Above average	6
Equal to 45 and < 55	С	Satisfactory	5
Equal to 35 and < 45	D	Pass	4
Below 35	F	Failure	0
	Ab	Absent	0

PASS CRITERIA

- A separate minimum of 30% marks each for internal and external (for both theory and practical) and aggregate minimum of 35% for a pass in a course
- For a pass in a programme, a separate minimum of Grade D is required for all the individual courses

- If a candidate secures F Grade for any one of the courses in a semester/programme, only F grade will be awarded for that semester/programme until he/she improves this to D Grade or above within the permitted period
- Students who complete the programme with D grade will have one betterment chance within 12 months, immediately after the publication of the result of the whole programme

CREDIT POINT AND CREDIT POINT AVERAGE

Credit Point (CP) of a course is calculated:

 $CP = C \times GP$, C = Credit; GP = Grade point

Semester Credit Point Average (SCPA) of a semester:

SCPA = TCP/TC

TCP = Total Credit Point of that semester

TC = Total Credit of that semester

Cumulative Credit Point Average (CCPA) is calculated:

CCPA = TCP/TC

TCP = Total Credit Point of that programme

TC = Total Credit of that programme

CREDIT POINT AVERAGE (CPA)

CPA of different category of courses viz. Common courses, Complementary courses, Skill courses etc. are calculated:

CPA = TCP/TC

Curriculum and Syllabi 2023 Admission Onwards
TCP = Total Credit Point of a category of course

TC = Total Credit of that category of course

Grades for the different courses, semesters and overall programme are given based on the corresponding CPA:

СРА		Grade
Equal to 9.5 and above	S	Outstanding
Equal to 8.5 and < 9.5	\mathbf{A}^+	Excellent
Equal to 7.5 and < 8.5	Α	Very good
Equal to 6.5 and < 7.5	B ⁺	Good
Equal to 5.5 and < 6.5	В	Above average
Equal to 4.5 and < 5.5	С	Satisfactory
Equal to 4 and < 4.5	D	Pass
Below 4	F	Failure

- There shall be supplementary exams only for V sem
- Notionally registered candidates can also apply for the said supplementary examinations
- For reappearance/improvement for other semesters, appear along with the next batch
- A student who registers his name for the external exam for a sem will be eligible for promotion to the next semester
- A student who has completed the entire curriculum requirement, but could not register for the Semester examination can register notionally, for getting eligibility for promotion to the next semester
- A candidate who has not secured minimum marks/credits in internal examinations can redo the same registering along with the University examination for the same semester, subsequently
- There shall be no improvement for internal evaluation
- All rules and regulations are subjected to change as and when modified by Mahatma Gandhi University, Kottayam, to which St. Teresa's College (Autonomous), Ernakulam, is affiliated.

SYLLABI FOR SKILL COURSES

SEMESTER 1

SEMESTER I

SKILL COURSE

VSD1S01B23 : FINANCIAL ACCOUNTING

CREDITS	:4

HOURS / WEEK	: 4	TOTAL LECTURE HOURS	:	60
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Course Overview and Context:

- This course provides an introduction to the accounting requirements, concepts and principles that underlie financial accounting.
- Auditing and managerial accounting are related to financial accounting, but the areas differ in several ways. Auditors usually work with companies to review financial accounting offices' reports

Course Outcomes:

- **CO1:** Identify the fundamentals concepts of accounting and double entry books of accounts. (Understand level)
- **CO2:** Prepare the journal accounts by applying the rules of accounting (Apply)
- CO3: Prepare ledger accounts and cash book by applying the principles of accounting. (Apply)
- CO4: Articulate the theoretical concepts of double entry system and prepare the trial balance. (Apply)
- **CO5**-: Equip with the knowledge of accounting process and preparation of final accounts of sole trader (Apply)

Syllabus Content:

Module-1(20hours)

Accounting meaning Objects- Concepts and Conventions-Double Entry Books of Accounts Book keeping and Accounting Accountancy The language of the Business World Principles of double entry Advantages of double entry.

Module-2(10hours)

Journal- Rules of debit and credit - Kinds of Accounts Journalising .

Module-3(20hours)

Ledger Sub divisions of ledger Account Form of an Account Posting of Journal Balancing of Accounts-Cash book (simple, triple column)-Petty Cash book.

Module-4(10hours)

Trail Balance Meaning Objects-Summary of Accounting Entries.

Module-5(12hours)

Final Accounts-Trading and Profit and Loss Account Balance Sheet (without adjustments)

References

- 1. Advanced Accountancy- R L Gupta and M Radhaswamy, Sultan Chand & Sons, 2001
- 2. Cost Accounting S P Iyengar, Sultan Chand & Sons, 1980
- 3. Advanced Accountancy, P C Tulsan.

MODEL QUESTION PAPER

B.VOC DEGREE EXAMINATION (C B C S S) SEMESTER I - SKILL COURSE VSD1S01B23 : FINANCIAL ACCOUNTING

Time: 3 hours

Maximum marks: 80

Part A

(Answer any ten questions. Each question carries 2 marks)

Qn.No.		Questions	CO	Level of Questions
1.	Explain the imp	ortance of profit and loss account?	1	R
2.	What is analytic	al petty cash book?	1	U
3.	State the featu	res of Trial balance	1	U
4.	Explain going co	oncern concept.	2	Ар
5.	From the follo returns book	owing particulars prepare a sales	2	Ар
	September 1	Antony & co returned back goods worth Rs.275		
	September 3	Returned goods by kumar which were defective Rs.230		
	September 5	Allowance granted to Mukesh for breakage of goods Rs. 215		
	September 7	Anand returned us goods worth Rs.210		
6.	Differentiate b returns book.	etween sales day book and sales	2	R
7.	Differentiate be aspect principle	etween matching principle and dual	2	R

8.	The follow	wing are the transactions	taken from the	2	Ар
	books of	a furniture dealer. Prepa	are his sales day		
	book				
	Feb 1	Sold to Anil 5 wo	oden tables at		
		Rs.135 per table			
	Feb 7	Sold to Rajas 2 drea	ssing tables for		
		cash Rs.275 each			
	Feb 11	Sold to Hameed one	type writer for		
		Rs.1,500			
	Feb 17	Sold to Gopi 2 di	ning tables at		
		Rs.1200 per dining	g table: trade		
		discount			
	Feb 19	Sold 50 chairs to An	il. At Rs.45 per		
		chair			
	Feb 21	Sold to Gopi 2 st	eel cabinets at		
		Rs.1,500 each			
9.	Enter the	e following transactions	in an analytical	2	Ар
	petty cash	n book			
	June 1	Received a cheque	500		
		towards petty cash	200		
	June 2	Daily workers wages	200		
	June 3	Postage stamps	50		
	June 5	Railway freight	100		
	June 6	Pencil	20		
	June 8	Sundry expenses	35		
10.	The follo	wing information relates	to a business for	3	U
	the year 2	2013. Ascertain the gross	profit		
	O	pening stock	16,000		
	Pu	urchases	40,000		
	Pu	irchases returns	1,500		
		irect expenses	3,000		
	Sa	lles	/8,000		
	Sa Clasica -t	ues returns	2400		
		OCK 13,00		2	
11.	UISTINGUIS	in between fixed asset and	a current.	3	К
10	Dutaflue	antha tha functions of		2	Δ
12.	Brietly de	scribe the functions of ac	counting.	3	Ар

(10 x 2 = 20 marks)

Part B

(Answer any six questions. Each question carries 5 marks)

Qn.No.	(Questions			CO	Level of
						Questions
13.	Explain the objectives	s of prepar	ing Trial bala	ance?	1	U
14.	The following is a Ti	rial Balanc	e as on 31 ^s	^{it} March	1	Ар
	2014 prepared by an	incompete	ent account	ant. You		
	are required to rewri	te it in its c				
	Capital	22,000				
	Stock(1st April	6,500				
	2013)					
	Furnituro	2 700				
	Purchases	2,700	0 0 0 0			
	Fulchases	- - - - - - - - - -	0,000			
	Cash at bank	7,300				
	Carriages	300				
	Sales		22,700			
	Buildings	12000				
	Returns inwards		1,500			
	Returns outwards	350				
	Trade expenses	1,000				
	Discount received	370				
	Salary	3,500				
	Office rent		1,770			
	Total	56,020	34,820			
		<u> </u>	<u> </u>	ļ		
		-				
15.	Explain the advantage	es of specia	al journals.		2	U
16.	From the following tr	ial balance	, prepare a	Trading	2	Ар
	and profit & Loss acc	ount for th	ne year en	ded 31 st		
	marcn 2014.	C				
	<u>Dr.(RS)</u>	<u> </u>	. <u>(KS)</u>			

r					
	Capital		11800		
	Stock on 1 st april	6000			
	Cash in hand	100			
	Purchases	16800			
	Salaries	1100			
	Insurance	400			
	Rent		600		
	Discount	400			
	Bills payable		800		
	Sundry debtors	7500			
	Bank overdraft		1900		
	Carriage inwards	450			
	Furniture	650			
	Sundry creditors		1500		
	Trade expenses	1000			
	Returns inwards	950			
	Machinery	2300			
	Wages	9000			
	Sales		29250		
	Returns outwards		800		
	Closing stock was valued at	Rs.7500			
17.	Record the journal entries r	elating to	the	2	U
	transactions in the books of	Anil			
	Started business with cash	า	2,00,000		
	Bought furniture		50,000		

	Cash sales	15,000		
	Paid rent	20,000		
	Interest on investment received	10,000		
18.	From the following balances extra books M/S shine paints, calculate gross profit earned during the period 2014 Opening stock 17,000, cash purch credit purchases 7,10,000, cash credit sales 12,05,000, direct exp closing stock 28,000 sales returns 14 returns12,000	acted from the the amount of lended 31 st Dec nases 2,30,000, sales 3,80,000, enses 2,20,000 4,000 ,purchase	2	Ар
19.	Calculate the amount operating p following information Opening stock 24000, net purchase sales 7,50,000 ,direct expe administration Expenses 39,000 distribution 47,000 ,loss due to fire stock 48,000	orofit from the s 4,80,000 , net nses 52,000, ,selling and 24,000, closing	4	Ар
20.	Accounting is a language of business it communicates to various par interested in it. How is it made possi	through which ties who are ble.	3	Ар
21.	What do you mean by grouping and assets and liabilities?	I marshalling of	3	Ар

 $(6 \times 5 = 30 \text{ marks})$

Part C

(Answer any two questions. Each question carries 15 marks)

Qn.No.	Questions	CO	Level of
			Questions
22.	Explain the Errors which will affect the agreement of	1	Ар
	the Trial balance?		
23.	Accounting information is useful to many people.	2	Ар
	List out the major users of accounting information.		

24.	Following is the trial balan	ce of Miss	Gini as on 31 st	2	Ар
	dec.2014				
	Particulars	Debit	Credit		
	Stock (1 st Jan 2014)	1250			
	Sales		11,800		
	Sundry expenses	667			
	Commission		211		
	Insurance	380			
	Carriage inwards	300			
	Furniture	670			
	Printing charges	481			
	Carriage outwards	200			
	Capital		9228		
	Creditors		1780		
	Bills payable		541		
	Plant & machinery	6230			
	Returns outwards		1380		
	Cash in hand	895			
	Salary	750			
	Debtors	1905			
	Discount	328			
	Bills receivables	2730			
	Wages	1589			
	Return inwards	1659			
	Bank overdraft		4000		
	Purchases	8679			
	Petty cash in hand	47			
	Bad debts	180			
	Value of stock as on Rs.3200.				
	Prepare Trading & Pr				
	the year ended 31 ^s				
	sheet as on that date				
25.	Record the following trans	actions in a	single column	4	qA
	cash book.	-	C		

March	Mohan	20,000		
1	commenced			
	business with cash			
March	Opened a bank	5,000		
2	account			
March	Purchased goods	4,100		
3	for cash			
March	Bought office	3,600		
5	furniture			
March	Sold goods for	2,400		
6	cash			
March	Paid for stationery	250		
8				
March	Received cash on	1,750		
10	sales			
March	Electricity charges	650		
12	paid			
March	Rent paid	175		
13				
March	Cheque received	325		
17	was paid in to			
	bank			
March	Salary paid	3000		
20			_	
March	Purchased goods	1,900		
22				

 $(2 \times 15 = 30 \text{ marks})$

CO : Course Outcomes

Level : R – Remember, U – Understand, Ap- Apply, An- Analyze, E- Evaluate, C- Create

SEMESTER 1

SKILL COURSE

VSD1S02B23 : PROBLEM SOLVING TECHNIQUES

CREDITS	: 4			
HOURS / WEEK	: 4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

Acquire techniques in problem-solving and decision making, including root cause analysis of problem, generating and evaluating alternative solutions, making appropriate decisions, and taking responsibility for the decisions within own circle of influence.

Many companies add problem-solving skills in their job descriptions, especially in leadership roles, and mainly refer to the ability to handle difficult or unexpected situations in the workplace. Organizations depend on people who can analyze problems and identify solutions.

Course Outcomes:

CO1: Design solutions with algorithm to solve real life problem scenarios in professional development. (Create)

- CO2: Illustrate solutions for factoring problems using algorithmic technique. (Create)
- **CO3:** Experiment the usage of array and sorting concept in sequential and linear problem solving in computer and business logics. (Apply)
- **CO4:** Develop the logical ability to solve merging, sorting and searching problems with Algorithms applied in commercial and numerical applications. (Create)
- **CO5:** Create Algorithmic model for a Case Study or Real Project to solve a problem in business And society (Create)

Course Content:

Module I: PROGRAMMING TECHNIQUES (12 hours)

Steps Involved in Computer Programming – Problem Definition – Outlining The Solution – Flow Chart – Developing Algorithms – Efficiency of Algorithms - Analysis of Algorithms, Translators, Compiler and Interpreter.

Module II: FUNDAMENTAL ALGORITHMS (12 hours)

Exchanging the Values – Counting – Summation of Set of Number – Factorial Computation – Sine Computation – Fibonacci sequence – Reversing the Digits of an Integer – Base Conversion.

Module III: FACTORING METHODS (12 hours)

Finding the Square Root of a Number – Smallest Divisor of an Integer – GCD of Two Integers – Generating Prime Numbers – Computing the Prime Factors of an Integer – Raising a Number to a Large Power .

Module IV: ARRAY TECHNIQUES (12 hours)

Array Order Reversal – Array Counting or Histogram – Finding the Maximum Number in a Set – Removal of Duplicates from an Ordered Array – Partitioning an Array – Finding the kth Smallest Element

Module V: MERGING, SORTING AND SEARCHING (12 hours)

Two Way Merge - Sorting by Selection, Exchange, Insertion, and Partitioning - Binary Search Hash Searching.

Text Book

1. Dromey R G, "How to Solve it by Computer", Prentice Hall of India, 1997

References

- 1. Michael Schneider, Steven W. Weingart, David M. Perlman, "An Introduction to Programming and Problem Solving with Pascal", Wiley Eastern Limited, New Delhi, 1982.
- Harold Abelson and Gerald Sussman with Julie Sussman, "Structur Harold Abelson and Gerald Sussman with Julie Sussman, "Structure and Interpretation of Computer Programs", MIT Press, 1985.

MODEL QUESTION PAPER

B.VOC DEGREE EXAMINATION (C B C S S) SEMESTER I – SKILL COURSE VSD1S02B23 : PROBLEM SOLVING TECHNIQUES

Time: 3 hours

Maximum marks: 80

Part A

(Answer any ten questions. Each question carries 2 marks)

Qn.N	Questio	С	Level
0.	ns	0	Of
			Questio
			ns
1.	Define an algorithm.	1	R
2.	List basic requirement for solving a problem.	2	U
3.	Explain the relevance of dividing a problem into sub problems.	2	U
4.	Write the syntax for exchanging the values.	2	Ар
5.	Define recursion.	1	R
6.	Explain counting in programming.	2	Ар
7.	Write steps to find the GCD of 30 and 18.	3	Ар
8.	With an example discuss prime number and its special characteristics.	3	Ар
9.	Demonstrate the syntax of array with example.	3	Ар
10.	Define a histogram.	2	U
11.	Discuss role of key in Hashing.	4	U
12.	Define insertion sort.	4	Ар

$$(10 \text{ x } 2 = 20 \text{ marks})$$

Part B

Qn.N	Questions	С	Level
0.		0	Of
			Questio
			ns
13.	Differentiate worst and average case behavior of algorithms.	1	An
14.	Draw a flowchart to check the given angles form a triangle or not.	2	Ар
15.	Write an algorithm to reverse the digits of a number.	2	С
16.	Draw a flowchart to check the number is palindrome or not.	2	Ар
17.	Explain factorial of a number. Design an algorithm to find the factorial.	2	E
18.	Explain Babylonian method to find out the square root of a number with example.	3	Ар
19.	Explain Pivot element. How this element helps in partitioning of an array?	4	Ар
20.	Write an algorithm to find prime factors of an integer.	3	С
21.	Write a note on mapping function in hashing. What are the disadvantages of simplest hashing technique.	4	An

(Answer any six questions. Each question carries 5 marks)

(6 x 5 = 30 marks)

Part C

(Answer any two questions. Each question carries 15 marks)

Qn.N	Questio	CO	Level Of
0.	ns		Questions
22.	Design an algorithm that accepts a positive integer and reverse the order of digits [Assume input 27953]	2	С
23.	Design an Algorithm that finds Greatest Common Divisor . Write down algorithm development step and description.	3	С
24.	Explain Bubble sort. Explain how many passes are required to sort 13,32,26,35,10 with step by step procedure.	4	E
25.	Explain different types of collision resolution techniques in hashing.	4	An

(2 x 15 = 30 marks)

CO : Course Outcomes

Level : R - Remember, U - Understand, Ap- Apply, An- Analyze, E- Evaluate, C- Create

SEMESTER 1

SKILL COURSE

VSD1S03B23: METHODOLOGY OF PROGRAMMING AND C LANGUAGE

CREDITS	:	3			
HOURS/WEEK	:	3	TOTAL LECTURE HOURS	:	45

Course Overview and Context:

C is a widely used language in systems programming. It's a language with lot of capabilities. This subject gives an introduction to programming and basic elements of programming like algorithm, flow chart and Pseudo code. The subject starts with the features of C language and basic elements of the language. Programming constructs like if, for, while and do while are dealt with its syntax and applications. Advanced features like functions, arrays, pointers, structures and unions are also dealt here. Pointer being an important concept is dealt with respect to arrays, structures and functions. The concept of files and preprocessors are also introduced. In general, the subject concentrates in all the areas of C programming which is very much helpful for a beginner in Computer Programming.

C programming has a very *good career* like opportunities in different field like robotics, Artificial intelligence, machine learning, etc.

Course Outcomes

CO1: Develop an algorithm/flowchart to find its solution by analyzing a computational problem. (Create)

CO2: Develop legible* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators. (Create)

CO3: Develop legible C programs with arrays, structure or union for storing the data to be processed. (Create)

CO4: Construct memory efficient C programs by the application of pointers for array processing and parameter passing and files for input and output storage. (Apply)

Course Content:

Module I:(9 hours)

Introduction to programming, Classification of computer languages, Language translators (Assembler, Compiler, Interpreter), Linker, Characteristics of a good programming language, Factors for selecting a language, Subprogram, Purpose of program planning, Algorithm, Flowchart, Pseudocode, Control structures (sequence, selection, Iteration), Testing and debugging. **Module II:**(9 hours)

C Character Set, Delimiters, Types of Tokens, C Keywords, Identifiers, Constants, Variables, Rules for defining variables, Data types, C data types, Declaring and initialization of variables, Type modifiers, Type conversion, Operators and Expressions- Properties of operators, Priority of operators, Comma and conditional operator, Arithmetic operators, Relational operators, Assignment operators and expressions, Logical Operators, Bitwise operators

Module III:(9 hours)

Input and Output in C – Formatted functions, unformatted functions, commonly used library functions, Decision Statements If, if-else, nested if-else, if-else-if ladder, break, continue, goto, switch, nested switch, switch case and nested if. Loop control-for loops, nested for loops, while loops, do while loop.

Module IV:(9 hours)

Array, initialization, array terminology, characteristics of an array, one dimensional array and operations, two dimensional arrays and operations. Strings and standard functions, Pointers, Features of Pointer,

Pointer and address, Pointer declaration, void wild constant pointers, Arithmetic operations with pointers, pointer and arrays, pointers and two dimensional arrays.

Module V:(9 hours)

Basics of a function, function definition, return statement, Types of functions, call by value and reference. Recursion -Types of recursion, Rules for recursive function, direct and indirect recursion, recursion vs iterations, Advantages and disadvantages of recursion. Storage class, Structure and union, Features of structures, Declaration and initialization of structures, array of structures, Pointer to structure, structure and functions, typedef, bitfields , enumerated data types, Union, Dynamic memory allocation, memory models, memory allocation functions.

Text Books

- 1. Ashok Kamthane Programming in C, Third Edition, Pearson Education
- 2. P K Sinha & Priti Sinha Computer Fundamentals, Fourth Edition, BPB Publications.

References

- 1. E. Balaguruswamy Programming in ANSI C, Seventh Edition , McGraw Hill Education
- 2. Byron Gotfried Programming with C, Second Edition, Schaums Outline series. McGraw

MODEL QUESTION PAPER

B.VOC DEGREE EXAMINATION (C B C S S) SEMESTER I - SKILL COURSE VSD1803B23 : METHODOLOGY OF PROGRAMMING AND C LANGUAGE

Part A

Qn.N	Questions	С	Level
0.		Ο	Of
			Questio
			ns
1.	Define a Flowchart. Explain the commonly used	1	R
	symbols of flowchart.		
2.	Define Algorithm.	1	R
3.	Define Compiler.	1	R
4.	Recall the concept of variables in 'C'.	2	An
5.	Explain printf() function with an example.	2	U
6.	Write a C program to add two integer values.	2	Ар
7.	Explain the syntax of 'for' loop.	2	R

(Answer any ten questions. Each question carries 2 marks)

8.	Write a program to check whether a students age is greater than 18 or not. If yes display message "Eligible for Voting".	2	Ар
9.	Examine a function prototype.	4	R
10.	Demonstrate the use of ' 0 ' and '%s'.	3	An
11.	Define Structure.	3	R
12.	Define Union.	3	R

(10 x 2 = 20 marks)

Part B

(Answer any six questions. Each question carries 5 marks)

Qn.N	Questio	С	Level
0.	ns	0	Of Questio ns
13.	Compare and Contrast Compilers and Interpreters.	1	R
14.	Write a C Program to illustrate the use of Conditional Operator.	2	Ар
15.	Write a program to illustrate the use of relational operator.	2	U
16.	Explain the use of 'goto' statement with a sample program.	2	Ε
17.	Justify the use of 'break' statement in Switch statement.	2	An
18.	Develop a C program to search an element from the array.	3	Ар
19.	Compare and contrast call by value and call by reference.	4	An
20.	Demonstrate the working of a recursive function.	4	Ар

21.	Differentiate between a structure and a union.	4	U
			(6 x 5 = 30 m)

Part C

(Answer any two questions. Each question carries 15 marks)

o.nsOOf Questio ns22.Explain different types of operators supported by C language.1R23.Write a C program to check whether the given character is a vowel using Switch statement.2U24.Write a C program to perform Matrix Addition and Subtraction.3Ap25.Write a C program to find the factorial of a given number using functions.4E	Qn.N	Questio	С	Level
Questio22.Explain different types of operators supported by C language.1R23.Write a C program to check whether the given character is a vowel using Switch statement.2U24.Write a C program to perform Matrix Addition and Subtraction.3Ap25.Write a C program to find the factorial of a given number using functions.4E	0.	ns	0	Of
Image:Image:22.Explain different types of operators supported by C language.1R23.Write a C program to check whether the given character is a vowel using Switch statement.2U24.Write a C program to perform Matrix Addition and Subtraction.3Ap25.Write a C program to find the factorial of a given number using functions.4E				Questio
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23.Write a C program to check whether the given character is a vowel using Switch statement.2U24.Write a C program to perform Matrix Addition and Subtraction.3Ap25.Write a C program to find the factorial of a given number using functions.4E	22.	Explain different types of operators supported by C language.	1	R
24.Write a C program to perform Matrix Addition and Subtraction.3Ap25.Write a C program to find the factorial of a given number using functions.4E	23.	Write a C program to check whether the given character is a vowel using Switch statement.	2	U
25.Write a C program to find the factorial of a given number using functions.4E	24.	Write a C program to perform Matrix Addition and Subtraction.	3	Ар
	25.	Write a C program to find the factorial of a given number using functions.	4	Ε

 $(2 \times 15 = 30 \text{ marks})$

CO : Course Outcomes

Level : R - Remember, U - Understand, Ap- Apply, An- Analyze, E- Evaluate, C- Create

SEMESTER I

SKILL PRACTICAL VSD1SP01B23 : SOFTWARE LAB-I (PROGRAMMING IN C LANGUAGE)

CREDITS	:	4			
HOURS/WEEK	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

C is a widely used language in systems programming. It's a language with lot of capabilities. This subject gives an introduction to programming and basic elements of programming like algorithm, flow chart and Pseudo code. The subject starts with the features of C language and basic elements of the language. Programming constructs like if, for, while and do while are dealt with its syntax and applications. Advanced features like functions, arrays, pointers, structures and unions are also dealt here. Pointer being an important concept is dealt with respect to arrays, structures and functions. The concept of files and preprocessors are also introduced. In general, the subject concentrates in all the areas of C programming which is very much helpful for a beginner in Computer Programming.

C programming has a very good career like opportunities in different field like robotics, Artificial intelligence, machine learning, etc.

Course Outcomes:

- **CO1 :** Develop an algorithm/flowchart to find its solution by analysing a computational problem. (Create)
- **CO2 :** Develop legible* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators. (Create)
- **CO3 :** Develop legible C programs with arrays, structure or union for storing the data to be Processed. (Create)
- **CO4 :** Construct memory efficient C programs by the application of pointers for array processing and parameter passing and files for input and output storage. (Apply)

- 1. Programs to familiarize printf() and scanf() functions.
- 2. Programs Based on Decision statements, break, goto, continue, switch and Loop controls statements.
- 3. Programs Based on One dimensional and two dimensional arrays.
- 4. Programs on Strings and string handling functions.
- 5. Programs based on Pointers, operations on pointers, Arrays & Pointers,
- 6. Programs based on functions, Call by value, Call by reference, Recursion,
- 7. Programs based on structure and union, array of structures, Pointer to structure, structure and functions
- 8. Simple programs using pointers and malloc().

Scheme of Evaluation for software lab I external is as follows: Division of Marks (Practical - 3 hours External)

First program from part 1& 2

1.Flowchart	- 5 marks
2.Logic	– 10 marks
3.Successful compilation	– 5 marks
4.Result	– 5 marks

Second program should be based on advanced concepts ,part 3 to part 5 - **35 marks**

1.Logic - 20 marks
2.Successful compilation - 10 marks
3. Result - 5 marks)

Viva Voce Record (minimum of 25 Programs) - 80 marks

- 10 marks Lab
- 10 marks Total Marks

- 25 marks

SEMESTER I

SKILL PRACTICAL

VSD1SP02B23 : MSOFFICE/ PHOTOSHOP

CREDITS	:	3			
HOURS/WEEK	:	3	TOTAL LECTURE HOURS	:	45

Course Overview and Context:

This course teaches the basic skills for word processing, for creating excel spreadsheets, for building databases and preparing presentations, through the use of Microsoft Office Word, Excel, Access, and PowerPoint programmes. You will learn all of Photoshop's selection tools and how they can assist you as you edit. You will learn about layers and how they have revolutionized the way you can work in Photoshop.

Typical Jobs for MS Office skills: Administrative Assistant.

Course Outcomes:

- **CO 1** Create professional documents and spreadsheets using MS office tools for business and/or industry report generation (Create)
- CO 2 Develop Presentation skills using application software tools. (Apply)
- CO 3 Appraise the knowledge of art and design components using Photoshop software. (Evaluate)
- **CO 4** Create proficiency in developing multimedia presentations using various features and techniques using software tools. (Create)

Course Content :

Module–I: (9 hours)

Word Basics, Work with Text, Format Documents, Work with Text Objects, Work with References, Work with Illustrations, Specialized Documents, Collaborate with Others, Web Pages.

Excel Basics, Work with Cells and Worksheets Calculate Your Data, Format your Workbook, Add Charts and Graphics, Collaborate with Others, Analyze your Data, Work with Macros and the Web.

Module–II: (9 hours)

PowerPoint Basics, Create Presentations, Insert and Modify Text, Work with Graphics and Media, Final Preparations, Deliver a Presentation.

INTRODUCTION TO ADOBE PHOTOSHOP CS4

About Photoshop - Navigating Photoshop - Menus and panels- Opening new files - Opening existing files-Exploring the Toolbox- The New CS4 Applications Bar & the Options Bar-Exploring Panels & Menus-Creating & Viewing a New Document- Customizing the Interface- Setting Preferences -Zooming & Panning an Image -Working with Multiple Images, Rulers, Guides & Grids -Undoing Steps with History -Adjusting Color with the New Adjustments Panel -The New Masks Panel & Vibrance Color Correction Command.

RESIZING & CROPPING IMAGES : Understanding Pixels & Resolution-The Image Size Command-Interpolation Options-Resizing for Print & Web-Cropping & Straightening an Image-Adjusting Canvas Size & Canvas Rotation.

Module–III: (9 hours)

WORKING WITH BASIC SELECTIONS

Selecting with the Elliptical Marquee Tool-Using the Magic Wand & Free Transform Tool-Selecting with the Regular & Polygonal Lasso Tools-Combining Selections-Using the Magnetic Lasso Tool-Using the Quick Selection Tool & Refine Edge-Modifying Selections.

GETTING STARTED WITH LAYERS

Understanding the Background Layer- Creating, Selecting, Linking & Deleting Layers- Locking & Merging Layers- Copying Layers, Using Perspective & Layer Styles- Filling & Grouping Layers- Introduction to Blending Modes- Blending Modes, Opacity & Fill- Creating & Modifying Text.

PAINTING IN PHOTOSHOP

Using the Brush Tool- Working with Colors & Swatches- Creating & Using Gradients- Creating & Working with Brushes- Using the Pencil & Eraser Tools-Painting with Selections.

PHOTO RETOUCHING

The Red Eye Tool-The Clone Stamp Tool-The Patch Tool & the Healing -brush Tool-The Spot Healing Brush Tool- The Color Replacement Tool-The Toning & Focus Tools-Painting with History.

Module–IV: (9 hours) INTRODUCTION TO COLOR CORRECTION

Color Spaces & Color Modes-The Variations Command-The Auto Commands- Adjusting Levels- Adjust Curves, Non-Destructively, with Adjustment Layers.

USING QUICK MASK MODE

Quick Mask Options - Painting a Selection- Saving & Removing a Selection from the Background

WORKING WITH THE PEN TOOL

Understanding Paths & the Pen Tool-Creating Straight & Curved Paths- Creating Combo Paths- Creating a Clipping Path

CREATING SPECIAL EFFECTS

Getting Started with Photoshop Filters- Smart Filters- Creating Text Effects- Applying Gradients to Text.

Resources

- 1. Adobe Photoshop
- 2. Adobe Photoshop CS4
- 3. CorelDraw Graphic Suite

SEMESTER II

SEMESTER II

SKILL COURSE

MT2B03B23 –BASIC MATHEMATICS

CREDITS	:	4	
HOURS / WEEK	:	4	TOTAL LECTURE HOURS : 60

Course overview and Context:

This course is framed so that the student familiarizes with mathematical logic. Knowledge of matrix algebra is fundamental in analyzing and interpreting data. Graph theory has wide applications in network theory and management problems. The basics of Graph theory is also included.

You might work in a research institution, a university, the Civil Service, in business, finance or industry. There are also opportunities in information technology.

Course Outcomes:

CO1: Apply the fundamental concepts of Mathematical logic in real life situations (Apply level)

CO2:Solve systems of linear equations using matrices. (Apply level)

CO3: Analyze different set operations using set theory. (Analyze level)

CO4: Apply the concepts of connectivity of graphs in real life problems and find solutions. (Apply level)

Course Content:

MODULE I(20hours)

Mathematical Logic Logical statement or proposition, Types of propositions, The Propositional Calculus, The negation of proposition, Disjunction, Conjunction, Tautologies & Contradictions, Logical Equivalence, The Algebra of propositions, Conditional propositions, Converse, Inverse & Contrapositive propositions, The negation of a Conditional propositions, Biconditional propositions, Arguments

(Text - 2 Chapter - 1)

MODULE II (18 hours)

MATRIX Elementary transformation – echelon form – rank using elementary transformation by reducing in to echelon form – solution of linear homogeneous and non – homogeneous equations using elementary transformation

(Relevant sections of Text 3).

MODULE III (14hours)

Sets, Union, Intersection, Complementation, Symmetric Difference, Power set, Cartesian Products, Generalized set theory, Relation, equivalence relations

(Text - 2 Chapter 2 & Chapter 3: 3.1 & 3.2)

MODULE IV (20hours)

GraphTheory :An introduction to graph. Definition of a Graph, More definitions, Vertex Degrees, Sub graphs, Paths and cycles The matrix representation of graphs (definition & example only) Trees and connectivity. Definitions and Simple properties, Bridges, Spanning trees, Cut vertices and connectivity(definition & example only)

(Relevant sections of Text 1)

Text Books

1. John Clark Derek Allen Holton - A first look at graph theory, Allied Publishers

2. B.S.Vatsa & Suchi Vatsa : Discrete Mathematics (Fourth revised edition), New Age International Publishers, New Delhi

3. Frank Ayres Jr - Matrices , Schaum's Outline Series, TMH Edition

References

- 1. Shanti Narayan Matrices (S. Chand & Company)
- Lipschutz: Set Theory and related topics (Second Edition), Schaum Outline Series, Tata McGraw-Hill Publishing Company, New Delhi. (Reprint)
- 3. P.R. Halmos : Naive Set Theory, Springer.
- 4. Ian Chiswell & Wifrid Hodges: Mathematical Logic, Oxford university press

SEMESTER II

SKILL COURSE

CA2C03B23 : DATABASE MANAGEMENT SYSTEMS

CREDITS	:	4		
HOURS /WEEK	:	4	TOTAL LECTURE HOURS :	60

Course Overview and Context:

The main aim of the course is to introduce database fundamentals to the students. With this course we shall demonstrate database development activities and prepare students for proficiency in developing database for commercial applications. The subject deals with what is a database and how a database should be designed. It also deals the popular relational data model and SQL queries in depth. It also concentrates on various techniques for database protection and query optimization. A brief introduction about network and hierarchical data model gives exposure about how a DBMS can be designed. The subject also deals with distributed databases in brief.

This course enables the student to pursue career as database administrator whose responsibilities include installing and testing new versions of the database management system (DBMS) maintain data standards, including adherence to the Data Protection Act. write database documentation, including data standards, procedures and definitions for the data dictionary (metadata) control access permissions and privileges.

Course Outcomes:

- **CO1:** Describe the fundamental concepts of databases. (Understand)
- CO2: Construct an Entity-Relationship (ER) model and transform to relational schema.(Create)
- **CO3**: Develop queries for relational databases in the context of practical applications.(Apply)
- **CO4**: Model and design(Construct) relational databases following the design principles(Apply).
- CO5: Summarize control and recovery techniques in transaction processing.(Understand)

Syllabus Content:

Module 1 (12 hours)

 $\label{eq:linear} Introduction : Characteristics of the Database Approach – Database users -DBA , Database Designers ,End users – Advantages of using the DBMS Approach – Data models, Schemas, and Instances – Three- Schema Architecture and Data Independence.$

DBMS Languages: DDL, DML – The Database System Environment: DBMS Component Modules.

Module II(12 hours.)

Relational Model : **Entity Relationship Modeling**: Introduction –Entity Types, Entity Sets, Attributes and Keys – Relationship Types ,Relationship Sets, Roles , and Structural Constraints – Weak Entity Types – Notation for ER diagrams – Sample ER diagrams.

Relational Model concepts: Domains ,Attributes, Tuples, and Relations – Characteristics of Relations – Relational Model Constraints and Relational Database Schemas : Domain Constraints, Key Constraints , Relational Database Schemas , Entity Integrity , Referential Integrity, and Foreign Keys .

Module III (12 hours.)

SQL : **Data Types** – Data Definition commands : CREATE , ALTER ,DROP - Adding constraints in SQL – Basic SQL Queries : INSERT ,SELECT ,DELETE ,UPDATE - Substring comparison using LIKE operator ,BETWEEN operator – Ordering of rows – SQL set operations UNION , EXCEPT , INTERSECT – Complex Queries : Comparison involving NULL and Three-valued logic, Nested queries , EXISTS and UNIQUE functions, Renaming of attributes and Joining of tables, Aggregate functions ,Grouping – Managing Views.

Module IV(12 hours.)

Normalization and Indexing Structures for Files : **Normalization**: Informal Design Guidelines for Relational Schemas –Functional Dependencies – Normal forms : First Normal Form , Second Normal Form , Third Normal Form – General Definitions of Second and Third Normal Forms – BCNF.

Indexing Structures for files: -Types of Single-Level Ordered Indexes: Primary Indexes, Clustering Indexes, and Secondary Indexes.

Module V(12 hours.)

Transaction Processing and Database Security : **Transaction Processing**: Introduction to Transaction Processing - Transaction and System Concepts – Desirable properties of Transactions.

Database Security and Authorization: Types of Security – Control measures – Database Security and DBA – Access Control, User Accounts, and Database Audits –Access Control based on Granting and Revoking Privileges.

Text Book

 $1. Ramez \ Elmasri \ and \ Shamkant \ B. Bava the \ - \ DATABASE \ SYSTEMS \ , \ Sixth \ Edition, Pearson Education.$

References

1. C.J Date- An Introduction to Database Systems, Eighth edition, Pearson Education, 2003

2. Reghu Ramakrishnan and Johannes Gehrke- Database Management Systems , Third edition, Mc Graw Hill International Edition.

3. Dipin Desai, An Introduction to Database Systems, First Edition, Galgoria Publications

SEMESTER II

SKILL COURSE

VSD2S04B23 : OBJECT ORIENTED PROGRAMMING USING C++

CREDITS : 3

HOURS/WEEK : 3 TOTAL LECTURE HOURS : 45

Course Overview and Context:

- This course provides a solid foundation for object-oriented programming using the C++ programming language. The major emphasis of this course is on the most effective use of the advanced language features, presented in the context of modern software engineering themes of modularity, abstraction, information hiding, and reusability. Fundamental principles of object-oriented design and programming are also introduced.
- This course enables the students to pursue career as C++ developers who apply their C++ programming language expertise to develop desktop and mobile software applications, as well as embedded systems.

Course Outcomes:

- **CO1:** Write programs using C++ and learn its execution environment (Apply)
- **CO2:**Apply programs to implement various computational tasks which requires loops and conditional statements (Apply)
- **CO3:** Apply programs to implement the concept of Object Oriented Programming (Apply)
- **CO4:** Design object oriented programs to implement daily life problems and their solutions (Create)

Course Content :

Module I

(9 hours)

Principles of Object Oriented Programming, Beginning with C++

Procedure Oriented Programming-Object Oriented Programming-Basic concepts of objectoriented programming- Benefits of OOP- Applications of OOP-A simple C++program-Structure of C++ program- C++ data types- Symbolic constants- Reference by variables-Operators in C++-Operator precedence- Control structures- Function in C++ - The main function, Function prototyping- Call by reference- Return by reference- Inline function- Default arguments- Function overloading.

Module II(9 hours)

Classes and Objects : Specifying a class- Defining member functions- Nesting of member functions -Private member functions - Arrays within a class - Memory allocation for objects-Static data members -Static member functions - Arrays of objects - objects as function arguments -Friendly functions- Returning Objects.

Module III(9 hours)

Constructors and Destructors, Overloading : Constructors- Default constructor-Parameterized constructor-Copy constructor- Multiple constructors- Constructors with default arguments-Dynamic constructor-Destructors- Operator overloading- Unary and Binary operator overloading-Overloading using friends- Rules for overloading- Type conversion.

Module IV(9 hours)

Inheritance : Inheritance- Defining derived classes-Visibility modes-Single,Multilevel,Multiple, Hierarchical And Hybrid inheritance- Virtual base classes- Abstract classes- Constructors in derived classes- Nesting of classes.

Module V(9 hours)

Pointers, Virtual Functions and Polymorphism, Working with Files : Pointers- Pointers to objects- this pointer-Pointers to derived classes- Virtual functions- Pure virtual functions- File Stream classes, Opening and closing a file- File opening modes- File pointers and their manipulations- Sequential input and output operations.

Text Book

1. E. Balagurusamy - Object Oriented Programming with C++, Fifth edition, Tata McGrawEducation Hill , 2011.

References

1. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India

2. Robert Lafore, Object Oriented Programming in Turbo C++, First Edition, Galgotia Publications.

3. D Ravichandran, Programming with C++, Second edition, Tata McGraw-Hill SEMESTER II

SKILL PRACTICAL COURSE

VSD2SP03B23: Software Lab III (OBJECT ORIENTED PROGRAMMING

USING C++)

CREDITS :

HOURS/WEEK : 4 TOTAL LECTURE HOURS :

4

60

Course Overview and Context:

This course provides a solid foundation for object-oriented programming using the C++ programming language. The major emphasis of this course is on the most effective use of the advanced language features, presented in the context of modern software engineering themes of modularity, abstraction, information hiding, and reusability. Fundamental principles of object-oriented design and programming are also introduced.

Candidates certified within the course will make place in numerous fields like MNC's, BPOs, Government and personal Organizations and KPOs. when finishing the course students can choose any of the profiles.

This course enables the students to pursue career as C++ developers who apply their C++ programming language expertise to develop desktop and mobile software applications, as well as embedded systems.

Course Outcomes:

CO1: Test the basic concept of database system and applications (Apply)

CO2:Solve database problems using SQL(Apply)

CO3:Apply programs to implement the concepts of Object Oriented Programming (Apply)

CO4: Develop object oriented programs to implement daily life problems and their solutions (Create)

I. SQL Commands (2 hrs.

per week)
- 1. Data definition commands CREATE, ALTER, DROP, Adding Constraints Primary key, foreign key, unique key, check, not null.
- Basic SQL queries INSERT, SELECT, DELETE, UPDATE, Using multiple tables, ordering of rows using ORDER BY option, Set operations using UNION, EXCEPT, INTERSECT, Substring Comparison using LIKE operator, BETWEEN operator.
- 3. Complex Queries Nested Queries, EXISTS and UNIQUE/DISTINCT functions, NULL values, Renaming of attributes and Joining of tables, Aggregate functions and grouping.
- 4. Managing views, Simple stored procedures.
- 5. Data Control commands Access Control and Privilege commands.

II. Object Oriented Programming using C++ (3 hrs. per

week)

- 1. Programs based on default arguments, function overloading.
- 2. Programs based on array of objects, friend functions, passing objects as arguments to function.
- 3. Programs based on operator overloading (binary, unary) using member functions and friend functions.
- 4. Programs based on constructors, different types of constructors.
- 5. Programs based on inheritance, different types of inheritance.

Scheme of Evaluation for software lab II external is as follows:

(There will be two questions; the first from DBMS and second from C^{++})

Division of Marks (Practical - 3 hours External)

First program - questions from DBMS

marks

1. Logic	– 10 marks
2.Successful compilation	– 8 marks
3. Result	– 7 marks

Second program – questions from Object Oriented Programming using C++ - 35

- 25

marks

1. Logic	- 20 marks
2.Successful compilation	-10 marks

3. Result – 5 marks

SEMESTER II

SKILL PRACTICAL COURSE

VSD2SP04B23 : SOFTWARE LAB IV (ACCOUNTING WITH TALLY)

CREDITS	:	2		
HOURS / WEEK	:	2	TOTAL LECTURE HOURS :	30

Course Overview and Context:

Tally is used by a huge number of small and medium-sized businesses, is to execute accounting activities in a highly precise and methodical manner. Tally full course is what you should follow if you want to become familiar with various aspects of the program, how it works, and comprehend basic concepts like bookkeeping, profit, and loss analysis, stock maintenance, and so on. The most recent version is tally erp 9.

Accounting course students consider tally to be extremely significant for a job as an accountant; they pursue a certificate or diploma in tally to become skilled in it. Tally computer full course length is 1 - 3 months, however, if students choose to pursue a diploma in tally, it can take up to 2 years. Tally's accounting tools enable you to quickly and simply record business transactions. Create and manage vouchers, masters, and reports to record transactions required for your business. It assists you in managing all of your company's essential accounting procedures.

Tally jobsoffer jobroles in Accounting Clerk,AccountsExecutive, TallyAccounts Executive, Tally Junior Accountant, and more.

Course Content :

Module I(12 hours)

Introduction to accounting - accounting basis and terms - branches of accounting - mode of accounting - manual accounting - computerized accounting fundamentals.

Module II(12 hours)

Curriculum and Syllabi 2023 Admission Onwards

Accounting with Tally - Introduction to Tally - tally interface - f11 features-f12 configuration - company creation - accounting groups - accounting ledgers - accounting vouchers – vouchers entry.

Module III(12 hours)

Inventory management with tally - stock groups - stock items - stock category - unit of measures – godown inventory vouchers (Pure inventory and inventory vouchers)

Module IV(12 hours)

Integration of accounting with inventory - bill wise details – invoicing - voucher entry – cost centre - cost category - budget and control - bank reconciliation - interest calculation – order processing - stock valuation methods - reorder levels - tracking numbers - bill of material - inventory ageing analysis.

SEMESTER III

SEMESTER III

SKILL COURSE

CA3CO7B23 : SYSTEM ANALYSIS AND SOFTWARE ENGINEERING

CREDITS	:	5			
HOURS / WEEK	:	5	TOTAL LECTURE HOURS	:	75

Course Overview and Context:

In this course, students will gain a broad understanding of the discipline of software engineering and its application to the development of and management of software systems.

This course enables the student to pursue a career as an IT professional who designs, develops and maintains computer software at a company. They use their creativity and technical skills and apply the principles of software engineering to help solve new and ongoing problems for an organization.

Course Outcomes:

CO1: Adapt the basic software engineering methods and practices in their appropriate applications. (Create)

CO2: Distinguish the various software process models such as waterfall model, evolutionary models, etc. (Evaluate)

CO3: Compose the requirements document by understanding the software requirements and identify the software architectural styles to the suitable applications. (Create)

CO4: Devise, design and maintain software.(Create)

Curriculum and Syllabi 2023 Admission Onwards

Syllabus Content :

Module I (15 hours)

Information systems concepts, Business information systems; Describing the business organization – organization chart, organization function list; information system levels - operational, lower, middle, top management; the system development life cycle concepts; hardware and software end products. Life cycle activities- life cycle flow chart, task, management review, baseline specifications, role of system analyst.

Module II(15 hours)

Introduction to Software Engineering - Definition, Program Vs Software, and Software process, Software Characteristics, Brief introduction about product and process, Software Software life cycle models - Definition, Waterfall model, Increment process models, Evolutionary process models, Selection of a life cycle model.

Module III(15 hours)

Software Requirement Analysis and Specification Requirements Engineering type of requirements, Feasibility Studies, Requirement Elicitation, Various steps for requirement analysis, Requirement documentation, Requirement validation, an example to illustrate the various stages in Requirement analysis. Project planning-Size estimation, cost estimation, the constructive cost model (COCOMO).

Module IV(15 hours)

Software Design - Definition, Various types, Objectives and importance of Design phase, Modularity, Strategy of design, Function oriented design, IEEE recommended practice for software design descriptions. Steps to Analyze and Design Objected Oriented System. Software Reliability Definition, McCall software quality model, Capability Maturity Model.

Module V(15 hours)

Software Testing What is testing?, Test, Test case and Test Suit, Verification and Validation, Alpha, beta and acceptance testing, functional testing, techniques to design test cases, boundary value analysis, Equivalence class testing, decision table based testing, cause effect graphing technique, Structural testing path testing, Graph matrices, Data flow testing; Levels of testing Unit testing, integration testing, system testing, validation testing, a brief introduction about debugging and various testing tools.

Text Books

1. Marvin Gore & John Stubbe -Elements Of System Analysis, Fourth Edition, Galgotia

2. K K Aggarwal, Yogesh Singh - Software Engineering, Third Edition, New Age International Publications.

References

1. Roger S Pressman - Software Engineering: A Practitioner's Approach, Sixth Edition, McGraw-Hill Higher Education.

2. Ian Sommerville - Software Engineering, Seventh Edition, Pearson Education.

3. Pankaj Jalote - An Integrated approach to Software Engineering, Second Edition, Narosa Publishing Company.

SEMESTER III

SKILL COURSE

VSD3S05B23 : DATA STRUCTURES USING C++

CREDITS	:	4			
HOURS /WEEK	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

This course introduces the design of data structures for representing information in computer memory. Topics include: Abstract data types and their implementations; Stacks; Queues; Priority queues; Sorting; Recursion.This course assumes that students know how to analyze simple algorithms and data structures. It introduces students to the design of computer algorithms, as well as analysis of sophisticated algorithms. This course enables the students to pursue career as software developers who effectively organize data and how it can be used to solve a real life problem.

Course Outcomes:

CO1: Choose appropriate data structures to represent data items in real world problems.(Apply)

CO2: Analyze the time and space complexities of algorithms. (Analyze)

CO3: Design programs using a variety of data structures such as stacks, queues, binary trees, search trees, heaps, graphs, and B-trees. (Create)

CO4: Analyze and implement various kinds of searching and sorting techniques. (Analyze)

Course Content :

Module I(12 hours)

Concept of Structured data - Data structure definition, Different types and classification of data structures, Arrays – Memory allocation and implementation of arrays in memory, array operations, Applications - sparse matrix representation and operations, polynomials representation and addition, Concept of search and sort – linear search, binary search, selection sort, insertion sort, quick sort.

Module II(12 hours)

Stacks – Concepts, organization and operations on stacks using arrays (static), examples, Applications - Conversion of infix to postfix and infix to prefix, postfix evaluation, subprogram calls and execution, Multiple stacks representation. Queues - Concepts, organization and operations on queues, examples. Circular queue – limitations of linear queue, organization and operations on circular queue. Double ended queue, Priority queue.

Module III(12 hours)

Linked list: Concept of dynamic data structures, linked list, types of linked list, linked list using pointers, insertion and deletion examples, circular linked list, doubly linked lists, Applications- linked stacks and queues, memory management basic concepts, garbage collection.

Module IV(12 hours)

Trees - Concept of recursion, trees, tree terminology, binary trees, representation of binary trees, strictly binary trees, complete binary tree, extended binary trees, creation and operations on binary tree, binary search trees, Creation of binary search tree, tree traversing methods – examples, binary tree representation of expressions.

Module V(12 hours)

File - Definition, Operations on file (sequential), File organizations - sequential, Indexed sequential, random files, linked organization, inverted files, cellular partitioning, hashing – hash tables, hashing functions, collisions, collision resolving methods.

Text Books

- 1. G.S Baluja Data Structures Through C++ (A Practical Approach), Second Edition-2004, Danapat Rai & Co.
- 2. Ellis Horowitz and Sartaj Sahni Fundamentals of Data Structures in C++, Second Edition, Galgotia Publications.

References

- 1. Seymour Lipschutz, Theory and Problems of Data Structures, Schaums Outline Series,2006, McGraw Hill
- **2.** Yedidyah Lanngsam, Moshe Augustein, Aaron M Tenenbaum- Data structures using C and C++ , Second Edition, Prentice Hall

SEMESTER III

SKILL PRACTICAL COURSE

VSD3SP05B23 : Software Lab V (DATA STRUCTURES USING C++)

CREDITS	:	5			
HOURS Course Outcome and Context:	:	5	TOTAL LECTURE HOURS	:	75

The Data Structures course in C++ teaches students about advanced data structures such as maps, queues and sets, while applying them in larger, real-world assignments and projects. Build efficient programs by learning how to implement data structures using algorithmic techniques and solve various computational problems using the C++ programming language.

This course enables the students to pursue career as software developers who effectively organize data and how it can be used to solve a real life problem.

Course Outcomes:

CO1: Identify the appropriate data structures and algorithms for solving real world problems. (Understand)

CO2: Illustrate various kinds of searching and sorting techniques.(Analyse)

CO3: Compare data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems. (Evaluate)

Syllabus Content :

Module I (12 Hours)
Array – Insertion , Deletion, Polynomial addition using arrays
Sort – Selection, Insertion, Quick
Search – Linear search, Binary search
Sparse matrix – Sparse form representation, transpose and addition using the sparse form
Module II(12 Hours)
Stack - Implementation using arrays (linear stack), Infix to postfix conversion, Postfix evaluation
Queue – Implementation using arrays (linear queue), Implementation of circular queue

Module III(12 Hours)

Singly linked list – Implementation using dynamic memory allocation techniques, arrange the list based on the ascending or descending order of the information field, concatenate two linked lists, interchange any two nodes in a list, Implementation of circular list, Implementation of linked stacks and queues. Doubly linked list – Implementation of doubly linked list, Implementation of circular doubly linked list.

Module IV(12 Hours)

Creation of binary search trees, Insertion and deletion of nodes, Tree traversals.

Scheme of Evaluation for software lab III external is as follows: (There will be two questions) **Division of Marks (Practical - 3 hours External)** First program - questions from module 1 & II - 25 marks 1. Logic -10 marks 2.Successful compilation - 8 marks - 7 marks 3. Result Second program – questions from module III & IV - 35 marks 1. Logic -20 marks 2.Successful compilation -10 marks 3. Result - 5 marks

Viva Voce Lab Record of 25 Programs) Total Marks - 10 marks

- 10 marks (Minimum

- 80 marks

SEMESTER III

SKILL PRACTICAL COURSE

VSD3SP06B23 : HTML5 AND CSS3 (PRACTICAL ONLY)

CREDITS	:	5			
HOURS/WEEK	:	5	TOTAL LECTURE HOURS	:	75

Course Overview and Context:

- HTML is highly flexible and supported on all browsers.
- User friendly and an open technology. ϖ It give better performance.
- CSS provides powerful control over the presentation of an HTML document.
- CSS saves many times as it can be reused in many HTML pages.
- CSS can be used to make responsive web pages, which are compatible on multiple devices.
- It can be used to allow the web pages to display differently depending on the screen size or device on which it is being viewed. Pre-requisite / Target Audience:
- Job skills of this course include manage HTML projects, create online apps, code websites, assist website visitors, take . psd files and mockups, and produce CSS code.

Course Outcomes:

CO1: Simple and impressive design techniques of HTML and CSS, from basics till advanced to focus on goal oriented and user centric designs (Understand)

CO2:Plan and optimize a website (Analyze)

CO3: Create a layout for web pages and your entire site and to add elements to your web pages, including colors, text, images, and more using html and CSS (Create)

CO4: Add advanced features to your website including special effects and widgets using html and CSS(Create)

Course Content :

Module I (15 Hours)

Overview of HTML5 Defining HTML5 - HTML5 markup - Key HTML5 elements - Web forms - New HTML5 elements - HTML5 APIs and supporting technologies - Geolocation in action - Web workers - Web

storage - CSS animations - CSS transitions - CSS 2D and 3D transformations - CSS3 backgrounds, borders, RGBa colors, gradients, drop shadows, and rounded corners - @font-face web fonts. Fundamentals of HTML, XHTML, and CSS Web languages - Details of XHTML syntax - W3C and page validation - HTML structure - Placing images in HTML - Role of CSS - Styling a heading - Class styles and the element - Three ways to use styles - Internal vs. external style sheet

Module II (15 Hours)

Formatting Text with CSS Importance of typography on the web - Challenges of fonts on the web - Setting a font-family - Sizing text with CSS - Pixels and points are not the best choices - Using a combination of percent and the em measurement - Using margins to modify space between your text - Setting paragraph line-height - Transforming text with CSS - Working with HTML lists - Styling HTML lists Basic (X)HTML Formatting (15 HOURS)

Making Text Bold or Italic - Changing the Size of Text and Using a Monospaced Font - Using Preformatted Text - Quoting, Superscripts, and Subscripts - Marking Changed Text .

Module III(15 Hours)

Introduction to CSS Layout Working with the CSS reset file - Brief history of layout techniques on the Web - Page layout options - <div> element: creating a two-column fixed-width CSS layout - CSS float property - Creating columns with the float property - Working with the clear property - Creating a list-based navigation using floats - Adding text styles - Effect of margins and padding on your fix-width layout - Using margins and padding for layout - Styling your footer with a background image.

Module IV(15 Hours)

Advanced CSS Layout Building your page layout - Removing the background color - Working with CSS background images - Using hacks to solve layout problems - Enhancing your CSS navigation bar - Moving internal styles to the external style sheet - Creating a style for the active page - Adding images to sidebar - Working with absolute positioning

Module V(15 Hours)

Creating HTML5 Forms

Need for updated forms – Forms - Components of a form - Adding new HTML5 input types and attributes - Creating an order form with new HTML5 input type and attributes - HTML5 form features under development.

SEMESTER IV

Curriculum and Syllabi 2023 Admission Onwards

SEMESTER IV SKILL COURSE VSD4S06B23: OPERATING SYSTEMS

CREDITS	:	4
HOURS / WEEK	:	4
TOTAL LECTURE HOURS	:	60

Course Overview and Context:

Operating system is the manager of computer resources. This course is intended to introduce the concepts, structures, features, trends and design mechanism of OS. It covers the fundamentals of multiple operating systems and their associated applications. Students will gain insight into both the difference and similarities between os architecture.

They can pursue career as a System administrator in software companies.

Course Outcomes:

CO1: Describe the evolution, types, importance, structure and functions of Operating Systems in computing devices(Understand)

CO2: Illustrate the concepts of process management and process scheduling mechanisms in Operating Systems. (Understand)

CO3: Explain Inter process synchronization and determine the methods for detection, prevention, avoidance and recovery for managing deadlocks in Operating Systems (Apply)

CO4: Apply knowledge to describe different approaches to memory management (Apply)

CO5: Apply secondary storage management and disk scheduling Techniques (Apply)

Syllabus Content:

Module I: (12 hours)

Introduction: OS Definition, Functions, Evolution of OS,OS Structure Operating System Operations,Operating System Services, User Operating System Interface, System Calls, Types of System Calls.

Curriculum and Syllabi 2023 Admission Onwards

Module II:(12 hours)

Process: Basic Concepts, Process Scheduling, Operations on Processes, Inter process communication, Process Scheduling - Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling.

Module III:(12 hours)

Process Coordination: Synchronization - The Critical Section problem, Semaphores, Classic Problems of Synchronization, Monitors. Deadlocks: System Model, Deadlock Characterization, Methods of handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Module IV: (12 hours)

Memory Management: Memory Management Strategies - Swapping, Contiguous memory allocation, Paging, Segmentation. Virtual Memory Management- Demand paging, Page Replacement.

Module V: (12 hours)

Storage Management: File System: - File Concept, Access Methods, Directory structure. Implementing File Systems:-File System Structure, Allocation Methods, Free Space Management, Disk Scheduling.

Text Books

- Abraham Silberschatz, Peter Galvin and Greg Gagne Operating System Principles, Seventh Edition, John Wiley
- 2. William Stallings Operating Systems, Sixth Edition, Prentice Hall of India, Pearson

Reference

1. Milan Kovic - Operating Systems, 2ndEdition, (TMH)

SEMESTER IV

SKILL COURSE

VSD4S07B23 : PROGRAMMING IN JAVA

CREDITS	:	4			
HOURS	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

In this course student will become familiar with features of Java language, they will learn how to write Java code according to Object-Oriented Programming principles, how to design GUI applications and Applets using AWT, how to develop multithreaded and Networking applications and how to create dynamic pages.

This course focuses on Java Programming concepts which is extensively used in all most all the programming fields. It enables the students to pursue career varies from android applications and web server tools to enterprise software.

Course Outcomes:

CO1: List and use Object Oriented Programming concepts for problem solving.(Analyze)
CO2: Write Java programs to implement error handling techniques usingexception handling and developing programs using class and inputs from keyboard and multithreading.(Create)
CO3: Illustrate the interdisciplinary applications using the concept of inheritance.(Apply)
CO4: Develop graphical User Interface using AWT and programs using java collection API as well as java standard class library(Apply)
CO5: Write programs using JDBC to provide a program level interface for communicating

with database using java programming.(Create)

Syllabus Content :

Module I(12 hours)

Object oriented programming-Encapsulation-Inheritance-Polymorphism-Genesis of Java-characteristics of java- program structure-identifiers-operators-variables-literals-data types-Arrays. Control Statements-selection statements-iterative statements-jump statements - Loops- while loop-do while loop- for loop

Module II(12 hours)

Classes-declaration –object references-instantiation- method declaration-method calling – this operatorconstructor- method overloading-constructor overloading-method overriding-inheritance-super classdynamic method dispatch-final-static-abstract classes – String Handling.

Module III(12 hours)

Packages - creating packages-using packages-Interfaces-Exception Handling Techniques-try-catch-throwthrows-finally -Multithreading- creation of multithreaded program-Thread class-Runnable interface- thread priorities.

Module IV(12 hours)

The Applet class - Event Handling - Working with windows, Graphics and Text using AWT Classes- AWT Controls - Layout Managers and menus - Images. Java I/O Programming

Module V (12 hours)

JDBC: JDBC Architecture - Installing the ODBC Driver - Connecting to a Database – StructuredQuery language. JDBC programming concept: Database URL - Executing the action commands – Introducing Swing: swingcomponents and containers - the swing packages - Painting in a Swing - Exploring Swing: JlabelandImageIcon - JtextField - The Swing Buttons - Jtabbed Pane - Jscroll Pane - Jlist - JcomboBox - Trees- Jtable.

Text Books

- 1. Herbert Schildt The Complete Reference Java Tata McGraw Hill Publishing CompanyLimited Edition 7, 2007.
- 2. Cays Horstmann and Gary Cornell Core Java Volume II, Pearson Edition, 2001
- 3. Phil Hanna JSP 2.0: The Complete Reference -Tata McGraw Hill Publishing CompanyLimited, Edition 2, 2003

References

- 1. E. Balaguruswamy, "Programming with Java: A Primer", 5E, TMH, 1998.
- 2. P. Naoughton and H. Schildt Java2: The Complete Reference Tata McGraw Hill PublishingCompany Limited, Edition 3, 1999.
- 3. K. Arnold and J. Gosling The Java Programming Language Edition 2, Publication, 2000
- 4. Deitel&Deitel,"Java How to program", 8th ed., PHI.

SEMESTER IV

SKILL PRACTICAL

VSD4SP07B23 : SOFTWARE LAB VII (PROGRAMMING IN JAVA)

CREDITS	:	4			
HOURS/WEEK Course Overview and Context:	:	4	TOTAL LECTURE HOURS	:	60

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

This course focuses on Java Programming concepts which is extensively used in all most all the

programming fields. It enables the students to pursue career varies from android applications and web server tools to enterprise software.

Course Outcomes:

CO1: Illustrate java application programs using OOP principles and proper program structure.(Analyze)

CO2: Develop Java programs using packages, inheritance and interface.(Apply)

CO3: Create Multithreaded programs.(Create)

CO4: Practice Java programs to implement error handling techniques using exception handling and developing programs using class and inputs from keyboard.(Apply)

Course Content:

Part I. Applet, JDBC connection and swing based Programs

Part II (using class and read inputs from keyboard)

Java Programs: Method Overloading-Method Overriding-inheritance-abstract class interfacespackages-Exception Handling-Multithreading

Scheme of Evaluation for software lab V external is as follows:

(There will be two questions; the first from PartI and second from PartII)

Division of Marks (Practical-3 hours External)

First program-questions f	-25marks	
1.Logic	– 10 marks	
2.Successful compilation	– 8 marks	
3. Result	– 7 marks	
Second program- question	ons from Part II	-35marks
1.Logic	– 20 marks	
2.Successful compilation	-10 marks	
3. Result	– 5 marks	
VivaVoce		-10marks
Lab Record		-10marks
(Minimum of 25 Programs))	
Total Marks		-80marks

SEMESTER IV

SKILL PRACTICAL

VSD4SP08B23 : SOFTWARE LAB VIII (PHP & SQL)

CREDITS	:	2			
HOURS/WEEK Course Overview and Context:	:	2	TOTAL LECTURE HOURS	:	30

- 1) Creatingsimple programs based on PHP
- 2) Programs usingPHP functions
- 3) Programs based on MYSQL

Course Outcomes and Context:

CO1: Discover PHP as a server side programming Language.(Apply)

CO2: Construct Programs based on PHP.(Create)

CO3: Connect HTML forms to PHP scripts.(Analyze)

CO4: Generalize the principles behind using MySQL as a backend DBMS with PHP.(Create)

CO5: Construct a responsive web page with proper validation .(Create)

This course gives job role as PHP and SQL developer.

PHP Developers write, test, and maintain code for the back-end of the website. Simultaneously, they also support the front-end development needs. They create the basic website functions like user logins, image or file uploads, blogs, and e-commerce checkout flows.

SQL developer who will be responsible for designing databases and ensuring their stability, reliability, and performance.

Scheme of Evaluation for software lab IV external is as follows:

(There will be two questions; the first from LINUX and second from PHP)

First program-questions fromLINUX

- 10 marks 1. Logic

2. Successful compilation – 8 marks 3. Result – 7 marks

Second program- questions from PHP

1.	Logic	– 15 marks
2.	Successful compilation	–15 marks
3.	Result	– 5 marks

VivaVoce	-10marks Lab
Record	-10marks
Minimum of 10 Programs PHP	-Minimum of 15 Programs)

Total Marks

-80marks

-25marks

-35marks

Division of Marks (Practical-3 hours External)

SEMESTER V

SEMESTER V

SKILL COURSE

VSD5S08B23 : COMPUTER NETWORKS

CREDITS	:	3			
HOURS/WEEK	:	3	TOTAL LECTURE HOURS	:	45

Course Overview and Context:

The subject introduces the concept of networks, different topologies and network devices. The OSI reference model is dealt to introduce different layers. The layers are discussed in detail in later chapters of the subject. Error detection and correction mechanisms are dealt to give an exposure about how actually the network handles the data. The discussion about routing algorithms gives exposure to the sending of information in a network. Congestion handling is also dealt in the subject.

Povide job role as network engineer who has the following responsibilities.

- Establishes and maintains network performance.
- Builds net configurations and connections.
- Troubleshoots network problems.
- IP address auditing.
- Establishes networking environment by designing system configuration and directing system installation.
- Defines, documents, and enforces system standards.
- Maximizes performance by troubleshooting network problems and outages and scheduling upgrades.

Course Outcomes:

CO1: Define basic concepts of Data communication and Computer Networks.(Understand)

CO2:Understand different Network Models, their functions and transmission medias.(Understand)

CO3: Understand various topologies, Networking types and protocols.(Understand)

CO4:Apply the encoding schemes, Error correction and detection methods, switching techniques as per given network.(Apply)

CO5: Understand different Network devices, addressing schemes, security threats and crypting method (Understand)

Syllabus Content

Module 1(9 hours)

Introduction to Networks, Data and signals-analog and digital, periodic analog signals, digital signals, bit rate, baud rate, bandwidth. Transmission impairments - attenuation, distortion and noise.

Data communication protocols and standards, Network models - OSI model-layers and their functions. TCP/IP protocol suite.

Module II(9 hours)

Bandwidth utilization Multiplexing: FDM, TDM, spread spectrum. Transmission Media- guided media and unguided media. Switching: message, Circuit and packet switched networks, datagram networks, virtual- circuit networks.

Module III(9 hours)

Data link layer: Error Detection and Correction, Framing, flow and error control, Protocols -Noiseless channels (Simplest, Stop and Wait) and Noisy channels (Stop and Wait and Piggy Backing).

Multiple Access Protocols. Random Access-ALOHA, CSMA. Wired LANs-IEEE standards, wireless

LANs-Bluetooth, Cellular

Telephony

Module IV(9 hours)

Network layer and Transport layer: Repeaters, Bridges, Gateways and routers. Logical addressing – IPV4 and IPV6 addressing, Internet protocol - IPV4 and IPV6. Connectionless and Connection Oriented Services: UDP and TCP. Congestion Control, Quality of Service.

Module V(9 hours)

Application layer: HTTP, FTP, SMTP, DNS. Network security: Common Threats- Firewalls (advantages and disadvantages), Cryptography.

Text Books

- 1. B. A. Forouzan Data communication and Networking, Fourth edition-, TMH
- 2. Andrew S Tanenbaum Computer Networks ,Fourth Edition, Prentice Hall of India.

SEMESTER V

SKILL COURSE

VSD5S09B23 : PYTHON PROGRAMMING

CREDITS : 4

HOURS / WEEK : 4	TOTAL LECTURE HOURS :	60
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Course Overview and Context:

- To do input/output with files in Python.
- To use Python data structures -- lists, tuples, dictionaries.
- To define Python functions and call them.
- To develop Python programs with conditionals and loops.
- To read and write simple Python programs.

This course provides following job responsibilities.

- Python Web Developer.
- Software Engineer.
- Automation Testing Engineer.
- Data Analyst.
- Data Scientist.
- Machine Learning Engineer.

Course Outcomes:

CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions. (Apply)

CO2: Explain modules and functions using Python. (Understand)

CO3: Develop logic of various programming problems using numerous data types and control structures of Python. (Create)

CO4: Create, run and manipulate Python Programs using core data structures like Lists,

Dictionaries and use Regular Expressions. (Create)

CO5: Develop proficiency in handling Strings and File Systems. (Apply)

Syllabus Content:

Module I(12 hours)

Introduction to python, features, downloading and installing python, running python, python virtual machine(PVM), python implementation alternatives, Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions

Module II (12 hours)

DATA, EXPRESSIONS, STATEMENTS

Statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

Module III(12 hours)

CONTROL FLOW, FUNCTIONS

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays.

Module IV(12 hours)

LISTS, TUPLES, DICTIONARIES

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension

Module V(12 hours)

FILES, MODULES, PACKAGES

Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages

Text Books

- 1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/)
- 2. Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python Revised and updated for Python 3.2, Network Theory Ltd., 2011.

References

- 1. John V Guttag, —Introduction to Computation and Programming Using Python", Revised and expanded Edition, MIT Press, 2013
- Robert Sedgewick, Kevin Wayne, Robert Dondero, —Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
- Timothy A. Budd, —Exploring Python^{II}, Mc-Graw Hill Education (India) Private Ltd., 2015.
- Kenneth A. Lambert, —Fundamentals of Python: First Programs, CENGAGE Learning, 2012.
- 5. Charles Dierbach, —Introduction to Computer Science using Python: A Computational ProblemSolving Focus, Wiley India Edition, 2013.
- Paul Gries, Jennifer Campbell and Jason Montojo, —Practical Programming: An Introduction to Computer Science using Python 3^{II}, Second edition, Pragmatic Programmers, LLC, 2013

SEMESTER V

SKILL COURSE

VSD5S10B23 : JAVA SCRIPT AND JQUERY

CREDITS	:	3			
HOURS/WEEK	:	3	TOTAL LECTURE HOURS :	: 4	5

Course Overview and Context:

This course is designed to accommodate website designers who have some experience building web pages. Lessons familiarize students with the ins and outs of basic JavaScript and then move on to advanced tools for adding really useful interactivity to a Web site as quickly and easily as possible with the help of prewritten jQuery libraries. Students will learn how to use simple JavaScript Code that will liberate them from all of the minute, time-consuming details of creating JavaScript programs that run well across different browser platforms.

This course allows students to pursue their career as javascript and jquery developer. JQuery developers are highly skilled JavaScript developers who specialize in working with the jQuery JS library. They are mainly responsible for developing new user-facing web features, *building reusable code and libraries, and ensuring the feasibility of UI/UX design*.

Course Outcomes:

CO1: Understand the JavaScript language & amp; the Document Object Model., identify

expressions and operators and summarize flow control. (Understand)

CO2: Evaluate objects and arrays usage, illustrate functions and methods. (Apply)

CO3: Create event listeners and callbacks to respond to user-interface and network events. (Create)

CO4: Apply the jQuery AJAX interfaces and JSON to upload data to a back-end web server, and to asynchronously retrieve and display responses. (Apply)

Syllabus Content :

Module I(9 hours)

The Nature of JavaScript

The Evolution of Scripting Languages, JavaScript -Definition, Essential features of javascript, Lexical structure, Datatypes and values- Numbers, Strings, Functions, Objects, Boolean Values, Arrays, null, defined, date object, Variables - variable typing, variable declaration, variable scope. First javascript program.

Module II (9 hours)

Script Writing Basics

Expressions and operators, Using Conditional Statements for Decision Making, if Statements, ifelse Conditional Statements, while Conditional Statements, break and continue Statements, for Conditional Statements, for in conditional statement, with statement, switch statement, Creating objects, object properties, checking property existence, deleting properties.

Module III (9 hours)

Adding Interactivity to a Web Page

Arrays, reading and writing array elements, adding new elements to an array, deleting array elements, array length, iterating through arrays, array methods, ,Creating Functions in JavaScript, DeclaringFunction, Designing a Simple Function,basic event handling,mouse events,keyboard events,onload event.

Module IV (9 hours)

Introduction to jQuery

Introduction,advantages,getting jquery,adding jquery to a page, selectors in jquery,jquery filters, understanding jquery selections,adding content to a page, setting and reading tag attributes, classes, reading and removing html attributes, Events, using events the jquery way, jquery events, event object, Jquery effects- showing and hiding elements, fading elements in and out,sliding elements.

Module V(9 hours)

jQuery and AJAX

Using the ajax() API, Loading data with GET & POST, Working with JSON data, Serialising your form handling with serialize() Handling a completed AJAX request.

Text Books

- 1. JavaScript & jQuery: The Missing Manual, 2nd Edition By David Sawyer McFarland Publisher: O'Reilly Media.
- 2. Javascript : the definitive guide ,By David Flanagan.

References

- 1. JavaScript and JQuery: Interactive Front-End Web Development, Jon Duckett
- 2. HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and Jquery Paperback 2011 by Kogent Learning Solutions Inc. (Author)

SEMESTER V

SKILL COURSE (PRACTICAL)

VSD5SP09B23 : SOFTWARE LAB IX (JAVA SCRIPT AND JQUERY)

CREDITS	:	4		
HOURS/WEEK	:	4	TOTAL LECTURE HOURS :	60
HOURS				

Course Overview and Context:

This course is designed to accommodate website designers who have some experience building web pages. Lessons familiarize students with the ins and outs of basic JavaScript and then move on to advanced tools for adding really useful interactivity to a Web site as quickly and easily as possible with the help of prewritten jQuery libraries. Students will learn how to use simple JavaScript Code that will liberate them from all of the minute, time-consuming details of creating JavaScript programs that run well across different browser platforms.

This course allows students to pursue their career as javascript and jquery developer. JQuery developers are highly skilled JavaScript developers who specialize in working with the jQuery JS library. They are mainly responsible for developing new user-facing web features, *building reusable code and libraries, and ensuring the feasibility of UI/UX design.*

Course Outcomes:

CO1: Illustrate the understanding of JavaScript and JQuery scripting fundamentals. (Understand)

CO2: Write and troubleshoot JavaScript statements, commands, variables, operators, conditionals, loops, arrays, and functions. (Remember)

CO3: Test user events using JavaScript and jQuery, creating interactivity. (Apply)

CO4: Illustrate JavaScript libraries, toolkits, plugins, and APIs to add specialized functionality to web pages. (Apply)

CO5: Design effective user interfaces. (Create)

Course Content:

To write, test, and debug simple javascript programs using browsers. To implement javascript programs with conditionals and loops. Use functions for structuring javascript programs.

SEMESTER V

SKILL COURSE (PRACTICAL)

VSD5SP10B23: S/W LAB X (PYTHON PROGRAMMING)

CREDITS	:4		
HOURS/WEEK	: 4	TOTAL LECTURE HOURS	: 60

Course Overview and Context:

- To acquire programming skills in core Python.
- To acquire Object Oriented Skills in Python
- To develop the skill of designing Graphical user Interfaces in Python
- To develop the ability to write database applications in Python

This course provides following job responsibilities.

- Python Web Developer.
- Software Engineer.
- Automation Testing Engineer.
- Data Analyst.
- Data Scientist.
- Machine Learning Engineer.

Course Outcomes:

CO1: Describe the structure and components of Python with simple examples.(Understand)

- **CO2**: Construct Programs with loops and conditional statements. (Apply)
- CO3: Design Python programs using functions. (Create)
- CO4: Categorize compound data using tuples, lists, dictionaries. (Analyze)
- CO5: Demonstrate proficiency in handling Strings and File Systems. (Create)
Syllabus Content:

To write, test, and debug simple Python programs.

- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python.

SEMESTER VI

SEMESTER VI

SKILL COURSES

VSD6S11B23 – MACHINE LEARNING

CREDITS	:6	: 6		
HOURS/WEEK	:4	TOTAL LECTURE HOURS	: 60	

Course Overview and Context:

- To introduce the prominent methods for machine learning
- To study the basics of supervised and unsupervised learning

Roles and Responsibilities of a Machine Learning Engineer

- To research, modify, and apply data science and data analytics prototypes.
- To create and construct methods and plans for machine learning.
- Employing test findings to do statistical analysis and improve models.

Course Outcomes :

- **CO1**: Differentiate various learning approaches, and to interpret the concepts of supervised learning. (Understand)
- **CO2** : Apply theoretical foundations of decision trees to identify best split and Bayesian classifier to label data points (Apply)
- **CO3** : Illustrate the working of classifier models like SVM, Neural Networks and identify classifier model for typical machine learning applications (Understand)
- **CO4** : Illustrate and apply clustering algorithms and identify its applicability in real life problems (Understand)
- **CO5** : Compare the different dimensionality reduction techniques (Understand)

Syllabus Content:

MODULE I : Introduction(12hours.)

Introduction: Machine Learning, Applications, Supervised Learning: Learning a Class from Examples, Unsupervised Learning, Semi Supervised learning, Reinforcement Learning. Applications of Machine Learning. Issues in Machine Learning.

MODULE II : **Preparing to Model**(15hours.)

Basic types of data in Machine Learning, Exploring structure of data, Data quality and remediation, Data Preprocessing, Basics of Feature Engineering, Feature Transformation, Bayesian Concept Learning.

MODULE III : Supervised Learning : Classification(15 hours.)

Introduction, Example of Supervised Learning, Classification Model, Classification Learning steps, Common Classification Algorithms, KNN, Decision Tree, Random Forest Models, Support Vector Machines. Regression, Simple linear regression, Multiple linear regression, Logistic regression, Maxmium Likelihood Estimation.

MODULE IV : Unsupervised Learning(15hours.)

Application of Unsupervised Learning, Clustering, Different types of Clustering techniques, Finding Pattern using Association Rule.Apriori algorithm.

MODULE V : **Basics of Neural Network**(15hours.)

Understanding the Biological Neuron, Exploring Artificial Neuron, Types of Activation Functions, Implementations of ANN, Architectures of Neural Network. Learning process in ANN, Backpropagation, Deep Learning.

Text Book

1. Machine Learning, Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, Pearson Publications.

SEMESTER VI

SKILL COURSE

VSD6SPRB23 : SOFTWARE DEVELOPMENT LAB (MAIN PROJECT)

CREDITS: 6

HOURS PER WEEK : 5

TOTAL LECTURE HOURS: 90

Course Outcomes:

CO1: Demonstrate a sound technical knowledge of their selected project topic.(Understand)

CO2: Sketch problem identification, formulation and solution.(Create)

CO3: Apply software application packages as an engineering tool, if required (Apply)

CO4: Manage Communication effectively with customers, peers, technicians and engineers (Apply)

SYLLABI FOR GENERAL COURSES

SEMESTER I

SEMESTER I

GENERAL COURSE

VSD1G01B23- LE FRANÇAIS ÉLÉMENTAIRE

CREDITS :4

HOURS / WEEK :4 TOTAL LECTURE HOURS : 60

Course Overview and Context: It focuses on basic sound patterns of the French language and rudiments of French grammar.

The knowledge of a foreign tongue enriches your personal life, enhances the <u>careers involving</u> <u>languages</u>, and increases your power to act as a global citizen.

Course Outcomes:

CO1: Identify and use familiar everyday expressions and basic phrases. (Understand)

CO2: Develop Language, vocabulary and grammar skills (Apply)

CO3: Construct simple and meaningful sentences that helps to express their behaviour (Apply)

CO4: Prepare conversations based on scenarios which helps while traveling (Apply)

CO5: Write basic compositions in simple but complete sentences and short paragraphs about different themes. (Apply)E

Course Content :

Module I (16 hours)

Bienvenue – Qui est-ce ? Les alphabets – Les sons – les accents - saluer-se présenter quelqu'un - faire connaissance avec quelqu'un –les nombres – les verbes être, s'appeler – l'article défini

Module II (14 hours)

Ça va bien ? - correspond@nce.com Les verbes aller et avoir - l'adjectif possessif

au singulier – l'article indéfini – la politesse – demander des nouvelles d'une personne – chercher un(e) correspondant(e)

Module III (14 hours)

Trouvez l'objet – Portrait-robot Nommer, monter et situer des objets – exprimer la

possession – indiquer les couleurs – les pronoms toniques – le pluriel des articles, des verbes, des adjectifs possessifs, la négation

Module IV (14 hours)

Shopping – Le coin des artistes Caractériser un objet – faire des achats - exprimer des goûts – l'adjectif interrogatif – les adjectifs interrogatifs – l'interrogation – comprendre un texte court

Module V (14 hours)

Appartement à louer – C'est par où ? Situer un lieu sur un plan – décrire un

appartement – indiquer une direction – indiquer un moyen de transport – les prépositions – l'impératif – l'adverbe y – comprendre une annonce immobilière – présenter des informations touristiques

Textbook

Guy Capelle, Robert Menand : Le Nouveau Taxi 1, Hachette Livre 2009, Lessons 1-10,

(Pp 13 - 37)

SEMESTER I

GENERAL COURSE

CA1C01B23 : COMPUTER FUNDAMENTALS AND DIGITAL PRINCIPLES

CREDITS :4

HOURS / WEEK :4 TOTAL LECTURE HOURS : 60

Course Overview and Context :

Introduction to the basics of digital systems and their design; the analysis of digital circuits using Boolean Algebra and logic reduction; concepts of memory systems and examination of the various designs, flip-flops, counters. Introduction to memory systems, micro-processors and computer architecture. This is a core course for the students to gain more insights to the actual working principles of computing systems.

This course enables the students to pursue career in the field of electrical/electronics equipment installer and repairer.

Course Outcomes:

- **CO1:** Differentiate the types of computers, softwares, hardwares and input or output devices (Analyse)
- CO2: Differentiate the Operating Systems and basics of Networks and Internet. (Analyse)
- **CO3:** Illustrate the conversion between various number systems and the construction of binary code. (Apply)
- CO4: Design simplified logical expression for digital circuits. (Create)
- **CO5:** Construct digital circuits of medium complexity using the working of combinational and sequential circuits. (Create)

Course Content:

Module I(12 hours)

Introduction: Functional units of a computer system, Different types of computers, Computer Software and Hardware, Types of software-System software and Application program. Characteristic of computers. Input Devices – Keyboard, Mouse, Optical input devices, Output devices – Monitors and Printers.

Module II(12 hours)

Introduction to Operating Systems and Networking: Definition of an Operating System - Different types of PC Operating Systems. Computer Networks- categories of networks - LAN,WAN, MAN. The Internet - Working of Internet - Major Features of Internet.

Module III(12 hours)

Number Systems: Base or radix ,Positional number system, Popular number systems(Decimal, Binary, Octal and Hexadecimal), Conversion-From one number system to another, Concept of binary addition and subtraction, Complements in binary number systems,1^s Complement, 2^s Complement and their applications, Signed magnitude form, BCD numbers- concept and addition.

Module IV(12 hours)

Boolean Algebra and Gate Networks: Logic gates- AND, OR, NOT, NAND and NOR Truth tables and graphical representation, Basic laws of Boolean Algebra, Simplification of Expressions, De Morgans theorems, Dual expressions, Canonical expressions, Min terms and Max terms, SOP and POS expressions, Simplification of expression using K-MAP (up to 4 variables), Representation of simplified expressions using NAND/NOR Gates, Dont care conditions, XOR and its applications, parity generator and checker.

Module V (12 hours)

Sequential and Combinational Logic. Flip flops- Latch, Clocked, RS, JK, T, D and Master slave , Adders-Half adder, Full adder(need and circuit diagram), Encoders, Decodes, Multiplexers and Demultiplexers (working of each with diagram), Analog to digital and digital to analog converters (Diagram and working principle), : Concept of Registers, Shift Registers

Text Books

1. Peter Nortons- Introduction to Computers, Sixth Edition, Published by Tata McGraw Hill

2. P K Sinha & Priti Sinha - Computer Fundamentals, Fourth Edition, BPB Publications.

3. M Morris Mano-Digital Logic and Computer design, Fourth Edition, Prentice Hall.

References

1. Thomas C Bartee- Digital computer Fundamentals, Sixth Edition, TATA McGraw Hill Edition

2. Thomas L Floyd- Digital Fundamentals, Ninth edition, PEARSON Prentice Hall.

3. Malvino & Leach- Digital Principles and Applications, Sixth Edition, Tata McGraw Hill, 2006

MODEL QUESTION PAPER

B.VOC DEGREE EXAMINATION (C B C S S) SEMESTER I - GENERAL COURSE CA1C01B23 – COMPUTER FUNDAMENTALS AND DIGITAL PRINCIPLES

Time: 3 hours

Maximum marks: 80

Part A

(Answer any ten questions. Each question carries 2 marks)

Qn.No.	Questions	СО	Level of
			Questions
1.	Define Computer.	1	R
2.	Expand a) RAM b) ROM	1	U
3.	Give two examples of application software.	1	U
4.	Convert (39.625)10 to its binary equivalent	2	Ар
5.	Convert (25.15625)10 to its hexadecimal equivalent	2	Ар
6.	Define Base or Radix of a Number system	2	R
7.	List the different types of PC Operating systems.	2	R
8.	Give the dual expression for $A + 0 = A$	2	Ар
9.	State and prove Distributive laws of Boolean algebra using Truth Table	2	Ар
10.	Discuss Latch?	3	U
11.	List the use of Registers	3	R
12.	Describe the significance of primary memory.	3	U
L	1	($10 \ge 2 = 20 \text{ marks}$

Part B

(Answer any six questions. Each question carries 5 marks)

Qn.No.	Questions	СО	Level of
			Questions
13.	Explain the characteristics of a computer system.	1	U
14.	Differentiate between the characteristics of primary and secondary storage of a computer system.	1	Ар
15.	Distinguish between System software and application software.	2	U
16.	Subtract (110)2 from (1010)2 using 1's complement method	2	Ар
17.	Show NAND gate as Universal gate	2	U
18.	Subtract (11001.101)2 from (11100.110)2	2	Ар
19.	Add the following in BCD numbers 437 and 721	4	Ар
20.	Prove the theorem A+A'B=A+B	3	Ар
21.	Design the logic circuits of the expression (AB)'+AB+AC'+ABC	3	Ар

 $(6 \times 5 = 30 \text{ marks})$

Part C

(Answer any two questions. Each question carries 10 marks)

Qn.No.	Questions	СО	Level of
			Questions
22.	Obtain the minimal SOP expression for Y=A'B'C+AB'C+ABC'+ABC using K-Map	1	Ар
23.	Simplify the Boolean function using K-Map Y(ABCD)=∑m(0,2,4,5,6,7,8,10,12,14)	2	Ар

24.	Obtain the minimal POS expression for	2	Ар
	∏M(0,1,2,4,5,6,9,11,12,13,14,15) and		
	implement it in NOR logic		
25.	Explain in detail shift registers with diagram	4	R

(2 x 15= 30 marks)

CO : Course Outcomes

Level : R – Remember, U – Understand, Ap- Apply, An- Analyze, E- Evaluate, C- Create

SEMESTER II

SEMESTER II

GENERAL COURSE

VSD2G02B23 : LE FRANÇAIS INTERMEDIAIRE (INTERMEDIATE FRENCH)

CREDITS	: 4	
HOURS/WEEK	: 4	TOTAL LECTURE HOURS : 60

Course Overview and Context :

This module is comprised of an in-depth study of grammar categories and structures with practice drills to enable the students to use it more confidently.

The knowledge of a foreign tongue enriches your personal life, enhances the <u>careers involving</u> <u>languages</u>, and increases your power to act as a global citizen.

Course Outcomes:

- **CO1**: Identify familiar everyday expressions. (Understand)
- CO2: Develop vocabulary and grammar skills. (Understand)
- CO3: Explain one's immediate environment. (Understand)
- **CO4**: Write a postcard in a particular scenario. (Apply)
- **CO5**: Explain one's day to day activity. (Understand)

Course Content:

Module I (12 hours)

Bon Voyage – Marseille Donner un conseil – décrire un lieu – C'est + lieu – les prépositions de lieu – on – les moyens de transport – localisation – comprendre et présenter des informations touristiques.

Module II (12 hours)

Un aller simple – À Londres Demander et donner l'heure – indiquer une date –

demander poliment – situer dans le temps – les verbes partir, faire au présent – les professions – réserver un billet de train – s'informer sur les activités des autres

Module III (10 hours)

Le dimanche matin - Un journée avec Laure Manaudou S'informer sur une

activité en cours, habituelle – dire quel sport on fait – parler des activités quotidiennes les verbes lire et écrire au présent – le genre des noms - les verbes pronominaux – faire de, jouer à + sport – comprendre un article de journal simple

Module IV (13hours)

On fait des crêpes ? – Il est comment ? Demander et exprimer des besoins – s'informer sur des habitudes – indiquer des quantités – les articles partitifs – rapporter desévénements passés – exprimer une opinion – le passé composé avec avoir – la formation du participe passé – parler des ses habitudes alimentaires – parler de sa journée

Module V (13 hours)

Chère Léa... - Les fêtes Interroger sur le moment et la durée – comprendre des souvenirs – le passé composé avec être – pour et dans + durée future – écrire une carte postale – évoquer des fêtes traditionnelles .

Text book

Guy Capelle, Robert Menand : Le Nouveau Taxi 1, Hachette Livre 2009, Lessons 1-10,

(Pp 38 - 64)

SEMESTER II

GENERAL COURSE

VSD2G03B23 - COMPANY LAW

CREDITS :

HOURS/WEEK : 4 TOTAL LECTURE HOURS : 60

4

Course Overview and Context:

The course introduces the meaning of company. The standard of business integrity and conduct in promotion *and* management of companies. Effective participation and control by shareholders and the protection of their legitimate interests.

A thorough study of various provisions of the *Companies Act* is a must for becoming a competent and efficient Company Secretary.

Course Outcomes :

CO1: Describe the framework of Companies Act 2013 and the procedure in the promotion and formation of the company (Understand)

CO2: Describe the types, related concepts and procedure of issue of share capital (Understand)

CO3: Explain the proceedings of company meetings. (Understand)

CO4: Explain the various grounds and procedures for winding up of companies. (Understand)

CO5: Discuss the concepts of Corporate Accountability and the requirement of keeping various books of accounts. (Understand)

Course Content :

Module I (12 Hours)

Legal structures of business, Forms of business association contrasted, Meaning and types of companies, Formation and incorporation of a company, ; advantages and disadvantages of incorporation; corporate personality.

Module II (12 Hours)

Promoters of company, Duties and Liabilities of Promoter, Memorandum and Articles of Association, Prospectus and Issue of Shares, Share Capital and Shareholders, 'Lifting the corporate veil', Doctrine of indoor management.

Module III (12 Hours)

Company Management, officers and organs of the company; Company Meetings and Proceedings; legal rules governing the enforceability of transactions with companies.

Module IV (12 Hours)

Directors. Appointment and tenure; Powers and Liabilities of Directors, executive and nonexecutive directors; Managerial Remuneration and Winding up of Company.

Module V (12 Hours)

Corporate accountability- requirement of keeping book of accounts, statutory books and statistical books, Annual accounts, Auditors- appointment, qualification, remuneration, removal of auditors.

References

- 1. N.D.Kapoor, Mercantile Law,
- 2. Dr S M Shukla and Dr O P Gupta, Mercantile Law
- 3. S S Gulshan, Excel Book, Mercantile Law
- 4. Maheshwari & Maheshwari, .Business Law,

SEMESTER III

SEMESTER III

GENERAL COURSE

VSD3G04B23: PRINCIPLES AND PRACTICES OF MANAGEMENT

CREDITS	:	4		
HOURS/WEEK	:	4	TOTAL LECTURE HOURS	:
60				

Course Overview and Context:

In modern business environments of constant change and turbulent external environments, the effective management of the organisation is paramount to achieving corporate success. This course introduces the theories, concepts and frameworks of management and how these lead to the effective management of a modern-day organisation. Students are introduced to the rich context and approaches of the theory and practice of management and explore the four critical dimensions of planning, organising, leading and controlling within an organisation. The course examines these four dimensions at three levels: the individual, the group and the organisation and applies them to case studies and other real-world contexts.

Managerial skills are what the manager uses to assist the organization in accomplishing its goals. Specifically, a manager will make use of his or her own abilities, knowledge base, experiences, and perspectives to increase the productivity of those with whom they manage.

Course Outcomes:

CO1: Describe the evolution of management.(Remember)

CO2: Identify the functions and principles of management.(Understand)

CO3: Discuss the planning and the process of effective controlling in the

organization.(Understand)

CO4: Explain the management functions in the special areas of staffing and motivation.(Understand

Syllabus Content :

Module I : Management (12 hours)

Definition, nature, importance, evolution of management thought, Contribution made by Taylor, Fayol, Hawthrone experiments. Maslow; Is managing a science or art? Functions of manager, ethics in managing and social responsibility of managers.

Module II : Planning & Control (12 hours)

Why Management process starts with planning, steps in planning, types of planning, barriers to effective planning, operational plan, strategic planning, Mckinsey's 7's Approach, SWOT analysis, Controlling- concept, Planning- control relationship, process of control, human response to control, dimensions of control, MBO.

Module III : Decision Making & Organizing (12 hours)

Nature, process of decision making, decision making under Certainty and Uncertainty, decisiontree, group-aided decision, brain-storming.

Organizing – concept, nature and process of organizing, authority and responsibility, delegation and empowerment, centralization and decentralization, concept of departmentation.

Module IV : Staffing & Motivation (12 hours)

Concept, Manpower planning, Job design, recruitment & selection, training and development, performance appraisal, motivation, motivators and satisfaction, motivating towards organizing objectives, morale building.

Module V : Leadership & Communication (12 hours)

Defining leadership and its role, should managers lead, leadership style, leadership development, Leadership behavior.

Communication- Process, Bridging gap-using tools of communication, electronic media in Communication.

References

- 1. Koontz Principles of Management (Tata McGrew Hill, 1st Edition 2008)
- 2. Robbins & Caulter Management (Prentice Hall of India, 8th Edition)
- 3. L.M. Prasad Principles & Practices of Management (Sultanchand & Sons , New Delhi)
- 4. Parag Diwan Management Principles and Practices (Excel Books, New Delhi)
- 5. Stoner, Freeman, Gilbert. Jr. Management (Prenlice Hall of India, 6th Edition)
- 6. Koontz, weihrich Essentials of Management (TMH, 5th Edition)

SEMESTER III

GENERAL COURSE

VSD3G05B23 : HUMAN RIGHTS

CREDITS	:	4		
HOURS/WEEK	:	4	TOTAL LECTURE HOURS :	60

Course Overview & Context :

The objective of Human Rights is to motivate students to take positive and peaceful action in support of human rights.

Jobs in this field have different roles and designations like human right activist, analyst, professional, campaigner, worker etc. A lot of Governmental organizations (national & state level), NGO's, Human Right agencies, social welfare departments and many other organizations absorb them as an employee.

Course Outcomes:

CO1: Develop the students to observe the nature and need for human rights to take positive actions in support of human rights. (Apply)

CO2: Describe systems prevailing under the Indian Constitution for the protection of human rights. (Understand)

CO3: Explain the implementation and development stages of Human rights in India. (Understand)

CO4: Identify the role of Human rights for the protection and upliftment of weaker sections of the society. (Understand)

Syllabus Content: Module I <u>THE CONCEPT OF HUMAN RIGHTS</u>

Introduction Nature and Meaning of Human Rights Origin of Human Rights Movement UN Charter and its Agencies International Movements for the Protection of Human Rights

Module II

PROTECTION OF HUMAN RIGHTS UNDER THE INDIAN CONSTITUTION

Introduction

Indian Constitution vis-à-vis International Human Rights Human Rights, Politics and Indian Judiciary Public Interest Litigation

Module III

IMPLEMENTATION OF HUMAN RIGHTS IN INDIA

Introduction

Position of Judiciary Under Indian Constitution

The Concept of 'Judicial Review' and Human Rights

Development of Human rights Through different Tools and

Technique

Module IV HUMAN RIGHTS AND WEAKER SECTIONS

Introduction Women and International Human Rights Women and Human Rights in India National Legislations Children and Human Rights in India

Module V <u>HUMAN RIGHTS OF ARRESTED PERSONS, UNDER TRIALS AND PRISONERS</u>

Rights of Arrested Persons Power of and Procedure for Arrest Rights of under trial Prisoners Rights of Prisoners

References:

1. S.K.Kapoor, International law & Human Rights in India.

SEMESTER III

GENERAL COURSE

ST3B04B23 : BASIC STATISTICS AND SPSS

CREDITS	:	4		
HOURS	:	4	TOTAL LECTURE HOURS :	60

Course Overview & Context:

- 1. To introduce basic concepts in Statistics
- 2. To explain different techniques used in a statistical investigation.
- 3. To familiarize statistical tools MS Excel and SPSS

Job skills include interpreting statistical models and numerical data to help organizations plan and make decision-making processes .

Course Content:

Module I (10 Hours)

Data and its organization: Data - Sources of data - Types of data - Collection of data Tabulation–frequency distribution - graphic representation- Histogram, frequency polygon, frequency curve, ogives

Analysis of Data: Measures of Central Tendency - Mean, Median and Mode. Requisites for an ideal measure of central tendency. Measures of Variation - Range, Quartile deviation, Mean deviation, Standard deviation & Coefficient of variation, Characteristics of an ideal measure of dispersion. Concepts of correlation and regression. Scatter diagram, Correlation table, correlation coefficient, regression coefficient, linear regression and prediction(Theory only)

Module II (20 Hours)

Interpretation of Data: Normal distribution - Importance and properties of Normal distribution. Theory of attributes - introduction, independence of attributes, criterion of independence,

association of attributes, Yule's coefficient of association, coefficient of colligation. Tests of significance- Null Hypothesis, level of significance, confidence interval, large sample tests for single proportion, single mean and difference of means, difference of standard deviations. Small sample tests-t test and F' test-t test of significance for single mean, paired t - test for related samples, difference in means and observed correlation coefficients, F test of significance for equality of population variances. - Chi square - test of goodness of fit, independence of attributes.

Module III(14 Hours)

- Data Handling using Excel: Getting started with Using functions Statistical Functions Frequency,
- Average, Median, Mode, Quartile, Standard Excel Work Book and Work Sheet Moving around in a work
- sheet Building a work sheet working with more than one cell at a time Formula and rules for using formula - Functions - Deviation, Variance, Correlation, Chi

test - Printing Data and Results. Charts: Column- Pie- XY (Scatter) - Frequency Polygon,

Frequency curve - Ogives- Formatting Charts - Printing Charts. Data Analysis Using Excel:

Frequency Distribution - Histogram - Descriptive Statistics Correlation - Regression.

Inferential Statistics: Statistical Tests: Testing a mean, t-test for a mean, two sample Z test for Means- Two sample t-test for means, Paired t- test, Chi-square test for Variance, Goodness of fit, Independence of Attributes.

Module IV (16 Hours)

Introduction to SPSS and its Applications: Defining variables - Numeric and String Variables - Assigning Names and Labels to variables and values - Entering Data - Summary Statistics - Frequencies - Descriptive Statistics Means - Crosstab - Graphs - Histograms and Bar charts-Scatter diagram, Pie Diagram - Bivariate Correlation - Linear regression - Test of mean - One Sample t-test, Independent sample t-test- Paired samples t-test - Chi-square test.

References

- 1. Scientific Methods and Social Research Gosh, B.N.- Sterling Publishers Pvt. Ltd. New Delhi,
- 2. Research Methodology, Methods and Techniques Kothari, C.R. Wiey Eastern Limited, New Delhi, 1990.

- 3. Research Methods in Social Science -Sharma, B.A.V. Prasad RD. and Satyanarayana, P. Sterling Publishers Pvt. Ltd, 1985.
- 4. Methodology and Techniques of Social Research Wilkinson, T.S. and Bhandarkar, P.L.Himalaya Publishing House, Bombay, 1984.
- 5. Statistical Methods Agarwal. Y.P. Sterling Publishers Pvt. Ltd, 1990.
- 6. Statistical Methods Gupta. S.P. Sultan Chand & Sons, New Delhi, 1996.
- 7. Statistical Methods for Biologists Palanisamy S. and Manobaran M.Paramount Publications, Palani, 1991.
- 8. Statistics Theory, Methods and Application Sancheti, D.C. and Kapoor.V.K. Sultan Chand & Sons, New Delhi, 1993.
- 9. Methods in Bio Statistics for medical students & Research workers B.K. Mahajan Jaypee Brothers.
- An Introduction to Bio Statistics (A manual for students in Health Science) P.S.S. Sundar Rao & J. Richard - Prentice Hall of India
- 11. Statistics made simple Do it yourself on PC K.V.S Sharma Prentice Hall of India, New Delhi.
- 12. A first Course in Computers Sanjay Saxena Vikas publishing house Pvt. Ltd.
- 13. Microsoft Office 2003 Bible Edward C. Willett Wiley Publishing, Inc.
- 14. Microsoft Office Excel 2003, A Beginners Guide Guy Hart Davis dream tech Press.
- 15. Introduction to Computers & MS Office Sanjay Saxena Vikas Publishing House Pvt. Ltd.
- 16. SPSS Explained Perry R. Hinton, Charlotte Brownlow, Isabella Mc Murray and Bob Cozens - Routledge Taylor and Francis Group, London & New York.

SEMESTER IV

SEMESTER IV

GENERAL COURSE

VSD4G06B23 : WEB PROGRAMMING USING PHP

CREDITS	:	4	
HOURS/WEEK	:	4	TOTAL LECTURE HOURS
: 60			

Course Overview & Context:

Knowledge of PHP is an essential skill for a wide variety of careers in business and information technology. Many emerging and growing career opportunities including web designing. The course curriculum is focused on the following objectives:

- To create MySQL users and grant privileges
- To test PHP and MySQL installations
- To configure PHP

This course provide job role as pht developer.PHP Developers write, test, and maintain code for the back-end of the website. Simultaneously, they also support the front-end development needs. They create the basic website functions like user logins, image or file uploads, blogs, and e-commerce checkout flows.

Course Outcomes:

CO1: Establish the installation of PHP and develop simple PHP programs(Apply level).

CO2: Analyze the construction of a web page and relate how PHP and HTML combine to produce the web page(Analyze).

CO3: Connect HTML forms to PHP scripts(Analyze)

CO4: Create Dynamic website using server side PHP Programming and Database connectivity(Apply).

CO5: Design a responsive web site(Create).

Syllabus Content:

Module I(12 hours)

Introduction to PHPInstallation of PHP and MySQL.PHP configuration in IIS & Apache Web Server and features of PHP.Writing PHP-How PHP code is parsed, Embedding PHP and HTML,Executing PHP and viewing in Browser, Data types, Operators, PHP variables: static and global variables, Comments in PHP

Module II (12 hours)

Control Structures

Condition statements-If...Else, Switch,? Operator,Loops-While, Break Statement,Continue Do...While,For,For each, Exit, Die, Return, Arrays in PHP.Working With Data- FORM element, INPUT elements, Validating the user input, Passing variables between pages,Passing variables through GET, Passing variables through POST,Passing variables through REQUEST.

Module III(12 hours)

Working With Functions-Built-in functions ,Sring Functions: chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim, substr, strcmp,strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print,Math Functions: abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand Array Functions: count, list, in_array, current, next, previous, end, each, sort, rsort, assort, array_merge, array_reverse, User Defined Functions

Module IV(12 hours)

Sessions and cookies- Concept of Session, Starting session, Modifying session variables, Un registering and deleting session variable, Concept of Cookies

Module V(12 hours)

Introduction of MySQL- Types of tables in MySQL, Query in MySQL: Select, Insert, Update, Delete, Truncate, Alias, Order By, Database connectivity of PHP with MySQL

Text Book/References:

- 1. Core PHP Programming Leon Atkinson Pearson publishers
- 2. The Complete Reference PHY Stever Holzner McGraw Hill
- 3. Beginning PHP 5.0 Database Christopher Scollo, Harish

- 4. Rawat, Deepak Thomas Wrox Press
- 5. PHP A beginners Ashok Appu Wiley
- 6. PHP 5.0 and MySql Bible Tim Converse, Joyce Park, Clark Morgan John Wiley & Sons
- 7. MySQL Bible Steve Suehring John Wiley & Sons
- 8. PHP Black Book Peter Moulding -
- 9. PHP 5 and Mysql Tim converse, Joyce Park and Clark Morgan Bible Wiley
- 10. Beginning PHP 5.3 Matt Doyle Wrox Publication

SEMESTER IV

GENERAL COURSE

VSD4G07B23 : ADVANCED SQL WITH ORACLE

CREDITS	:	4

HOURS/WEEK : 4

TOTAL LECTURE HOURS : 60

Course Overview and Context:

- To introduce advanced sql features with Oracle.
- To be familiar with database management.

SQL developer who will be responsible for designing databases and ensuring their stability, reliability, and performance.

Course Outcomes:

CO1: Apply relational database theory to construct relational algebra expression, tuple and domain relational expression for SQL queries (Apply)

CO2: Construct advanced SQL queries on data (Create)

CO3: Analyze PL/SQL structures like functions, procedures, cursors and triggers for database applications(Analyze).

CO4: Write programs using control structures, conditional and looping statements(Apply)

CO5: Construct advanced SQL queries on data and apply Procedural abilities through PL/SQL. (Create)

Course Content :

Module - I Structured Query Language :(12 hours)

Writing Basic SQL Select Statements, Restricting and Sorting Data, Creating and managing tables, including constraints, creating views, creating other database objects(Sequences, Indexes and Synonyms)

Module - II Advanced SQL (12 hours)

using SET operators, single row functions, Joins(Displaying data from multiple tables), aggregating data using group functions, grouping data from tables in sql- GROUPBY clause, having clause, subqueries.

Module - III PL/SQL (12 hours)

Introduction, Overview and benefits of PL/SQL, Subprograms, types of PL/SQL blocks, Simple Anonymous Block, Identifiers, types of identifiers, Declarative Section, variables, Scalar Data Types, The % Type attribute, bind variables in PL/SQL expressions, Executable statements, PL/SQL block syntax, comment the code, deployment of SQL functions in PL/SQL, Convert Data Types.Invoke SELECT Statements in PL/SQL.

Module – IV Control Structures :(12 hours)

Conditional processing using IF statements and CASE statements, Loop Statement, while loop statement, for loop statement, the continue statement composite data types : PL/SQL records, The % ROWTYPE attribute, insert and update with PL/SQL records

Module - V (12 hours)

SQL cursor concept, -implicit and explicit cursors,declare cursor, Fetch data from the Cursor, Close the Cursor, Cursor FOR loop,

Text Book

1. C.J. Date, Database Systems, Addison Wesley, 2000

References

- 1. Chip Dawes, Biju Thomas, Introduction to Oracle 9i SQL, BPB, 2002
- 2. Bob Bryla, Biju Thomas, Oracle 9i DBA Fundamental I, BPB, 2002
- 3. Doug Stums, Matthew Weshan, Oracle 9i DBA Fundamental I, BPB, 2002
- 4. Joseph C. Johnson, Oracle 9i Performance Tuning., BPB, 2002
GENERAL COURSE

VSD4G08B23 : INDIAN CONSTITUTION

CREDITS	:	4		
HOURS /WEEK	:	4	TOTAL LECTURE HOURS:	60

Course Overview and Context:

- Understand the need for a constitution
- Explain the role of constitution in a democratic society
- List the key features of the constitution
- Appreciate the fundamental rights of the citizens of india

Course Outcomes :

CO1: Describe the basic principles of the Indian Constitution.(Understanding)

CO2: Examine the concept of federalism and the description of fundamental rights in the Indian Constitution.(Apply)

CO3: Explanation of the constitutional organs such as Legislature Executive and Judiciary.(Understanding)

CO4: Describe the emergency provisions and the amendment procedure of the Indian Constitution.(Understanding)

Course Content :

Module I (15 Hours)

Constitution

Definition and Classification - Sources of Constitution - Constitutional Conventions - Salient features and provisions of Indian Constitution - Rule of Law - Separation of powers

Module II (15 Hours)

Distributive of Powers between Center and States

Legislative Powers - Administrative Powers - Financial Power

Doctrine of Territorial Nexus–Doctrine of Harmonious Construction-Doctrine of Pith and Substance-Doctrine of Repugnancy

Module III (15 Hours)

Constitutional Organs

(a) Parliament (b) Parliamentary Sovereignty (iii) Parliamentary Privileges (iv) Anti Defection

Law (v) Executive Power (vi) Collective Responsibility of Cabinet (vii) Judiciary-Jurisdiction of

Supreme Court and High Courts (viii) Independence of Judiciary

(ix) Public Interest Litigation (x) Power of Judicial Review

Module IV (15 Hours)

Emergency Provisions, Amendment of Constitution, Doctrine of Basic Structure,

Contractual and Tortious Liability of State, Right to Property and Freedom of Trade & Commerce

Text Book

1. J.N.Pandey – Constitutional Law of India **References**

- 1. Bakshi Constitutional law
- 2. V.N.Shukla Constitutional law

GENERAL COURSE

VSD5G09B23 : ENVIRONMENT STUDIES

CREDITS	:	4			
HOURS / WEEK	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

Environmental Studies is focussed on a holistic understanding of Earth systems in order to learn from the past, comprehend the present and influence the future. It is the study of how physical, chemical and biological processes maintain and interact with life, and includes the study of how humans affect nature.

This course gives employment opportunity as environment activist and responsible citiczen.

Course Outcomes:

CO1: Understand the multidisciplinary nature, important theories and concepts of environmental science, ecosystems, natural resources and conservation (Understand).

CO2: Identify various types of natural resources (Remember)

CO3: Describe the different components of ecosystem.(Understand)

CO4: Indicate skills and commitment to act independently and collectively to sustain and enrich the environment (Understand)

CO5: Review the transnational character of environmental problems and ways of

addressing them, including interactions across local to global scales.(understand)

Course Content :

Module I : (12 hours)

Multidisciplinary nature of environmental studiesDefinition, scope and importance

Need for public awareness.

Module II : (12 hours)

Natural Resources :Renewable and non-renewable resources : Natural resources and associated problems. a) Forest resources : Use and over-exploitation, deforestation, case studies.Timber extraction, mining, dams and their effects on forest and tribal people.

b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.

f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

Module III : (12 hours)

Ecosystems

- Concept of an ecosystem. IV
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the

following ecosystem :-a. Forest ecosystem

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

(6 lectures)

Module IV : Biodiversity and its conservation

- Introduction Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic

and option values

- Biodiversity at global, National and local levels.
- Inida as a mega-diversity nation V
- Hot-sports of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Module V :(12 hours)

Environmental Pollution Definition • Cause, effects and control measures of ,a. Air pollution, b. Water pollution,c. Soil pollution,d. Marine pollution,e. Noise pollution,f. Thermal pollution, g. Nuclear hazards

• Solid waste Management : Causes, effects and control measures of urban and industrial wastes.•

Role of an individual in prevention of pollution.

- Pollution case studies.
- Diaster management : floods, earthquake, cyclone and landslides.

References

a) Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

b) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd.,

Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)

c) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p

d) Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

e) Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001,

Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p

f) De A.K., Environmental Chemistry, Wiley Eastern Ltd.

g) Down to Earth, Centre for Science and Environment (R)

h) Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev.,

Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p

i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural

History Society, Bombay (R)

GENERAL COURSE

VSD5G10B23 : ENTREPRENEURSHIP

CREDITS	:	4		
HOURS	:	4	TOTAL LECTURE HOURS :	60

Course Overview and Context:

The students develop and can systematically apply an entrepreneurial way of thinking that will allow them to identify and create business opportunities that may be commercialized successfully.

- Setting the direction and establishing the desired image for the business.
- Seeking new directions and ways to improve and grow the company.
- Overseeing financial records and taking action, such as securing a new line of credit to handle unforeseen events.

Course Outcomes:

- **CO1** : Describe the basic aspects of entrepreneurship and marketing.(Understand)
- **CO2** : Explain the role of entrepreneurs in economic development.(Understand)
- CO3 : Identifying the various programmes promoting entrepreneurship.(Understand)
- CO4 : Identifying the various projects and and developing it.(Understand)
- **CO5** : Prepare a project report.(Apply)

Syllabus Content:

Module I(12 hours)

Entrepreneurship & Marketing

Entrepreneurship – Entrepreneur, Characteristics, Entrepreneurial Decision Process, Functions, Types and Need of Entrepreneur, Intrapreneur.

Marketing – Functions and problems of marketing, Marketing Segmentation & Marketing Mix

Module II(12 hours)

Role of Entrepreneur in Economic Development Entrepreneurship in Economic Development, Women Entrepreneur – Functions, Growth and Problems of Women Entrepreneurship. Developing Women Entrepreneurship and its Limitations.

Module III(12 hours)

Entrepreneurship Development Programmes

EDP – Objectives, Course Contents and Curriculum of EDPs, its phases, Evaluation and Problems of Entrepreneurship Development Programmes.

Module IV(12 hours)

Project Development and Project Formulation

Module V(12 hours)

Project Planning and Project Report

Textbook:

• Dr. S.S. Khanka, "Entrepreneurial Development"

GENERAL COURSE

VSD5G11B23 : LINUX OPERATING SYSTEMS

CREDITS	:	4		
HOURS/WEEK	:	4	TOTAL LECTURE HOURS :	60

Course Overview and Context:

This course covers the fundamentals of the Linux operating system and command line. The goal of this course is to provide a "starting place" for learning the Linux operating system. Individuals who complete this course should understand Linux as an operating system, basic open source concepts, how Linux is used and the basics of the Linux command line and shell programming.

This course enables students to pursue career as a Linux professional who performs system updates and server configurations. They are responsible for implementing changes in multiple environments from development to production.

Course Outcomes:

CO1: Explain concepts and components of Linux.(Understand)

CO2: Interpret common Linux commands and utilities for general file system operations. (Apply)

CO3: Construct shell scripts for common shell environments.(Create)

CO4: Implement system administration tasks to manage files, software, network, users, services.(Apply)

CO5: Interpret Filter Commands (Apply)

Syllabus Content:

Module I: (12 hours)

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell - Linux File system - Boot block, Super block, Inode table, Data blocks, Linux standard directories. Commands for files and directories – cd, ls, cp, rm, mkdir, rmdir, pwd, file, more, less, Creating and viewing files using cat, file comparisons, View files, disk related commands, checking disk free spaces.

Module II: (12 hours)

Essential Linux commands, Understanding shells, Processes in Linux, process fundamentals, connecting processes with pipes, redirecting input/output, Background processing, managing multiple processes, scheduling of processes. Batch commands, kill, ps, who, Printing commands, find, sort, touch, file, file processing commands - wc, cut, paste etc - mathematical commands - expr, factor etc. Creating and editing files with vi editor.

Module III: (12 hours)

System administration - Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accountsadding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disabling of user's accounts, creating and mounting file system, checking and monitoring system performance - file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel, installing and removing packages with rpm command

Module IV: (12 hours)

Shell programming - Basics of shell programming, various types of shell available in Linux, comparisons between various shells, shell programming in bash

Conditional and looping statements, case statement, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automating system tasks

Module V :Simple filter commands – pr, head, tail, cut, sort, uniq, tr - Filter using regular expression – grep, egrep, sed

Understanding various Servers ---DHCP, DNS, Squid, Apache, Telnet, FTP, Samba.

Textbooks

- 1. Red Hat Linux Bible" by Cristopher Negus, Wiley DreamtechIndia, Enterprise Edition
- 2. "UNIX Shell Programming" by YeswantKanethkar, BPB,2nd Edition

References

- 1. Official Red Hat Linux User's guide" by Redhat, Wiley Dreamtech India
- 2. "UNIX for programmers and users" by Graham Glass & King Ables, PearsonEducation
- 3. "Beginning Linux Programming" by Neil Mathew & Richard Stones, Wiley Dreamtech Indi

GENERAL COURSE

VSD6G12B23 : BUSINESS ETHICS

CREDITS	:	4			
HOURS	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

The objective of the course is to give a basic idea about the principles of business ethics. The students must learn about the importance of ethics in day to day life.

This course provides job role as an ethics officer. An ethics officer is a professional in compliance who evaluates a company's use of ethics and codes of conduct.

Course Outcomes :

CO 1: To discuss the ethical principles and relevance in business.(U)

CO 2: To examine basic elements of an ethical organization and designing the code of ethics of an organization. (A)

CO 3: To describe sustainable development, industrial pollution and related environmental

issues.(U)

CO 4: To explain the term corporate governance its importance, issues and obligations. (U)

CO 5: To describe consumer protection and legal protection available to consumers. (U)

Course Content

Module I(12 hours)

Introduction-Concept, relevance and importance, Ethical principles and relevance in business, Normative and Justice & Fairness .

Module II (12 hours)

Ethics and the organization

Organizational ethics, basic elements of an ethical organization, designing of code of ethics of an organization, dimensions of organizational ethics, benefits of managing ethics in the organization, current ethical related issues in organizations.

Module III(12 hours)

Environmental Ethics

Sustainable Development, Industrial Pollution & Environmental Issues.

Module IV(12 hours)

Corporate Governance

Introduction to corporate governance, Importance, Issues and Obligations.

Module V(12 hours)

Consumer Protection

Consumer & Consumer protection and Legal Protection to consumers.

References

- 1. Business Ethics Concepts & Cases , Velasquez, TMH Publication.
- 2. Ethics & the conduct of Business, Boatright, Pearson Publication
- 3. Business Ethics text and Cases Viswanath Ghosh, Vikas Publication
- 4. Business Ethics, S.K.Chakravorty, TMH Publication.
- 5. Business ethics in the Indian social system-kirandeeep kaur sumedha guptha

GENERAL COURSE

VSD6G13B23 : SOFTWARE TESTING

CREDITS	:	4			
HOURS/WEEK	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

Learn about the principles and methodologies used in software testing with this course.

This software testing course will familiarize you with the principles behind software and why it's so important for software development. By the end of this course, you will understand software testing processes, how to identify when to begin testing during a project's development, verification and validation within testing, and different levels of software tests.

This course provides following job roles.

1. QA Engineer \cdot 2. Test Manager \cdot 3. Test Engineer \cdot 4. Test Analyst \cdot 5. Test Automation Engineer.

Course Outcomes :

CO1: Understand the basic application of techniques used to identify useful ideas for tests. (Understand)

CO2:Illustrate a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing methods to the projects. (Apply)

CO3: Analyze and understand the use of software testing methods and modern software testing tools for their testing projects (Analyze)

CO4:Understand and design various levels of testing (Create).

CO5: Understand and analyze software test automation problems and solutions (Analyze).

Syllabus Content :

Module I (12 hours)

Fundamentals Of Testing: Human and errors ,Testing and Debugging, objectives of Testing,General Principles of Testing,Role of Tester,Software Quality Assurance (SQA)

Module II (12 hours)

Testing Techniques : Structural versus functional Technique Categories, Verification versus Validation , Static versus Dynamic Testing

Module III (12 hours)

Test Case Design : Introduction to testing design strategies – The smarter tester – Test case design strategies – Using black box approach to test case design – Equivalence class partitioning – Boundary value analysis – Other black box test design approaches –Using white box approach to test design – Test adequacy criteria – Coverage and control flow graphs – Covering code logic – Paths – Their role in white box based test design

Module IV (12 hours)

LEVELS OF TESTING : The need for Levers of Testing – Unit Test – Unit Test Planning – Designing the Unit Tests – –Running the Unit tests and Recording results – Test Harness-Integration tests – Designing Integration Tests – Integration Test Planning –-System Testing – Acceptance testing – Performance testing – Regression Testing – Ad-hoc testing – Alpha, Beta Tests

Module V (12 hours)

Test Automation : Software test Automation-Skill needed for Automation-Scope for Automation-Design and Architechture for Automation-Requirements for Test tool-Challenges in automatioTest metrics and measurements

References

1. Srinivasan Desikan and Gopalaswamy Ramesh, "Software Testing – Principles and Practices", Pearson education, 2006.

2. Software Testing – Principles and Techniques and tools"M G Limaye MC GrawHill Education

3. Aditya P.Mathur, "Foundations of Software Testing", Pearson Education, 2008.

4.Software Testing Foundations, Andreas Spillner, Tilo Linz, Hans Scharfer, Shoff Publishers and Distributors

GENERAL COURSE

VSD6G14B23 : CLOUD COMPUTING

CREDITS	:	4			
HOURS / WEEK	:	4	TOTAL LECTURE HOURS	:	60

Course Overview and Context:

- 1. Understanding the key dimensions of the challenge of Cloud Computing
- 2. Assessment of the economics, financial, and technological implications for selecting cloud computing for own organization
- 3. Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications.
- **4.** Assessment of own organizations' needs for capacity building and training in cloudcomputing-related IT areas.

This course provides following employability options.

Typical Job Levels and Responsibilities ·

- 1. Cloud administrator · 2. Cloud developer · 3. Cloud engineer · 4. Cloud architect ·
- 5. Cloud security ...

Course Outcomes :

CO1:Understand the theoretical background for cloud computing and storage, clouds working environments.(Understand)

CO2: Illustrate the methodologies and technologies for the development of applications that will be deployed and offered through cloud computing environments.(Create)

CO3: Categorize Virtualization management and virtualization technologies in cloud computing.(Analyze)

CO4: Implementation and management of cloud security and the various risk models in security.(Apply)

CO5 : Connect Market based management and third party cloud services.(Analyze)

Syllabus Content:

Module I

Introduction:

Historical development, Vision of Cloud Computing, Characteristics of cloud computing as per NIST, Cloud computing reference model ,Cloud computingenvironments, Cloud services requirements, Cloud and dynamic infrastructure, CloudAdoption and rudiments Applications-Satellite Image Processing ,Social networking.

ModuleII

Cloud Computing Architecture:

Cloud Reference Model, Types of Clouds, CloudInteroperability & Standards, Scalability and Fault Tolerance,

Cloud Solutions:

CloudEcosystem, Cloud Business Process Management, Cloud Service Management.

Module III

Cloud Management & Virtualization Technology:

Virtualization: Fundamental concepts of compute, storage, networking, desktopand application virtualization. Virtualization benefits, server virtualization, Block and file level storage virtualization.

Module IV

Cloud Security:

Security risks in cloud, security attacks in virtualization, security solutions in virtualization, securing the cloud, security boundary, CSA cloud reference model with security mechanisms, encryption, establishing identity and presence

Module V

Market Based Management of Clouds, Federated Clouds/Inter Cloud: Characterization &Definition, Cloud Federation Stack, and Third Party Cloud Services.

Textbook

1. Buyya, Selvi," Mastering Cloud Computing ",TMH Pub

References

- 1. Kumar Saurabh, "Cloud Computing", Wiley Pub
- 2. Krutz , Vines, "Cloud Security", Wiley Pub
- 3. Velte, "Cloud Computing A Practical Approach", TMH Pub
- 4. Sosinsky, "Cloud Computing", Wiley Pub