

DAYANANDA SAGAR ACADEMY OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under VTU)



CURRICULUM

Scheme and Syllabus I & II Semester Outcome Based Education

(Academic Year 2026-2027)

DEPARTMENT OF CSE IN IOT & CYBER SECURITY INCLUDING BLOCKCHAIN

1st & 2nd Semester B.E

ABOUT THE INSTITUTE

Dayananda Sagar Academy of Technology and Management- DSATM was established in 2011 with 5 UG Programs and 1 PG Program, currently there are 10UG courses, BArch course, and 2 PG courses the programs are approved by All India Council for Technical Education (AICTE) New Delhi, Affiliated to Visvesvaraya Technological University (VTU), Belagavi and DSATM is an autonomous institute from 2023-2024, (10 years), with NAAC A+ Grade,5 courses NBA Accredited.

The Dayananda Sagar Institutions is one of pioneer institutions in India and abroad with six decades of excellence in Academic and Research. The newer campuses were necessary to accommodate the growing need of the technology and innovation.

DSATM nurtures the students in academic, research, sports, cultural and extracurricular activities.

- Creating an academic environment to nurture and develop competent entrepreneurs, leaders and professionals who are socially sensitive and environmentally conscious.
- Integration of Outcome Based Education and cognitive teaching and learning strategies to enhance learning effectiveness.
- Developing necessary infrastructure to cater to the changing needs of Business and Society.
- Optimum utilization of the infrastructure and resources to achieve excellence in all areas of relevance.
- Adopting learning beyond curriculum through outbound activities and creative assignments.
- Imparting contemporary and emerging techno-managerial skills to keep pace with the changing global trends.
- Facilitating greater Industry-Institute Interaction for skill development and employability enhancement.
- Establishing systems and processes to facilitate research, innovation and entrepreneurship for holistic development of students.
- Implementation of Quality Assurance System in all Institutional processes.

VISION OF THE INSTITUTE

To strive at creating the institution a center of highest caliber of learning, so as to create an overall intellectual atmosphere with each deriving strength from the other to be the best of engineers, scientists with management & design skills.

MISSION OF THE INSTITUTE

- To serve its region, state, the nation and globally by preparing students to make meaningful contributions in an increasing complex global society challenge.
- To encourage, reflection on and evaluation of emerging needs and priorities with state-of-the-art infrastructure at institution.
- To support research and services establishing enhancements in technical, economic, human and cultural development.
- To establish interdisciplinary center of excellence, supporting/ promoting student's implementation.
- To increase the number of Doctorate holders to promote research culture on campus.
- To establish IIPC, IPR, EDC, innovation cells with functional MOU's supporting student's quality growth.

QUALITY POLICY

Dayananda Sagar Academy of Technology and Management aims at achieving academic excellence through continuous improvement in all spheres of Technical and Management education. In pursuit of excellence cutting – edge and contemporary skills are imparted to the utmost satisfaction of the students and the concerned stakeholders.

ABOUT THE DEPARTMENT

Year of Establishment: 2022 Intake of the Department = 60

Brief Details about Department of CSE in IoT & Cyber security including Blockchain

In today's world everything is connected to the Internet for ease of access, to monitor and control the devices across the globe. This provides an opportunity to automate different task and move all the communicating devices to be communicated through Internet. IoT is the most important technology for 21st century and it connects the device from home to industry, device to device or human to device.

The various industry which uses IoT are Manufacturing, Automotive, Transportation and Logistics, Retail, Public Sector, Health Care, Agriculture. The general safety across all industry is the requirement of securing these devices and its network. To secure the data generated due to communication between the devices, device to humans, and personal information are in demand.

Cyber Security courses aim to equip the students with the knowledge and skills required to defend your data, devices, and personal information from the attacker. This course provides a wide variety of opportunity in IT sector and in other manufacturing and production industries. As all devices are connected to Internet, the data generated is very huge. The data need to be accessed from the storage securely and should be available for access to the authorized users, the Blockchain provides this flexibility. Blockchain is a distributed ledger, in this system it records the information in such a way that it is impossible to change, hack or cheat the system.

VISION OF THE DEPARTMENT

To be frontier to provide the centre of Excellence in the field of IoT, Cybersecurity and Blockchain

MISSION OF THE DEPARTMENT

M1: a cutting-edge technology to the students to develop and innovate in IoT & Cybersecurity including Blockchain which proves to be an essential part for any organization.

M2: impart value based technical education of global standards.

M3: inculcate the entrepreneurship, technical knowledge and lifelong learning in theory and practice of Computer Science and Engineering in IoT & Cyber security including Blockchain.

M4: To strengthen the alumni and industrial association for development of students leading to technical and socio-economic growth.

PROGRAM EDUCATION OBJECTIVES (PEO'S):

PEO1: Employability: Having a successful professional career in Industry, Government, Academia, and Defense as an innovative engineer in a team.

PEO2: Higher Education: capable to pursue higher studies/research in the field of Engineering and other allied industries.

PEO3: Entrepreneurship: prepared for a successful career by meeting ever increasing demands required by Computer Science and Engineering profession and enable them to become an entrepreneur.

PEO4: Ethical: cultivated professional and ethical attitudes with effective communication skills, teamwork and multidisciplinary approach related to engineering issues.

PROGRAM OUTCOMES (PO's)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSO's)

PSO1: Practices of Computing: Connect learning from Core and Disciplinary/Interdisciplinary courses of CSE (IoT & Cybersecurity including Blockchain Technology) to assimilate Technological advancements in the field for analyzing and designing subsystem processes to arrive at the solution to real world problems.

PSO2: Knowledge in the domain specific: Acquire software skills pertinent to Research and industry practices in the field of CSE (IoT & Cybersecurity including Blockchain Technology); along with the soft skills like persistence, proper judgment through projects and industrial interactions.



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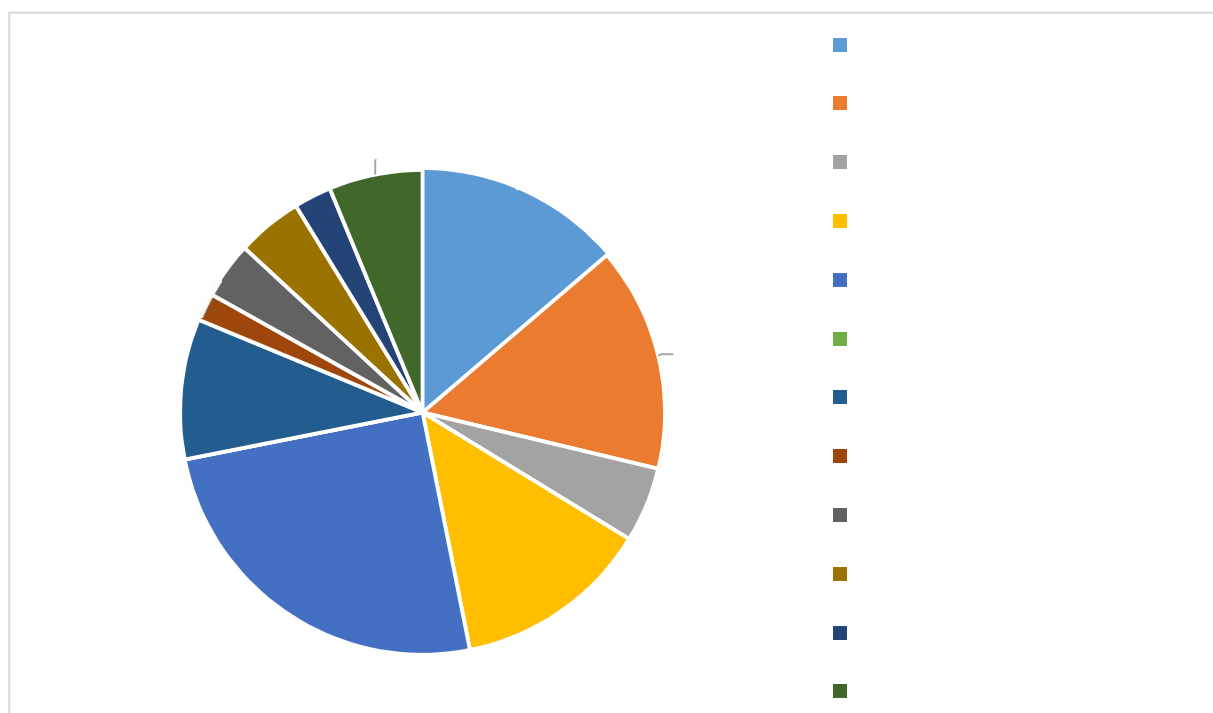
Affiliated to **VTU**
Approved by **AICTE**
Accredited by **NAAC** with **A+** Grade
6 Programs Accredited by **NBA**
(CSE, ISE, ECE, EEE, MECH, CV)

PROPOSED UG CREDIT STRUCTURE IN ALIGNMENT WITH VTU

Sl. No.	Semester	No. of Credits
1	1st Semester	20
2	2nd Semester	20
3	3rd Semester	21
4	4th Semester	21
5	5th Semester	22
6	6th Semester	22
7	7th Semester	20
8	8th Semester	14
Total		160

Scheme Distribution Department of CSE in IoT & Cybersecurity including Blockchain

Course Component	Credits	% of Credits
Basic Science (BS)	22	14
Engineering Science (ES)	24	15
Humanities (HU)	8	5
Program core (PC)	21	13
Program core Integrated (PCI)	40	25
Program core exclusive Lab	0	0
Program elective (PE)	15	9
Open Elective (OE)	3	2
Internship (INT)	6	4
Ability Enhancement course (AEC)	7	4
Mini Project (MPR)	4	3
Project (PR)	10	6
Total	160	100





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Scheme of Teaching and Examinations – 2023
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from 2023-24)

1st SEMESTER: PHYSICS CYCLE (Computer Science Stream) – Computer Science & Engineering (IOT & Cyber Security including Block Chain Technology)

Sl. No	Course Code	Course Title	Course Category	BOS	TD	Teaching Hours/Week					Credits	Examination			
						Lecture	Tutorial	Practical	Project	Total		SEE Duration (Hrs)	CIE Marks	SEE Marks	Total Marks
						L	T	P	S						
1	BMATS101	Engineering Mathematics-1	ASC	MAT	MAT	3	2	0	0	5	4	3	50	50	100
2	BPHYS102	Applied Physics for Computer Science Stream	ASC	PHY	PHY	2	2	2	0	6	4	3	50	50	100
3	BCECE105	Introduction to Electronics Engineering	CEC-1	ECE	ECE	3	0	0	0	3	3	3	50	50	100
4	BESCS101	Principles of Programming using C	ESC	ISE	CSE (IOT)	2	0	2	0	4	3	3	50	50	100
5	BETCS104	Introduction to Cyber Security	ETC	CSE(AI)	CSE (IOT)	2	0	0	2	4	3	3	50	50	100
6	BCENC106	Communicative English	HSSC	HSS	HSS	1	0	0	0	1	1	2	50	50	100
7	BICNC107	Indian Constitution	HSSC	MED	MED	1	0	0	0	1	1	2	50	50	100
8	BIDTC108	Innovation Design Thinking	AEC/SDC	ALD	ALD	1	0	0	0	1	1	2	50	50	100
Total						15	4	4	2	25	20	21	400	400	800

2nd SEMESTER: CHEMISTRTY CYCLE (Computer Science Stream) – Computer Science & Engineering (IOT & Cyber Security including Block Chain Technology)

Sl. No	Course Code	Course Title	Course Category	BOS	TD	Teaching Hours/Week					Credits	Examination			
						Lecture	Tutorial	Practical	Project	Total		SEE Duration (Hrs)	CIE Marks	SEE Marks	Total Marks
						L	T	P	S						
1	BMATC201	Engineering Mathematics-2	ASC	MAT	MAT	3	2	0	0	5	4	3	50	50	100
2	BCHES202	Applied Chemistry for Computer Science Stream	ASC	CHE	CHE	2	2	2	0	6	4	3	50	50	100
3	BCECM208	Introduction to Mechanical Engineering	CEC-2	MED	MED	3	0	0	0	3	3	3	50	50	100
4	BESCM202	Computer Aided Engineering Drawing	ESC	MED	MED	2	0	2	0	4	3	3	50	50	100
5	BPLCS201	Introduction to Python Programming	PLC	ISE	CSE(IOT)	2	0	2	0	4	3	3	50	50	100
6	BCENC206	Professional writing skills in English	HSSC	HSS	HSS	1	0	0	0	1	1	2	50	50	100
7	BSBKC207	Samskruthika Kannada	HSSC	HSS	HSS	1	0	0	0	1	1	2	50	50	100
8	BEEXC208	Engineering Exploration	AEC/SDC	ALD	ALD	0	0	0	2	2	1	2	50	50	100
Total						14	4	6	2	26	20	21	400	400	800

IPCC: Integrated Professional Core Course,

PCC: Professional Core Course

PBL: Project Based Learning

AEC: Ability Enhancement

Course, NCMC: Non-Credit

Mandatory Course L: Lecture,

T: Tutorial, P:Practical

S= SDA: Skill Development Activity,

CIE: Continuous Internal Evaluation,

SEE: Semester End Evaluation.

Integrated Professional Core Course (IPCC): Refers to Integrated Professional Core Course Theory Integrated with practicals of the same course. Credit for IPCC can be 04 and its Teaching Learning hours (L: T: P) can be considered as (3: 0: 2) or (2: 2: 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper.

Non-Credit Mandatory Course (NCMC) - National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Newly introduced subjects in the syllabus

		1 st Semester	2 nd Semester
1.	List of Existing Elective Courses		
2.	List of New Existing Elective Courses		
3.	List of New Industry Aligned Course		

Percentage of Change in the Syllabus- NA

1 st Semester						
Sl. No	Course Code	Course Name	Topics Added	Topics removed	Revised in %	Justification
1						
2						
3						
4						

2 nd Semester						
Sl. No	Course Code	Course Name	Topics Added	Topics removed	Revised in %	Justification
1						
2						
3						

1st Semester

ASC



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Semester	:	1 st			
Course Title	:	Engineering Mathematics – I for CSE & ECE Stream			
Course Code	:	BMATS/E101			
Course Type (Theory/ Practical/ Integrated)	:	Theory			
Course Category	:	ASC			
Stream	:	ECE, CSE & Allied branches		CIE	: 50 Marks
Teaching hour/week (L: T:P:S)	:	3:2:0:0		SEE	: 50 Marks
Total Hours	:	50 Hrs		SEE Duration	: 3 Hours
Credits	:	4			

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	Acquire basic knowledge of mathematical concepts for understanding engineering problems
2	Use concepts of calculus, differential equations and numerical methods in solving problems
3	Analyze problems using concepts of calculus, differential equations and numerical methods
4	Use MATLAB to obtain solutions of various mathematical problems

Teaching-Learning Process Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2025-26)

DSATM

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Partial differentiation Partial derivatives, total derivatives-differentiation of composite functions, maxima and minima for a function two variables, Jacobians, Hessian matrix.	10
Pedagogy	Chalk and board, group discussion, ppt, videos	
2	Ordinary Differential Equations of first order Linear differential equation, Bernoulli's equation, exact differential equations and reducible to exact differential equation, Newton's law of cooling- problems, rate of decay of radioactive materials, LR circuits.	10
Pedagogy	Chalk and board, group discussion, ppt, videos	
3	Ordinary Differential Equations of second and higher order Second and higher order differential equations, inverse differential operator, Legendre's differential equations, method of variation of parameters, LC Circuits and LCR Circuits, deflection of beams.	10
Pedagogy	Chalk and board, group discussion, ppt, videos	
4	Numerical solution of Ordinary Differential Equations Introduction to Taylor's series, Taylor's series method, Modified Euler's method, Runge-Kutta method of fourth order, Milne's predictor and corrector method, Milne's method for second order differential equations.	10
Pedagogy	Chalk and board, group discussion, ppt, videos	
5	Partial differential equations Formation of partial differential equation, solution of PDE by direct integration, numerical solution of Laplace equation using standard five-point formula, numerical solution of heat equation by Schmidt explicit formula, numerical solution of the wave equation.	10
Pedagogy	Chalk and board, group discussion, ppt, videos	

List of Experiments or Programs

Sl.No	Experiments/Programs	COs
	NIL	

Text Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	Advanced Engineering Mathematics, Erwin Kreyzig, Wiley Publications, 10 th Edition, 2015
2	Numerical Methods, M. K. Jain, S. R. K. Iyengar, R. K. Jain, New Age Publications, 6 th Edition, 2012
3	Theory and problems of Differential and integral calculus, Frank Ayres and Elliott Mendelson, Schaum's outline series, McGraw Hill publications, 3 rd Edition, 1990
4	Higher Engineering Mathematics, B. S. Grewal, Khanna Publications, 44 th Edition, 2021

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	Advanced mathematics for Engineers and Scientists, Murray R Spiegel, Schaum's outline series, McGraw Hill publications.
2	Higher Engineering Mathematics, H. K. Dass and Er. Rajnish Verma, S. Chand Publication, 3 rd Edition
3	Higher Engineering Mathematics, B.V. Ramana, McGraw-Hill Education, 11 th Edition, 2017
4	Engineering Mathematics, Srimanta Pal & Subodh C.Bhunia, Oxford University Press, 3 rd Edition, 2016.
5	A Textbook of Engineering Mathematics, N.P Bali and Manish Goyal, Laxmi Publications, 10 th Edition, 2022.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the basic concepts of calculus, differential equations and numerical methods	Understand	L2
CO2	Apply techniques of concepts of calculus, differential equations and numerical methods to solve Engineering Problems	Apply	L3
CO3	Analyze Engineering problems using concepts of calculus, differential equations and numerical methods	Analyse	L4
CO4	Develop mathematical solutions to various real time problems using MATLAB	Evaluate	L5

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1													--	--
CO2	3												--	--
CO3		2											--	--
CO4			2		2				1	1			--	--

Weblinks and Video Lectures (e-Resources)

1	https://archive.nptel.ac.in/courses/111/101/111101153/
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2	https://nptel.ac.in/courses/111103021
3	https://nptel.ac.in/courses/111106101
4	https://archive.nptel.ac.in/courses/111/107/111107105/

Assessment Pattern (both CIE and SEE)

Applied Science Courses

3 credits - Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				50			20	
CIE	Theory	Internal Assessment Test (IAT) - I	Module – 1, 2 & 3(half module)	50	(50+50) / 2	25	10	Average of Two Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) - II	Module - 3(half module), 4 & 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	25	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory					50	20	Scale down Marks of IAT and CCA to 50

SEE		Theory exam	Entire theory syllabus including questions from lab component	100	----	50	20	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
CIE + SEE				100	----	----	40	
				• The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component. • The Laboratory Component for the IPCC shall be for CIE only. • However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.				

The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks -25) in the Practical Component. The Laboratory Component of the IPCC shall be for CIE only. However, in SEE the questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the theory component of the IC shall be **25 Marks** and for the laboratory component **25 Marks**.

CIE for the theory component of the IC

Internal Assessment test:

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Two Tests each of **50 Marks** scaled down to **25 Marks**

- First test after 7th week of the semester (syllabus completion of 50%)
- Second test after 14th week of semester (syllabus completion of 100%)

The average score of two tests is taken and scaled down to **25 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **25 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
 - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **25 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **50 Marks**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day. The **10 Marks** are for conducting the experiment and preparation of the laboratory record, the other **10 Marks shall be for the test** conducted at the end of the semester and **5 Marks** for conducting Open Ended Experiments.
- The CIE Marks awarded in the case of the practical component shall be based on the continuous evaluation of the laboratory report and the conduction. Each experiment report can be evaluated for 05 Marks conduction(Observation Book) and 5 Marks for Record Book. Marks of all experiments' write-ups and conduction are added and scaled to **10 Marks**.
- The Practical laboratory test (**duration 03 hours**) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **10 Marks**.
- Open Ended Experiments are conducted after the completion of regular Experiments/Programs for 20 Marks and scaled down to **5 Marks**
- Scaled-down Marks of write-up, evaluations and tests, will be added as CIE Marks for the laboratory component of IC/IPCC for **25 Marks**.
- The minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum Marks) in the theory component and 10 (40% of maximum Marks) in the practical component.
- The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total Marks of all questions should not be more than 25 Marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student has to answer 5 full questions, selecting one full question from each module summing up to maximum score of 100 Marks. Marks **scored out of 100 shall proportionally be reduced to 50 Marks**.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module. The two questions should be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels

Bloom's Category	Theory				Practical
	Continuous Assessment Tests		Continuous Comprehensive Assessment (CCA)		Practical Test
	IAT-1	IAT-2	CCA-1	CCA-2	
	50 Marks	50 Marks	50 Marks	50 Marks	
Remember			30		
Understand	10	10	20		
Apply	30	30			
Analyse	10	10			
Evaluate				50	
Create					

CIE- Continuous Internal Evaluation (50 Marks)

CIE Course Assessment Plan

CO's		Marks Distribution					Total Marks	Weightage
	Test-1			Test-2				
	Module-1	Module-2	Module-3	Module-3	Module-4	Module-5		
CO1	5	5	5		5	5	25	25%
CO2	10	10	5	5	10	10	50	50%
CO3	5	5		5	5	5	25	25%
CO4								
CO5								
CO6								
Total	20	20	10	10	20	20	100	

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	
Understand	5
Apply	35
Analyse	10
Evaluate	
Create	

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5					5	10%
CO2	5	5	10	5	10	35	70%
CO3		5			5	10	20%
CO4							
CO5							
CO6							
Total	10	10	10	10	10	50	

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Introduction to the Course and syllabus	1
1	Partial derivatives- Definition and problems	1
1	Problems continued on above	1
1	Total Derivatives- problems	1
1	Partial Differentiation of Composite functions	1
1	Jacobians – Definition and problems	1
1	Definition and problems	1
1	Maxima and Minima for a function of two variables	1
1	Problems continued on above	1
1	Hessian matrix and problems	1
2	Linear differential equations of first order and first degree	1
2	Bernoulli's equation and problems	1
2	Exact equations and reducible to exact	1
2	Problems continued on the above	1
2	Newton's law of cooling and problems	1
2	Rate of decay of radioactive materials	1
2	Problems continued on the above	1
2	LR Circuits	1

2	Problems continued on the above	1
2	Problems continued on the above	1
3	Second and higher order differential equations	1
3	Inverse differential operator, three types, problems on type-I,	1
3	Problems on type-II	1
3	Problems on type-III	1
3	Legendre's differential equation and problems	1
3	Method of variation of parameters-problems	1
3	LCR Circuits-problems	1
3	Deflection of beams-problems	1
3	Problems on the above type	1
3	Problems on the above type	1
4	Introduction to Taylor's series	1
4	Numerical solution of ODE by Taylor's series method	1
4	Modified Euler's method and problems	1
4	Problems continued on the above	1
4	Runge-Kutta method of fourth order	1
4	Problems continued on the above	1
4	Milne's predictor and corrector method and problems	1
4	Problems continued on the above	1
4	Milne's method for second order differential equations	1
4	Problems continued on the above	1
5	Formation of partial differential equation-elimination of arbitrary constants	1
5	Formation of Partial Differential Equation-elimination of arbitrary functions	1
5	solution of PDE by direct integration	1
5	Problems continued on the above	1
5	Numerical solution of Laplace equation using standard five-point formula,	1
5	Problems continued on the above	1
5	Numerical solution of heat equation by Schmidt explicit formula	1
5	Problems continued on the above	1
5	Numerical solution of the wave equation	1
5	Problems continued on the above	1
		50 Hrs



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st /2 nd			
Course Title	:	Applied Physics for Computer Science Stream			
Course Code	:	BPHYS102/BPHYS202			
Course Type (Theory/ Practical/ Integrated)	:	Integrated			
Course Category	:	ASC			
Stream	:	Common to all CSE based branches	CIE	:	50 Marks
Teaching hours/ week (L:T:P:S)	:	(2:2:2:0)	SEE	:	50 Marks
Total Hours	:	40 Hrs (L) + 20 Hrs (P)			
Credits	:	04	SEE Duration	:	3 Hours

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	To explain the fundamental concepts of physics
2	To familiarize the students with various applications of physics that are relevant to the syllabus
3	To analyse given numericals and apply the theoretical concepts of physics for solving the same
4	To enlighten the concepts of physics for properties of different materials
5	To develop scientific temper among students and encourage them to do projects
6	To give an exposure towards practical knowledge for the theoretical concepts and to perform honest measurements

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Laser and Optical Fibers: LASER: Einstein's A and B Coefficients and Expression for Energy Density (Derivation), Laser Action: Conditions and Requisites of a laser system, Semiconductor Diode Laser, Applications: Bar code scanner, Measurement of pollutants in the environment, Numerical Problems. Optical Fiber: Acceptance angle and Numerical Aperture (NA), Derivation of Expression for NA, Classification of Optical Fibers, Attenuation, Applications: Point to point communication, Numerical Problems Pre requisite: Properties of light Self-learning: Characteristic properties of a LASER beam, Interaction of Radiation with Matter, Total Internal Reflection	8
Pedagogy	Chalk and talk: Expression for Energy Density (Derivation), Expression for NA PPT: Semiconductor Diode Laser Videos: Applications of Lasers and Optical Fibers	
2	Quantum Mechanics: de Broglie Hypothesis and Matter Waves, de Broglie wavelength and derivation of expression by analogy, Heisenberg's Uncertainty Principle and its application (Non existence of electron inside the nucleus - Non Relativistic), Principle of Complementarity, Wave Function and its properties, Time independent Schrödinger wave equation (Derivation), Physical Significance of a wave function and Born Interpretation, Expectation value, Eigen functions and Eigen Values, Particle inside one dimensional infinite potential well, it's energy Eigen values and Eigen States, Waveforms and Probabilities. Numerical Problems. Pre requisite: Wave-Particle dualism Self-learning: de Broglie Hypothesis	8
Pedagogy	PPT: Quantization of Energy States, Waveforms and Probabilities, Principle of Complementarity, Video: Quantization of Energy States, Waveforms and Probabilities Chalk Talk Group Discussion	
3	Quantum Computing: Principles of Quantum Information & Quantum Computing: Introduction to Quantum Computing, Moore's law & its end, Differences between Classical & Quantum computing. Concept of qubit and its properties. Representation of qubit by Bloch sphere. Single and Two qubits. Extension to N qubits. Dirac representation and matrix operations:	8

	Matrix representation of 0 and 1 States, Identity Operator I, Applying I to $0\rangle$ and $1\rangle$ states, Pauli Matrices and its operations on $0\rangle$ and $1\rangle$ states, Explanation of i) Conjugate of a matrix and ii) Transpose of a matrix. Unitary matrix U, Examples: Row and Column Matrices and their multiplication (Inner Product), Probability, and Quantum Superposition, normalization rule. Orthogonality, Orthonormality. Numerical Problems Quantum Gates: Quantum Not Gate, Pauli – X, Y and Z Gates, Hadamard Gate, Phase Gate (or S Gate), T Gate, CNOT Gate (Discussion for 4 different input states), Numerical Problems. Pre requisites: Matrices Self-learning: Moore's law, Young's double slit experiment	
Pedagogy	PPT: Introduction to Quantum Computing, Moore's law & its end, Differences between Classical & Quantum computing. Concept of qubit and its properties. Video: Representation of qubit by Bloch sphere. Single and Two qubits. Extension to N qubits. Chalk Talk Group Discussion Seminars	
4	Electrical Conductivity in metals Assumptions and Failures of Classical Free Electron Theory, Assumptions of Quantum Free Electron Theory, Fermi Energy, Density of States, Fermi Factor, Variation of Fermi Factor With Temperature and Energy level, Success of Quantum Free Electron Theory . Numerical Problems. Semiconductors and its classification, Fermi level in Intrinsic Semiconductor, Expression for concentration of electrons in conduction band & holes concentration in valence band (only mention the expression), Relation between Fermi energy & Energy gap in intrinsic semiconductors(derivation), Electrical conductivity of a semiconductor (derivation), Hall effect, Expression for Hall coefficient (derivation) and its application. Pre requisites: Fundamentals of semiconductor Self-learning: Fermi energy level for extrinsic semiconductors	8
Pedagogy	PPT: Hall coefficient (derivation) and its application. Video: Hall coefficient (derivation) and its application, classification of Semiconductors Chalk Talk, Group Discussion, Seminars	
5	Superconductivity Temperature dependence of resistivity, Mathessian rule, Superconductors, Meissner's Effect, Critical Field, Temperature dependence of Critical field, Types of Super Conductors, BCS theory (Qualitative), Quantum Tunnelling, High Temperature superconductivity, Josephson Junctions (Qualitative), DC and RF SQUIDS, Applications: Maglev Vehicles. Advanced Engineering Materials Nanomaterials: properties of nanomaterials, quantum confinement(Qualitative), synthesis methods(Top-down & bottom-up approaches) and applications, Shape memory alloys (SMA), Characteristics and applications of SMAs, NiTi alloy and its properties Pre requisites: Basics of nanomaterials Self-learning: Quantum Tunnelling	8

Pedagogy	PPT: Nanomaterials and shape memory alloy Video: Superconductor applications Chalk Talk Group Discussion Seminars
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List of Experiments or Programs

Sl.No	Experiments/Programs	Cos
1	Determination of wavelength of LASER using Diffraction Grating.	6
2	Determination of acceptance angle and numerical aperture of the given Optical Fiber.	6
3	Determination of Magnetic Flux Density at any point along the axis of a circular coil	6
4	Determination of resistivity of a semiconductor by Four Probe Method	6
5	Study the I-V Characteristics of the Given Bipolar Junction Transistor	6
6	Determination of dielectric constant of the material of capacitor by Charging and Discharging method.	6
7	Study the frequency response of Series & Parallel LCR circuits.	6
8	Determination of Plank's Constant using LEDs.	6
9	Identification of circuit elements in a Black Box and determination of values of the components	6
10	Study the Characteristics of a Photo-Diode and to determine the power responsivity / Verification of Inverse Square Law of Intensity of Light	6
11	GNU Step Interactive Simulations	4
12	PHET Interactive Simulations	4

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	A Textbook of Engineering Physics- M.N. Avadhanulu and P.G. Kshirsagar, 10 th revised Ed, S. Chand. & Company Ltd, New Delhi.
2	Engineering Physics-Gaur and Gupta-Dhanpat Rai Publications-2017.
3	Concepts of Modern Physics-Arthur Beiser: 6 th Ed; Tata McGraw Hill Edu Pvt Ltd- New Delhi 2006
4	An Introduction to Lasers theory and applications by M.N. Avadhanulu and P.S. Hemne revised Edition 2012. S. Chand and Company Ltd –New Delhi.
5	Fundamentals of Fibre Optics in Telecommunication & Sensor Systems, B.P. Pal, New Age International Publishers.
6	Quantum Computation and Quantum Information, Michel A. Nelsen & Isaac L. Chung, Cambridge Universities Press, 2010 Edition
7	Quantum Computing, Vishal Sahani, Mc Graw Hill Education, 2007 Edition

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the various fundamental concepts in Applied Physics	Remember/Understand	L1/L2
CO2	Apply the basic principles of physics in diverse engineering applications	Apply	L3

CO3	Analyse the given numerical and find the solutions	Analyse	L4
CO4	Design the simulations with the applications of physics	Evaluate	L5
CO5	Create scientific models, reports and posters in teams on applied physics themes	Create	L6
CO6	Conduct experiments in physics and perform precise and accurate measurements	Evaluate	L5

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CO2	3	--	--	--	--	--	--	--	--	--	--	--	--	--
CO3	--	2	--	--	--	--	--	--	--	--	--	--	--	--
CO4	--	--	2	--	2	--	--	--	--	--	--	--	--	--
CO5	--	--	--	--	--	--	--	--	2	2	--	1	--	--
CO6	--	--	--	--	2	--	--	--	2	2	--	2	--	--

Weblinks and Video Lectures (e-Resources)

1	Laser: https://www.britannica.com/technology/laser,k
2	Laser: https://nptel.ac.in/courses/115/102/115102124/
3	Quantum mechanics: https://nptel.ac.in/courses/115/104/115104096/
4	Physics: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html
5	Numerical Aperture of fiber: https://bop-iitk.vlabs.ac.in/exp/numerical-aperture-measurement

Assessment Pattern (both CIE and SEE)

Applied Science Courses

4 credits – (IPCC) - Theory and Practical

Assess ment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				50			20	
CIE	Theory	Internal Assessment Test (IAT) - I	Module - 1 & 2	50	(50+50) / 2	15	6	Average of Three Internal test each of 50 Marks scale down the
		Internal Assessment Test (IAT) - II	Module – 3,4& 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	10	4	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory						25	10

CIE	Practical	Conduction of Experiments	Continuous Evaluation of each experiment			Average of all Experiments	10	4	Performance of the Experiment (On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. 20 marks are for conducting the experiment and calculations/observations/output)
			Record	05	10				
			Observation book	05					
		Practical Test	Write up	15	50	----	10	4	One Internal Practical Test after conduction of all Experiments for 50 Marks
			Execution	25					
			Viva-voce	10					
		Open Ended Experiment	Write up	05	20	----	5	2	One experiment for 20 marks. 20 marks reduced to 05 marks
			Execution	10					
			Viva-voce	05					
		Total CIE Practical						25	10

SEE		Theory exam	Entire theory syllabus including questions from lab component	100	----	50	18	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
CIE + SEE				100	----	----	40	
				• The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component. • The Laboratory Component for the IPCC shall be for CIE only. • However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.				

The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks -25) in the Theory Component and 10 (40% of Maximum Marks -25) in the Practical Component. The Laboratory Component of the IPCC shall be for CIE only. However, in SEE the questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.
The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).
The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).
A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the theory component of the IC shall be **25 Marks** and for the laboratory component **25 Marks**.

CIE for the theory component of the IC
Internal Assessment test:

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests each of **50 Marks** scaled down to **25 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 100%)

The average score of three test is taken and scaled down to **15 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
 - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day. The **10 Marks** are for conducting the experiment and preparation of the laboratory record, the other **10 Marks shall be for the test** conducted at the end of the semester and **5 Marks** for conducting Open Ended Experiments.
- The CIE Marks awarded in the case of the practical component shall be based on the continuous evaluation of the laboratory report and the conduction. Each experiment report can be evaluated for 05 Marks conduction(Observation Book) and 5 Marks for Record Book. Marks of all experiments' write-ups and conduction are added and scaled to **10 Marks**.
- The Practical laboratory test (**duration 03 hours**) at the end of the 15th week of the semester after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **10 Marks**.
- Open Ended Experiments are conducted after the completion of regular Experiments/Programs for 20 Marks and scaled down to **5 Marks**
- Scaled-down Marks of write-up, evaluations and tests, will be added as CIE Marks for the laboratory component of IC/IPCC for **25 Marks**.
- The minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum Marks) in the theory component and 10 (40% of maximum Marks) in the practical component.
- The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total Marks of all questions should not be more than 25 Marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student has to answer 5 full questions, selecting one full question from each module summing up to maximum score of 100 Marks. Marks **scored out of 100 shall proportionally be reduced to 50 Marks**.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module. The two questions should be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory					Practical
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)		Practical Test 50 Marks
	IAT-1	IAT-2		CCA-1	CCA-2	
	50 Marks	50 Marks		50 Marks	50 Marks	
Remember	10	10				
Understand	24	24				15
Apply	8	8				
Analyse	8	8				10
Evaluate				50	50	25
Create						

CIE Course Assessment Plan

CO's	Marks Distribution						Total Marks	Weightage
	Test-1		Test-2					
	Module-1	Module-2	Module-3	Module-4	Module-5			
CO1	32	32	20	16	22		122	61
CO2	10	10	10	10	10		50	25
CO3	8	8	4	4	4		28	14
CO4								
CO5								
CO6								
Total	50	50	34	30	36		200	100

6

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	10
Understand	50

Apply	20
Analyse	10
Evaluate	--
Create	--

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	25	25	22	20	20	112	56
CO2	6	6	8	6	6	32	16
CO3	10	10	10	12	14	56	28
CO4	--	--	--	--	--	--	--
CO5	--	--	--	--	--	--	--
CO6	--	--	--	--	--	--	--
Total	41	41	40	38	40	200	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Einstein's A and B Coefficients : Rates of Absorption and emissions, Thermal Equilibrium, Boltzmann Relation, Derivation of Expression for Energy Density. Conclusions on Einstein's coefficients	1.5 Hrs
1	Laser Action: Population Inversion explanation, Metastable State: Description using 3 level system, Requisites of a laser system : Energy Source, Active Medium, Laser Cavity	1
1	Semiconductor Diode Laser: Principle, Construction, Working, merits and demerits. Applications of LASER: Bar code scanner, Measurement of pollutants	1
1	Numerical Problems: Einstein coefficients, Boltzmann factor	0.5
1	Propagation of Light Through the Optical fiber (Ray Diagram), Acceptance angle and Numerical Aperture (NA) Explanation and derivation	1
1	Modes of Propagation and RI Profile, Classification of Optical Fibers: Single Mode Step Index and Multi Mode Step and Graded Index Fibers,	1
1	Attenuation, Attenuation Coefficient, Types of Fiber Losses: Absorption, Scattering and Geometrical Losses, Applications: point to point Communication	1
1	Numerical Problems : Numerical Aperture, Acceptance angle and Attenuation Co-efficient.	1
2	Statement of de-Broglie Hypothesis, Derivation of expression for de Broglie wavelength (λ) by analogy and different forms of expression for (λ)	1
2	Heisenberg's Uncertainty Principle, Non existence of electron inside the nucleus (Non-relativistic),	1
2	Principle of Complementarity, Correlation between de Broglie Wavelength, Heisenberg's Uncertainty principle and wave packet, Wave Function, Explanation, General Mathematical Form (Exponential),	1

2	Physical Significance of a wave function (Probability Density) and Born Interpretation, Expectation value, Eigen functions and Eigen Values,	1
2	Schrödinger Time Independent wave definition, Setting up of Time independent Schrodinger wave equation in 1D (derivation) and extension to 3D (mention)	1
2	One Dimensional Potential Well Explanation and Boundary conditions, Schrödinger Wave equation for a particle in 1 D infinite potential well, General Solution, Applying Boundary Conditions, Energy Eigen Values (Quantization of Energy States), Normalization and Eigen Function, Variation of wave functions and probability density distributions for $n = 1, 2, 3$ states	2
2	Numerical Problems on de Broglie Hypothesis, Heisenberg's Uncertainty Principle, Energy Eigen Values for a particle in 1D infinite potential well	1
3	Introduction to Quantum Computing, Moore's law & its end. Differences between classical & quantum computing.	1
3	Concept of qubit and its properties. Representation of qubit by Bloch sphere. single and two qubits. Extension to N qubits.	1
3	Matrix representation of 0 and 1 States, Identity Operator I, Applying I to $ 0\rangle$ and $ 1\rangle$ states to show there is no change, Pauli Matrices and its operations on 0 and 1 states, Explanation of i) Conjugate of a matrix and ii) Transpose of a matrix. Unitary Matrix U, Examples: Row and Column Matrices and their multiplication (Inner Product), Probability, and Quantum Superposition, normalization rule. Orthogonality, Orthonormality.	2
3	Quantum Not Gate, Pauli – X, Y and Z Gates, Hadamard Gate, Phase Gate (or S Gate), T Gate	1
3	Controlled gate, CNOT Gate,	1
3	Numerical Problems: Identity, Unitary, Inner Product, Orthogonality, Gates: X Gates, Hadamard Gate, CNOT Gate, Relating T and S gates (Standard Forms),	2
4	Assumptions and Failures of Classical Free Electron Theory, Assumptions of Quantum Free Electron Theory,	2
4	Fermi Energy, Density of States, Fermi Factor, Variation of Fermi Factor With Temperature and Energy level, Success of Quantum Free Electron Theory.	1
4	Semiconductors and its classification, Fermi level in Intrinsic Semiconductor, Expression for concentration of electrons in conduction band & holes concentration in valance band (only mention the expression),	2
4	Relation between Fermi energy & Energy gap in intrinsic semiconductors(derivation), Electrical conductivity of a semiconductor (derivation), Explanation of Hall Effect, Hall Voltage, Hall field, Derivation of Expression for Hall coefficient and Hall Voltage. Applications.	2
4	Numerical Problems: Fermi energy, Fermi factor, electrical conductivity metals, semiconductor	1
5	General Introduction about Superconductivity, Graphical approach of Temperature dependence of resistivity in metals, Mathiessen's rule [$\rho = \rho_0 + \rho(T)$], Temperature dependence of resistivity in superconductors, Definition of superconductivity & Critical temperature. Meissner's Effect,	1
5	Critical field, Temperature dependence of Critical field, Detailed explanation of Type I & Type-II Superconductors. BCS Theory: Phonon & Phonon field, cooper pairs, High Temperature Superconductors(qualitative)	1
5	Brief explanation of SQUID & mention its applications, The construction and working of MAGLEV vehicle.	1
5	Numerical Problem: Critical field, Mathiessen's rule	1
5	Nanomaterials, synthesis methods (qualitative) properties and applications, quantum confinement(Qualitative),	2
5	Shape memory alloys (SMA), Characteristics, Properties of NiTi alloy, applications	1
Total		40 Hrs

CEC-1



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st / 2 nd				
Course Title	:	Introduction to Electronics Engineering				
Course Code	:	BCECE105/BCECE205				
Course Type (Theory/ Practical/ Integrated)	:	Theory				
Course Category	:	CEC-1/ CEC-2				
Stream	:	Other Branches		CIE	:	50 Marks
Teaching hours/ week (L:T:P:S)	:	3:0:0:0		SEE	:	50 Marks
Total Hours	:	40 Hrs T		SEE Duration	:	03 Hours
Credits	:	03				

Course Learning Objectives: Students will be taught

Sl. No	Course Objectives
1	Learn the fundamentals of integrated circuits, communication systems and advanced technologies
2	Familiarise in applying the concepts of electronic circuits and devices for the given application
3	Provide the knowledge in examining various electronic circuits
4	Impart design skills of circuits for real time applications
5	Equip with the usage of modern tools to simulate various integrated circuits

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
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(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Digital Electronics: Binary, Decimal, Octal and hexadecimal Number systems, Number base Conversion, Complements, Basic theorems and properties of Boolean algebra, Boolean functions, Canonical and Standard forms, Digital Logic gates. Combinational Logic: Introduction, Adders: Half adder and Full adders. Text-1	8
Pedagogy	Mobile Studio	
2	Operational Amplifiers: Introduction, Block diagram of OPAMP, OPAMP parameters, Ideal and Practical Characteristics of OPAMP. OPAMP applications: Inverting and Non-Inverting Amplifiers, Voltage Follower, Summer, Differentiator, Integrator Text-2	8
Pedagogy	Think Pair Share	
3	Embedded Systems – Definition, Embedded systems vs General Computing Systems, Classification of Embedded Systems, Major application areas of Embedded Systems, Elements of an Embedded System, Core of the Embedded System, Microprocessor vs Microcontroller, RISC vs CISC. Text – 3 Sensors, types and its Applications Text – 5	8
Pedagogy	Case Studies	
4	Analog Communication – Communication system scheme, Information source, and input transducer, Transmitter, Channel or Medium – Hardwired and Soft wired, Noise, Receiver, Multiplexing, Types of communication systems. Types of modulation (only concepts) – AM, FM. Digital Communication: Advantages of digital communication over analog communication, ASK, FSK, PSK, Radio signal transmission, Multiple Access Techniques. Text - 4	8
Pedagogy	Demonstration	
5	Cellular wireless networks: Cellular Telephone system, Cellular concepts, Network topology, wireless LAN, Bluetooth. Text - 4 Fundamentals of VLSI: Evolution of Microelectronics, Basics structures NMOS, PMOS and CMOS, Moore's Law, Depletion Mode and Enhancement mode Transistors, VLSI Design flow. Text - 5	8
Pedagogy	Flipped Class Room	

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-203- 0417-84
2	Op-amps and Linear Integrated Circuits, Ramakanth A Gayakwad, Pearson Education, 4 th Edition
3	K V Shibu, 'Introduction to Embedded Systems', 2nd Edition, McGraw Hill Education (India), Private Limited, 2016
4	S L Kakani and Priyanka Punglia, 'Communication Systems', New Age International Publisher, 2017
5	Raj Kamal , 'Internet of Things – Architecture and Design Principles', Mc Graw Hill Education

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the concepts of integrated circuits, communication systems and advanced technologies.	L2	Understand
CO2	Apply the fundamentals of integrated circuits to provide solution for analog and digital circuits.	L3	Apply
CO3	Analyse the operation of electronic circuits for a given problem scenario.	L4	Analyse
CO4	Design Linear Integrated and logic circuits for real time applications.	L3	Apply
CO5	Examine the performance of various electronic circuits using modern tools.	L4	Analyse

Mapping of Course Outcomes to Program Outcomes:

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3		2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	-	-	3	2	-	-	-	-	2	2	-	-	2	-	-
CO5	-	-	-	-	2	-	-	-	2	2	-	2	2	-	-

Weblinks and Video Lectures (e-Resources)

1	https://nptel.ac.in/courses/122106025
2	https://nptel.ac.in/courses/108105132
3	https://nptel.ac.in/courses/117104072
4	https://E-learning.vtu.ac.in
5	https://www.coursera.org/courses/digital-circuits

Assessment Pattern (both CIE and SEE)

Engineering Science Course (ESC) / Emerging Technology Course (ETC) / Programming Language Course (PLC)

3 credits - Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory				50			20	
CIE	Theory	Internal Assessment Test (IAT) - I	Module - 1 & 2	50	(50+50) / 2	25	10	Average of Two Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) - II	Module – 3,4&5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	25	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory						50	20

								50
SEE		Theory exam	Entire theory Syllabus	100	----	50	18	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
CIE + SEE				100	----	----	40	

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.

The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Group Problem Solving, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty may adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the internal assessment test shall be **25 Marks** and for the continuous and comprehensive assessment (CCA) shall be **25 Marks**.

Internal Assessment test:

The IA test questions are to be framed to map the course outcomes, program outcomes and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests each of 50 Marks

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 100%)

The average score of two test is taken and scaled down to **25 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **25 Marks**

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
 - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **25 Marks**

Total Marks scored for theory component of CIE (IAT + CCA) is **50 Marks**

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English

The duration of SEE is 03 hours.

	The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student must answer 5 full questions, selecting one full question from each module, summing up to maximum score of 100 Marks. Marks scored out of 100 shall proportionally be reduced to 50 Marks. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module. The two questions shall be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels
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CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory					Practical
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)		Practical Test 50 Marks
	IAT-1	IAT-2	IAT-3	CCA-1	CCA-2	
	50 Marks	50 Marks	50 Marks	50 Marks	50 Marks	
Remember	--	--	--	--	--	NA
Understand	10	20	20	--	--	NA
Apply	25	20	20	20	20	NA
Analyse	15	10	10	20	20	NA
Evaluate	--	--	--	10	10	NA
Create	--	--	--	--	--	NA

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage (%)
	Test-1		Test-2		Module-5		
	Module-1	Module-2	Module-3	Module-4			
CO1	04	06	10	10	20	50	33
CO2	10	05	10	10	20	55	37
CO3	10	05	05	05	10	35	23
CO4	05	05	--	--	--	10	07
CO5	--	--	--	--	--	--	--
Total	29	21	25	25	50	150	100

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (100% Theory)
Remember	--
Understand	33%
Apply	50%
Analyse	17%
Evaluate	--
Create	--

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage (%)
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	05	06	08	06	08	33	33
CO2	05	07	06	08	07	33	33
CO3	--	-	06	06	05	17	17
CO4	10	07	--	--	--	17	17
CO5	--	--	--	--	--	--	--
Total	20	20	20	20	20	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Digital Electronics: Binary, Decimal, Octal and hexadecimal Number systems,	1
	Number base Conversion,	1
	Complements,.	1
	Basic theorems and properties of Boolean algebra,	1
	Boolean functions,	1
	Canonical and Standard forms, Digital Logic gates.	1
	Combinational Logic: Introduction, Adders: Half adder and	1
	Full adders	1
2	Operational Amplifiers: Introduction, Block diagram representation of OPAMP, .	1
	OPAMP parameters,	1
	Ideal Characteristics of OPAMP.	1
	Practical Characteristics of OPAMP.	1
	OPAMP applications: Inverting and Non-Inverting amplifiers,	1
	Voltage Follower, summer,	1
	Differentiator,	1
	Integrator	1
3	Embedded Systems – Definition, Embedded systems vs General Computing Systems,	1

	Classification of Embedded Systems, Major application areas of Embedded Systems,	1
	Elements of an Embedded System, Core of the Embedded System,	1
	Microprocessor vs Microcontroller, RISC vs CISC.	1
	Introduction to sensors	1
	Sensor types	1
	Sensor types Contd	1
	Applications of Sensors	1
4	Analog Communication – Modern communication system scheme, Information source, and input transducer,	1
	Transmitter, Channel or Medium – Hardwired and Soft wired,	1
	Noise, Receiver, Multiplexing,	1
	Types of communication systems. Types of modulation (only concepts) – AM, FM.	1
	Digital Communication : Advantages of digital communication over analog communication,	1
	ASK, FSK, PSK,	1
	Radio signal transmission,	1
5	Multiple Access Techniques.	1
	Cellular wireless networks: Cellular Telephone system,	1
	Cellular concepts, Network topology,	1
	wireless LAN,	1
	Bluetooth.	1
	Fundamentals of VLSI: Evolution of Microelectronics,	1
	Basics structures NMOS, PMOS and CMOS,	1
	Moore's Law, Depletion Mode and Enhancement mode Transistors,	1
	VLSI Design flow,	1
Total		40 Hrs



ESC



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st / 2 nd			
Course Title	:	Principles of Programming Using C			
Course Code	:	BESCS101 / BESCS201			
Course Type (Theory/ Practical/ Integrated)	:	Integrated			
Category	:	ESC-1 / ESC-2			
Stream	:	Common to all branches	CIE	:	50 Marks
Teaching hours/ week (L:T:P:S)	:	2:0:2:0	SEE	:	50 Marks
Total Hours	:	28+12=40 Hrs	SEE	:	3 Hours
Credits	:	03	Duration	:	

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	Understand the basics of computers and C programming.
2	Learn the concepts of Functions, and Strings using C programming.
3	Study different Searching, Sorting techniques, and File handling in C.
4	Explore user-defined data structures such as Arrays, Pointers, and Structures in implementing solutions to problems.
5	Design and develop solutions to problems using a structured programming approach.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Adopt different teaching methods to attain the course outcomes.
2. Include videos to demonstrate various concepts in C.
3. Encourage collaborative (Group) Learning to encourage team building.
4. Ask at least three **HOTS (Higher-order Thinking Skills)** module-wise questions to promote critical thinking.
5. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
6. Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
7. Discuss various case studies to map with real-world scenarios and improve the understanding.
8. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE CURRICULUM

Module No.	Topics	Hours
1	Introduction to C: Fundamentals of computing, Flowcharts, Pseudocodes, Algorithm, Data types, Variables, Constants, Pre-processors, Introduction to C, Structure of C program, Files used in a C program, Compilers, Compiling and executing C programs, Types of Errors, Applications of C language.	5
2	Operators and expressions in C: Operators in C: arithmetic, relational, equality, logical, assignment, unary, conditional, bitwise operator, Increment and decrement operator, Conditional Operator, operator precedence, keywords and identifiers, type conversion and typecasting. Decision control and Looping statements: Introduction to decision control, Conditional branching statements, Iterative statements, Nested loops, break and continue statements, goto statement.	5
3	Functions: Basics of functions, function call, return statement, passing parameters to functions, scope of variables, storage classes, recursive and non-recursive functions. Arrays: Declaration of arrays, accessing the elements of an array, storing values in arrays, operations on arrays, one-dimensional array, multidimensional arrays, passing arrays to functions, applications of arrays	6
4	Strings: Introduction, String taxonomy, operations on strings, miscellaneous string and character functions, arrays of strings: Pointers: Introduction to pointers, Declaring pointer variables, Pointer to pointer, passing arguments to functions using pointers, Array of pointers, Dynamic memory allocation functions malloc/realloc/free. Structure and Union: Introduction, Structures and functions, Unions, Unions inside structures, Self-referential structures.	6

5	Searching algorithm: Linear search, Binary search. Sorting algorithm: Selection sort, Insertion sort, Bubble sort. File Handling: Introduction, Using files, Read and Write Operations on files	6
	Pedagogical Initiatives (Not limited to): • Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another • Problem Solving: encourages cognitive thinking and enables creative problem solving • Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily. • Case studies: maps different domains in real time applications • Demonstration: exhibits the implementation process	

List of Programs:

Sl. No.	Experiments/Programs	COs
1	Write a C program to implement a Simple Calculator.	CO1
2	a) Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages. b) Write a C program to print Pyramid of stars patterns using Looping	CO1
3	Implement Matrix multiplication and validate the rules of multiplication using C Program.	CO1
4	Write a C program for the following condition using Functions, Assume a Car servicing Center. Every service request by the Car Service Center the given charges are levied along with taxes. a. Car water wash - Rs. 500 + 10% tax b. Oil in the Engine must be at least 300 ml. If it goes below 300 ml (Ask the user to input the current level of oil in the engine), top up is done by the agency (the value of top up is given by the user so that level is at least 300 ml). Cost of 1 ml is Rs. 5 + 12.5% tax. 1. Define suitable variables to capture the above 2 parameters and corresponding taxes 2. Compute the total amount to be paid. 3. Display the total with 17 places which includes 7 places for fraction. The integer part of the total must be prefixed with 0's and a sign, if required.	CO2
5	Write a program in C using functions to swap two numbers using global variables concept and call by reference concept.	CO2
6	Implement a C program to read the values from the user today's date and your Date of birth in the format dd-mm-yyyy. Consider your sleeping time 8 hours a day, read 12 hours and spend 1.5 hours a day for eating. Calculate how many minutes have you spent as of this date for Sleeping and Eating. The number of years you have spent for reading as of this date (amount of time spent for reading in years).	CO2

7	a) Write functions to implement string operations such as compare, concatenate, and find string length. Use the parameter passing techniques. b) Implement a C Program to check String is a Palindrome or Not	CO2
8	Write a C Program to Implement linear search and binary search.	CO3
9	Write a C Program to Implement Bubble Sort.	CO3
10	Write a C program to read employee information (Name, Designation, Salary) from the user and write it to a file.	CO3
11	Write a C Program to input even & odd elements of an array in two separate arrays. The program first finds the odd and even elements of the array. Then the odd elements of an array are stored in one array and even elements of an array is stored in another array	CO4
12	Write a C program to define a structure to represent a cricketer's information (name, runs, average). Read the data corresponding to N Cricketer's in a structure array. The space for the array of structures should be determined at run-time by user input.	CO4
Open ended Programs		
1	Develop a 'C' program to calculate the gravitational pull between two objects.	CO1
2	Demonstrate a simple units convertor for distance, temperature, and liquid volume.	CO1
3	Calculate the displacement for an automobile using pointers.	CO4
4	Demonstrate the use of an array of pointers.	CO4

CIE for Principles of Programming Using C (Integrated Professional Core Course (IPCC)):

This Course refers to professional theory core course integrated with practical. Credit for this course can be 03 and its Teaching Learning hours (L : T : P: PJ) can be considered as (2 : 0 : 2 : 0).

15 marks for the conduction of practical experiment and preparation of the Laboratory record, and **10 marks** for the test to be conducted after the completion of all the laboratory sessions.

On completion of every program in the laboratory, the student shall be evaluated including viva-voce and marks shall be awarded on the same day.

Each program report can be evaluated for **15 marks** (Write-up – 3 marks, Execution – 8 marks .and Viva – 4 marks)

The Laboratory test (duration 2 hours / 3 hours) after completion of all the programs shall be conducted for 50 marks and scaled down to **10 marks**.

The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper.

This course is common to all branches of first year B.E/B.Tech. 2023-24 regulation.

Note: L- Theory Lecture, T- Tutorial, P-Practical, PJ-Project, IPCC: Integrated Professional Core Course, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	Computer Fundamentals and Programming in C, Reema Thareja, Oxford University, Second Edition, ISBN-13: 978-0-19-946373-2, 2017.
2	C, The Complete Reference is a book on computer programming, Herbert Schildt, McGraw Hill Education, 4th Edition, ISBN-13: 978-0070411838, 2017.
Reference Books	
1	C: How to program, H. M. Deitel, P. J. Deitel, Pearson Education, 7 th Edition, ISBN-13. 978-9332555310, 2010.
2	Programming in ANSI C, E. Balaguruswamy, Tata McGraw-Hill, 7 th Edition, ISBN 1-874152-02-0, 2019.
3	C Programming for Dummies, Dan Hookin, John Wiley & Sons, 2nd Edition, ISBN-13: 978-1119740247, 2021.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Understand the basics of programming in C	U	L2
CO2	Apply the knowledge of Functions, Strings using C Programming	A	L3
CO3	Analyse the user-defined data structures such as Arrays, Pointers and Structures in implementing solutions to problems.	An	L4
CO4	Implement different searching, sorting techniques, and file handling operations.	C	L5
CO5	Develop solutions to problems using structured programming approach	C	L5

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C02	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C03	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--
C04	--	--	3	--	--	--	--	--	--	--	--	--	--	--	--
C05	--	--	--	3	--	--	--	--	3	--	--	3	--	--	--

Weblinks and Video Lectures (e-Resources)

1	https://archive.nptel.ac.in/courses/106/105/106105171/ (12 Weeks NPTEL Course Videos)
2	https://researchcomputing.princeton.edu/education/external-online-resources/cplusplus
3	https://www.w3schools.com/c/
4	https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/
5	https://sanfoundry.com/c-programming-examples-linked-list/
6	https://onlinecourses.swayam2.ac.in/cec20_cs02/preview
7	https://www.youtube.com/watch?v=_MF8L7ZxwRE
8	https://www.youtube.com/watch?v=0Sg6QHmIFJE
9	https://www.newtondesk.com/c-programming-handwritten-study-notes-pdf/
10	https://www.eskimo.com/~scs/c/class/notes/top.html
11	https://www.javatpoint.com/c-programming-language-tutorial
12	https://www.tutorialspoint.com/cprogramming/index.htm

Engineering Science Course (ESC) / Emerging Technology Course (ETC) / Programming Language Course (PLC)

3 Credits & 2 Credits Courses – Theory (if Integrated)

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				50	----	----	20	
CIE	Theory	Internal Assessment Test (IAT) - I	Module - 1 & 2	50	(50+50) / 2	15	6	Average of Two Internal test each of 50 Marks scale down the marks to 15 Marks
		Internal Assessment Test (IAT) - II	Module – 3,5 & 4	50				
				50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	10	4	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory					25	10	Scale down Marks of IAT and CCA to 25

CIE	Practical	Conduction of Experiments	Continuous Evaluation of each experiment			Average of all Experiments	10	4	Performance of the Experiment (On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. 20 marks are for conducting the experiment and calculations/observations/output)
			Record	05	10				
			Observation book	05					
		Practical Test	Write up	15	50	----	10	4	One Internal Practical Test after conduction of all Experiments for 50 Marks
			Execution	25					
			Viva-voce	10					
		Open Ended Experiment	Write up	05	20	----	5	2	One experiment for 20 marks. 20 marks reduced to 05 marks
			Execution	10					
			Viva-voce	05					
			Total CIE Practical					25	10

SEE		Theory exam	Entire theory syllabus including questions from lab Component in respective Modules	100	----	50	20	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
CIE + SEE				100	----	----	40	

- The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component.
- The Laboratory Component for the IPCC shall be for CIE only.
- However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.

Note: If few of the 3 Credit Courses are Integrated course type, for such courses the method suggested for 4 Credit IPCC Course shall be followed

The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks -25) in the Practical Component. The Laboratory Component of the IPCC shall be for CIE only. However, in SEE the questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 40% of the maximum Marks (20 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 40% (20 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the theory component of the IC shall be **25 Marks** and for the laboratory component **25 Marks**.

CIE for the theory component of the IC

Internal Assessment test:

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests each of **50 Marks** scaled down to **25 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 70%)
- Third test after 14th week of semester (syllabus completion of 90 – 100%)

The average score of three test is taken and scaled down to **15 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
 - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day. The **10 Marks** are for conducting the experiment and preparation of the laboratory record, the other **10 Marks shall be for the test** conducted at the end of the semester and **5 Marks** for conducting Open Ended Experiments.
- The CIE Marks awarded in the case of the practical component shall be based on the continuous evaluation of the laboratory report and the conduction. Each experiment report can be evaluated for 05 Marks conduction(Observation Book) and 5 Marks for Record Book. Marks of all experiments' write-ups and conduction are added and scaled to **10 Marks**.
- The Practical laboratory test (**duration 03 hours**) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **10 Marks**.
- Open Ended Experiments are conducted after the completion of regular Experiments/Programs for 20 Marks and scaled down to **5 Marks**
- Scaled-down Marks of write-up, evaluations and tests, will be added as CIE Marks for the laboratory component of IC/IPCC for **25 Marks**.
- The minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum Marks) in the theory component and 10 (40% of maximum Marks) in the practical component.
- The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total Marks of all questions should not be more than 25 Marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student has to answer 5 full questions, selecting one full question from each module summing up to maximum score of 100 Marks. Marks **scored out of 100 shall proportionally be reduced to 50 Marks**.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module. The two questions should be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory					Practical
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)		Practical Test 50 Marks
	IAT-1	IAT-2		CCA-1	CCA-2	
	50 Marks	50 Marks		50 Marks	50 Marks	
Remember	10	-				-
Understand	20	10				-
Apply	20	20				20
Analyse	-	20				-
Evaluate	-	-				-
Create	-	-	-			30

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	25	25				50	33.3%
CO2			25			25	16.6%
CO3				25		25	16.6%
CO4					50	50	33.3%
CO5	5	5	5	5	5	25	25% (Lab)
Total	25	25	25	25	50	150	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	--
Understand	10
Apply	15
Analyse	15
Evaluate	--
Create	10

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	--	--	--	20	20%
CO2	10	10	10	--	--	30	30%
CO3	--	--	10	10	--	20	20%
CO4	--	--	--	--	20	20	20%
CO5	--	3	2	3	2	10	10%
Total	20	23	22	13	22	100	100%

ETC



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1st /2nd			
Course Title	:	Introduction to Cyber Security			
Course Code	:	BETCS104 / BETCS204			
Course Type (Theory/ Practical/ Integrated)	:	Theory			
Course Category	:	ETC-1 / ETC-2			
Stream	:	CSE		CIE	: 50 Marks
Teaching Hours/week (L:T:P:S)	:	3:0:0:0		SEE	: 50 Marks
Total Hours	:	40 Hrs		SEE Duration	: 3 Hours
Credits	:	3			

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	Learn the types of cybercrime, motivation behind the cybercrime, and Indian ITA 2000.
2	Get an overview of various steps involved in hacking, tools used in hacking, cyberstalking, botnet and attack vector.
3	Learn about proxy servers, DoS and DDoS, Steganography, and difference between worm, virus, and Trojan Horse.
4	Understand the different types of phishing, whaling and identity theft.
5	Learn the fundamental concepts of Computer Forensics.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Introduction to Computer Networking: Layered Architecture, Address used in various layers of Communication (IP address, Port, MAC address), Topologies, networking devices Introduction to Cybercrime: Cybercrime: Definition and Origins of the Word, Cybercrime and Information Security, who are Cybercriminals? Classifications of Cybercrimes, An Indian Perspective, Hacking and Indian Laws., Global Perspectives Textbook:1 Chapter 1 (1.1 to 1.5, 1.7-1.9)	8hr
Pedagogy	Quiz, Seminar	
2	Cyber Offenses: How Criminals Plan Them: Introduction, how criminals plan the attacks, Social Engineering, Cyber Stalking, Cybercafé & cybercrimes. Botnets: The fuel for cybercrime, Attack Vector. Textbook:1 Chapter 2 (2.1 to 2.7)	8hr
Pedagogy	Demonstrating the tools usage, seminar	
3	Tools and Methods used in Cybercrime: Introduction, Proxy Servers, Anonymizers, Phishing, Password Cracking, Key Loggers and Spy ways, Virus and Worms, Trojan Horses and Backdoors, Steganography, DoS and DDOS Attacks, Attacks on Wireless networks. Textbook:1 Chapter 4 (4.1 to 4.9, 4.12)	8hr
Pedagogy	Demonstrating the tools usage, seminar	
4	Phishing and Identity Theft: Introduction, methods of phishing, phishing, phishing techniques, spear phishing, types of phishing scams, phishing toolkits and spy phishing, counter measures, Identity Theft Textbook:1 Chapter 5 (5.1. to 5.3)	8hr
Pedagogy	Quiz and Seminar	
5	Understanding Computer Forensics: Introduction, Historical Background of Cyber forensics, Digital Forensics Science, Need for Computer Forensics, Cyber Forensics and Digital Evidence, Digital Forensic Life cycle, Chain of Custody Concepts, network forensics. Textbook:1 Chapter 7 (7.1. to 7.5, 7.7 to 7.9)	8hr
Pedagogy	Quiz and Seminar	

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Cyber Security: Understanding cybercrime, computer Forensics and Legal Perspective By Nina, Godbole and Sunit Belapure.
2	Computer Networking: This Book Includes: Computer Networking for Beginners and Beginners Guide (All in One) by Russell Scott

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the concept of basic of Networking, Cyber security and issues and challenges associated with it.	Understand	L2
CO2	Distinguish the cyber-crimes, their nature, legal remedies and as to how report the crimes through available platforms and procedures.	Analyse	L4
CO3	Understand the fundamental concepts of cyber forensics, cybercrime investigations, data privacy issues and tools available.	Understand	L2
CO4	Acquire knowledge on various privacy and security concerns while using the social media and reporting procedure of inappropriate content, underlying legal aspects.	Apply	L3

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	--	2	--	--	--	--	--	3	--	--	--	2	--	--
CO2	--	3	--	--	3	--	--	3	--	--	--	2	--	--
CO3	--	--	--	3	3	--	--	3	--	--	--	2	--	--
CO4	--	--	--	3	--	--	--	3	--	--	--	2	--	--
	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Weblinks and Video Lectures (e-Resources)	
1	https://www.youtube.com/watch?v=6_Cxj5WKplw
2	https://www.youtube.com/watch?v=khDuC8oCkUM
3	https://www.youtube.com/watch?v=JoeiLuFNBc4&list=PLBlnK6fEyqRgJU3EsOYDTW7m6SUmW6kII
4	https://www.youtube.com/watch?v=gx0vIRpdFnc&list=PLBlnK6fEyqRgJU3EsOYDTW7m6SUmW6kII&index=2
5	https://www.youtube.com/watch?v=cg1p3SRZHNY

Assessment Pattern (both CIE and SEE)

Engineering Science Course (ESC) / Emerging Technology Course (ETC) / Programming Language Course (PLC)

3 credits - Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory + Practical				50			20	
CIE	Theory	Internal Assessment Test (IAT) - I	Module - 1 & 2	50	(50+50) / 2	25	10	Average of Two Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) - II	Module - 3 & 4	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	25	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory						50	20

								50
SEE		Theory exam	Entire theory syllabus including questions from lab component	100	----	50	18	SEE Exam is theory Exam conducted for 100 Marks, scored Marks are scaled down to 50 Marks
CIE + SEE				100	----	----	40	
				• The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component. • The Laboratory Component for the IPCC shall be for CIE only. • However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.				

4 Credit Course – IPCC

The Minimum Marks to be secured in CIE to appear for SEE shall be 10marks (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks -25) in the Practical Component. The Laboratory Component of the IPCC shall be for CIE only. However, in SEE the questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the theory component of the IPCC shall be **25 Marks** and for the laboratory component **25 Marks**.

CIE for the theory component of the IPCC Internal Assessment Test (IAT):

The IA test questions are to be framed to map the Course Outcomes(COs), Program Outcomes(POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests each of **50 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 100%)

The average score of two test is taken and scaled down to **15 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.
 - The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

CIE for the practical component of the IPCC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day. The **10 Marks** are for conducting the experiment and preparation of the laboratory record, the other **10 Marks shall be for the test** conducted at the end of the semester and **5 Marks** for conducting Open Ended Experiments.
- The CIE Marks awarded in the case of the practical component shall be based on the continuous evaluation of the laboratory report and the conduction. Each experiment report can be evaluated for 05 Marks conduction(Observation Book) and 5 Marks for Record Book. Marks of all experiments' write-ups and conduction are added and scaled to **10 Marks**.
- The Practical laboratory test (**duration 03 hours**) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **10 Marks**.
- Open Ended Experiments are conducted after the completion of regular Experiments/Programs for 20 Marks and scaled down to **5 Marks**
- Scaled-down Marks of write-up, evaluations and tests, will be added as CIE Marks for the laboratory component of IC/IPCC for **25 Marks**.
- The minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum Marks) in the theory component and 10 (40% of maximum Marks) in the practical component.
- The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total Marks of all questions should not be more than 25 Marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. **The duration of SEE is 03 hours.**
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student has to answer 5 full questions, selecting one full question from each module summing up to maximum score of 100 Marks. Marks **scored out of 100 shall proportionally be reduced to 50 Marks**.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module. The two questions shall be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels

3 Credit Course – Theory

The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks -25) in the Practical Component. The Laboratory Component of the IPCC shall be for CIE only. However, in SEE the questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Project based, Problem Based, Building Models, Lab-to-Land, Mobile Studio, Design and Programming Contest, Certification, Concept Map (Collage presentation/poster presentation), Case studies, Think-Pair-Share, Flipped classroom, storytelling. The assessment of these techniques can be either based on Quiz or rubrics.

The faculty can adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the theory component of the IC shall be **25 Marks** and for the laboratory component **25 Marks**.

CIE for the theory component of the IC

Internal Assessment test:

The IA test questions are to be framed to map the Course Outcomes (COs), Program Outcomes (POs) and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests each of **50 Marks** scaled down to **25 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 70%)
- Third test after 14th week of semester (syllabus completion of 90 – 100%)

The average score of three test is taken and scaled down to **15 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **10 Marks**.

- CCA1 after 4th week and CCA2 after 9th week. The evaluation includes either through quiz or rubrics
- CCA as project-based learning,
 - CCA is evaluated for **50 Marks** with review 1 of **20 Marks** after and review 2 of **30 Marks** includes project demonstration/competition and report submission.

- The evaluation of review 1 after 6th weeks of semester and review 2 after 12th week of semester with project demonstration and submission of the report

Total score for CCA is **10 Marks**

Total Marks scored for theory component of CIE (IAT+ CCA) is **25 Marks**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and Marks shall be awarded on the same day. The **10 Marks** are for conducting the experiment and preparation of the laboratory record, the other **10 Marks shall be for the test** conducted at the end of the semester and **5 Marks** for conducting Open Ended Experiments.
- The CIE Marks awarded in the case of the practical component shall be based on the continuous evaluation of the laboratory report and the conduction. Each experiment report can be evaluated for 05 Marks conduction(Observation Book) and 5 Marks for Record Book. Marks of all experiments' write-ups and conduction are added and scaled to **10 Marks**.
- The Practical laboratory test (**duration 03 hours**) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for **50 Marks** and scaled down to **10 Marks**.
- Open Ended Experiments are conducted after the completion of regular Experiments/Programs for 20 Marks and scaled down to **5 Marks**
- Scaled-down Marks of write-up, evaluations and tests, will be added as CIE Marks for the laboratory component of IC/IPCC for **25 Marks**.
- The minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum Marks) in the theory component and 10 (40% of maximum Marks) in the practical component.
- The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total Marks of all questions should not be more than 25 Marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)
- The question paper shall be set for 100 Marks. The medium of the question paper shall be English. The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 Marks. The student has to answer 5 full questions, selecting one full question from each module summing up to maximum score of 100 Marks. Marks **scored out of 100 shall proportionally be reduced to 50 Marks**.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module. The two questions should be of same course outcome, program outcome and Blooms RBT level. Emphasis to be given for higher order RBT levels

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory				
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)	
	IAT-1	IAT-2		CCA-1	CCA-2
	50 Marks	50 Marks		50 Marks	50 Marks
Remember	10%	10%			
Understand	40%	40%			
Apply	40%	40%			
Analyse	10%	10%		50	50
Evaluate					
Create					

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	25			05	20	50	33.33%
CO2		25		--	05	30	20%
CO3			25	10	05	40	26.27%
CO4				10	20	30	20%
Total	25	25	25	25	50	150	

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	10%
Understand	60-70%
Apply	10-15%
Analyse	5-10%
Evaluate	--
Create	--

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	20	--	--	05	10	35	35
CO2	--	20	--	--	--	20	20
CO3	--	--	20	10	--	30	30
CO4	--	--	--	05	10	15	10
Total	20	20	20	20	20	100	100

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
	Introduction to Course, Discussion on CO, PO, CIE, SEE, Assignment	1
1	Introduction to Computer Networking: Layered Architecture,	1
1	Address used in various layers of Communication (IP address, Port, MAC address),	1
1	Topologies, networking devices	1
1	Introduction to Cybercrime: Cybercrime: Definition and Origins of the Word,	1
1	Cybercrime and Information Security,	1
1	who are Cybercriminals? Classifications of Cybercrimes	1
1	An Indian Perspective,	1
1	Hacking and Indian Laws., Global Perspectives	1
2	Cyber Offenses:	1
	How Criminals Plan Them: Introduction, ,	
2	how criminals plan the attacks	1
2	Social Engineering	1
2	Cyber Stalking	1
2	Cyber Stalking	1
2	Cybercafé & cybercrimes	1
2	Botnets: The fuel for cybercrime	1
2	Attack Vector	1
3	Tools and Methods used in Cybercrime: Introduction, Proxy Servers, Anonymizers	1
3	Phishing, Password Cracking,	1
3	Key Loggers and Spy ways	1
3	Virus and Worms	1
3	Trojan Horses and Backdoors	1
3	Steganography	1
3	DoS and DDOS Attacks	1
3	Attacks on Wireless networks.	1
4	Phishing and Identity Theft: Introduction, methods of phishing	1
4	phishing techniques	1
4	spear phishing	1
4	types of phishing scams	1
4	phishing toolkits and spy phishing	1
4	phishing toolkits and spy phishing	1
4	Phishing counter measures,	1
4	Identity Theft	1
5	Understanding Computer Forensics: Introduction, , ,	1
5	Historical Background of Cyber forensics	1

5	Digital Forensics Science	1
5	Need for Computer Forensics	1
5	Cyber Forensics and Digital Evidence	1
5	Digital Forensic Life cycle	1
5	Digital Forensic Life cycle	1
5	Chain of Custody Concepts, network forensics.	1
Total		41Hrs

HSSC



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st				
Course Title	:	Communicative English				
Course Code	:	BCENC106				
Course Type (Theory/ Practical/ Integrated)	:	Theory				
Course Category	:	HSSC				
Stream	:	Common to All Branches		CIE	:	50 Marks
Credits (L:T:P:S)	:	1:0:0:0		SEE	:	50 Marks
Total Hours	:	15 Hrs		SEE Duration	:	2 Hours
Credits	:	1				

Course Learning Objectives: Students will be taught.

Sl.No	Course Objectives
1	To know about Fundamentals of Communicative English and Communication Skills in general.
2	To train to identify the nuances of phonetics, intonation and enhance pronunciation skills for better Communication skills.
3	To impart basic English grammar and essentials of important language skills.
4	To enhance with English vocabulary and language proficiency for better communication skills.
5	To learn about Techniques of Information Transfer through presentation.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Introduction to Communicative English: Communicative English, Fundamentals of Communicative English, Process of Communication, Barriers to Effective Communicative English, Different styles and levels in Communicative English. Interpersonal and Intrapersonal Communication Skills.	03
Pedagogy	(i) Direct instructional method (Low/Old Technology) (ii) Enquiry and evaluation-based learning (iii) Personalized learning (iv) Problems based learning through discussion (v) Chalk & Talk, Interaction, Live examples & Videos	
2	Introduction to Phonetics: Phonetic Transcription, English Pronunciation, Pronunciation Guidelines to consonants and vowels, Sounds Mispronounced, Silent and Non silent Letters, Syllables and Structure. Word Accent, Stress Shift and Intonation, Spelling Rules and Words often Misspelt. Common Errors in Pronunciation.	03
Pedagogy	(i) Direct instructional method (Low/Old Technology) (ii) Enquiry and evaluation-based learning (iii) Personalized learning (iv) Problems based learning through discussion (v) Chalk & Talk, Interaction, Live examples & Videos	
3	Basic English Communicative Grammar and Vocabulary PART- I: Grammar: Basic English Grammar and Parts of Speech, Articles and Preposition. Question Tags, One Word Substitutes, Strong and Weak forms of words, Introduction to Vocabulary, All Types of Vocabulary – Exercises on it.	03
Pedagogy	(i) Direct instructional method (Low/Old Technology) (ii) Enquiry and evaluation-based learning (iii) Personalized learning (iv) Problems based learning through discussion (v) Chalk & Talk, Interaction, Live examples & Videos	
	Basic English Communicative Grammar and Vocabulary PART - II:	

4	Words formation - Prefixes and Suffixes, Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises, Tense and Types of tenses, The Sequence of Tenses (Rules in use of Tenses) and Exercises on it.	03
Pedagogy	(i) Direct instructional method (Low/Old Technology) (ii) Enquiry and evaluation-based learning (iii) Personalized learning (iv) Problems based learning through discussion (v) Chalk & Talk, Interaction, Live examples & Videos	
5	Communication Skills for Employment: Information Transfer: Oral Presentation and its Practice. Difference between Extempore/Public Speaking, Communication Guidelines. Mother Tongue Influence (MTI), Various Techniques for Neutralization of Mother Tongue Influence. Reading and Listening Comprehensions – Exercises.	03
Pedagogy	(i) Direct instructional method (Low/Old Technology) (ii) Enquiry and evaluation-based learning (iii) Personalized learning (iv) Problems based learning through discussion (v) Chalk & Talk, Interaction, Live examples & Videos	

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Communication Skills by Sanjay Kumar & Pushp Lata, Oxford University Press India Pvt Ltd - 2019.
2	A Textbook of English Language Communication Skills, (ISBN-978-81-955465-2-7), Published by Infinite Learning Solutions, Bengaluru - 2022.
3	Technical Communication: Principals & Practice (Third edition) Meenakshi Raman & Sangeeta Sharma Oxford University Press
4	Technical Communication by Gajendra Singh Chauhan and Et al, (ISBN-978-93-5350-050-4), Cengage learning India Pvt Limited [Latest Revised Edition] - 2019.
5	English Language Communication Skills – Lab Manual cum Workbook, Cengage learning India Pvt Limited [Latest Revised Edition] – (ISBN-978-93-86668-45-5), 2019.
6	A Course in Technical English – D Praveen Sam, KN Shoba, Cambridge University Press – 2020.
7	Practical English Usage by Michael Swan, Oxford University Press – 2016.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand and apply the Fundamentals of Communication Skills in their communication skills.	Understand	L-2
CO2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.	Remember	L-1
CO3	To impart basic English grammar and essentials of language skills as per present requirement.	Understand	L-2
CO4	Understand and use all types of English vocabulary and language proficiency.	Understand	L-2
CO5	Adopt the Techniques of Information Transfer through presentation.	Remember	L-1

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	--	--	--	--	--	--	--	--	2	2	--	2	--	--
CO2	--	--	--	--	--	--	--	--	1	1	--	1	--	--
CO3	--	--	--	--	--	--	--	--	1	2	--	2	--	--
CO4	--	--	--	--	--	--	--	--	2	2	--	1	--	--
CO5	--	--	--	--	--	--	--	--	2	1	--	2	--	--

Weblinks and Video Lectures (e-Resources)

1	https://drive.google.com/drive/folders/1rqloQbY2HWu7xbFSmaGU3YAc7Tbhc3b1
2	https://drive.google.com/file/d/1UbpxJBcZNFyCxMEK0KqpR6NjpNfd4e1n/view?usp=drive_link
3	https://drive.google.com/file/d/11GUI1amPCq75n8mHoGnc9qzv_OJFzCHM/view?usp=drive_link
4	https://drive.google.com/file/d/1RbPsNDA_ATiTXP_Tn8y2Udpc2NZTcvoy/view?usp=drive_link
5	https://drive.google.com/file/d/1brLXNdwbFugdZJ1B4_TtzN43_KhhZvZI/view?usp=drive_link

Assessment Pattern (both CIE and SEE)

Constitution of India / Samskruthika Kannada / Communicative English / Professional writing skills in English

1 Credit Courses – Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory				50	----	----	20	
CIE	Theory	Internal Assessment Test (IAT) – I (MCQ)	Module - 1 & 2	50	(50+50+50) / 3	15	6	Average of Three Internal test each of 50 Marks scale down the marks to 15 Marks
		Internal Assessment Test (IAT) – II (MCQ)	Module - 3 & 4	50				
		Internal Assessment Test (IAT) – III (QUIZ)	Module - 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	10	4	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
							25	10

	Total CIE Theory							of IAT and CCA to 25
SEE		Theory exam – (MCQ Type)	Entire syllabus	50	----	50	18	SEE Exam is theory Exam with MCQ type Question Papers of 50 Questions with each question 1 Mark each. Examination duration is 1 Hour
CIE + SEE				100	----	----	40	

- The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component.
- The Laboratory Component for the IPCC shall be for CIE only.
- However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.

1 Credit Course – Theory

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Crossword, Maize, Debate, Role Play, Community Service, Mind Map, Concept Map, Case Study, Group Discussions, Ideations

The faculty may adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the internal assessment test shall be **25 Marks** and for the continuous and comprehensive assessment (CCA) shall be **25 Marks**.

Internal Assessment test:

The IA test questions are to be framed to map the course outcomes, program outcomes and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels.

Three Tests (MCQ) each of **50 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 70%)
- Third test after 14th week of semester (syllabus completion of 90 – 100%)

The average score of three test is taken and scaled down to **25 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **25 Marks**.

- CCA1 to be conducted after 4th week
- CCA2 to be conducted after 9th week.
- The evaluation of CCAs includes either through quiz or rubrics

Total score for CCA is **25 Marks**

Total Marks scored for theory component of CIE (IAT + CCA) is **50 Marks**

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject .
- The question paper shall be set for 50 Marks. The medium of the question paper shall be English. **The duration of SEE is 01 hours.**
- The question paper will have 50 MCQs **covering all modules**. The questions shall map with the course outcome, program outcome and Blooms RBT level.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory				
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)	
	IAT-1	IAT-2	IAT-3	CCA-1	CCA-2
	50 Marks	50 Marks	50 Marks	50 Marks	50 Marks
Remember	18	17	18	17	18
Understand	16	15	13	15	17
Apply	8	10	9	8	7
Analyse	8	8	10	10	8
Evaluate	--	--	--	--	--
Create	--	--	--	--	--

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2		Test-3		
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	18	6			2	26	20%
CO2	7	19			2	28	25%
CO3			17	7	8	32	20%
CO4			8	18	8	34	20%
CO5					30	30	15%
Total	25	25	25	25	50		

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	35%
Understand	30%
Apply	20%
Analyse	15%
Evaluate	--
Create	--

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	3	2	2	2	1	10	20%
CO2	4	3	2	3	3	15	30%
CO3	2	1	2	3	2	10	20%
CO4	2	3	2	1	2	10	20%
CO5	2	1	1	1	0	5	10%
Total	13	10	09	10	8	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Communicative English, Fundamentals of Communicative English, Process of Communication	1
1	Barriers to Effective Communicative English,	1
1	Different styles and levels in Communicative English. Interpersonal and Intrapersonal Communication Skills.	1
2	Phonetic Transcription, English Pronunciation, Pronunciation Guidelines to consonants and vowels	1
2	Sounds Mispronounced, Silent and Non silent Letters, Syllables and Structure. Word Accent	1
2	Stress Shift and Intonation, Spelling Rules and Words often Misspelt. Common Errors in Pronunciation	1
3	Grammar: Basic English Grammar and Parts of Speech, Articles and Preposition	1
3	Question Tags, One Word Substitutes,	1
3	Strong and Weak forms of words, Introduction to Vocabulary, All Types of Vocabulary– Exercises on it	1
4	Words formation - Prefixes and Suffixes	1
4	Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises,	1
4	Tense and Types of tenses, The Sequence of Tenses (Rules in use of Tenses) and Exercises on it.	1
5	Information Transfer: Oral Presentation and its Practice. Difference between Extempore/Public Speaking	1
5	Communication Guidelines. Mother Tongue Influence (MTI), Various Techniques for Neutralization of Mother Tongue Influence	1
5	Reading and Listening Comprehensions – Exercises	1
	Revision	
Total		15 Hrs



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st / 2 nd			
Course Title	:	Indian Constitution			
Course Code	:	BICNC107 / BICNC207			
Course Type (Theory/ Practical/ Integrated)	:	Theory			
Course Category	:	HSSC			
Stream	:	Common to all	CIE	:	50 Marks
Teaching hours/ week (L:T:P:S)	:	1:0:0:0	SEE	:	50 Marks
Total Hours	:	15 Hrs	SEE Duration	:	2 Hours
Credits	:	01			

Course Learning Objectives: Students will be taught about the

Sl. No	Course Objectives
1	The basic structure of Indian Constitution.
2	The Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
3	The Union Government, political structure & codes, procedures.
4	The State Executive & Elections system of India.
5	Other important provisions given by the constitution.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

**Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)**

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Module 1: Introduction to the Indian constitution Importance of Indian Constitution, drafting of the Constitution, Salient features of India Constitution. Preamble of Indian Constitution, structure of the Indian Constitution	03
Pedagogy	Direct instructional method (Low/Old Technology) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students	
2	Module 2: Fundamental Rights and Directive Principles of State Policy Fundamental Rights (FR's) and its Restriction and limitations, Directive Principles of State Policy (DPSP's) and its present relevance in Indian society, Fundamental Duties and its Scope and significance in Nation	03
Pedagogy	Flipped classrooms (High/advanced Technological tools) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students	
3	Module 3: The Union Executive Union Executive: Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India, Judges of Supreme Court	03
Pedagogy	Blended learning (Combination of Low/Old Technology and High/advanced Technological tools) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students	
4	Module 4: The State Executive State Executive: State Legislature System, State Executive – Governor, Chief Minister, State Cabinet, State Legislature – Vidhana Sabha and Vidhana Parishad, Judicial System of state, High Court of State, Judges of High Court	03
Pedagogy	Enquiry and evaluation-based learning	

	Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students	
5	Module 5: Elections, Emergency Provisions and Constitutional Amendments Election Commission of India, Elections & Electoral Process, Emergency Provisions, types of emergencies, effects of emergency, Amendment to Constitution, and Important Constitutional Amendments till today, Special Provisions for certain classes.	03
Pedagogy	Personalized learning Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students	

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	The Indian Constitution: A Ready Reference Textbook as per VTU Syllabus, by Dr. Abhinav, Shashwat Publication, First Edition, 2023.
2	Constitution of India with important Case Laws, MCQs covering Constitutional Aspects of Indian Polity for Students, Competitive/ Civil Services Exams, Legal Fraternity, Practitioners, Legal, by Professionals, Professional Book Publishers, Edition-1, 2023.
3	Introduction to the Constitution of India, by Durga Das Basu, Lexis Nexis Publication, 24th Edition, 2019.
4	Constitution of India, Professional Ethics and Human Rights by Shubham Singles, Charles E. Haries, and et al., Cengage India Pvt.Ltd. Publications, Latest Edition, 2019.
5	Constitution of India -For Competitive Exams - Naidhruva Edutech Learning Solutions Publication, Latest Edition, 2022.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand and recall the concepts related to the Indian Constitution such as its historical context, key framers, structure, and basic functions.	Understand	L2
CO2	Comprehend the significance and principles underlying Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties within the Indian Constitution	Understand	L2
CO3	Comprehend and grasp the structure and functioning of Union Executive	Understand	L2
CO4	Understand the structure and functioning of State Executive	Understand	L2
CO5	Understand the importance of Election Commission of India, Emergency Provisions, Amendment to Constitution, and Special Provisions under the constitution of India.	Understand	L2

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	--	--	--	--	--	3	--	--	--	--	--	02	--	--
CO2	--	--	--	--	--	3	--	--	--	--	--	02	--	--
CO3	--	--	--	--	--	3	--	--	--	--	--	02	--	--
CO4	--	--	--	--	--	3	--	--	--	--	--	02	--	--
CO5	--	--	--	--	--	3	--	--	--	--	--	02	--	--

Weblinks and Video Lectures (e-Resources)

1	https://archive.nptel.ac.in/courses/129/106/129106003/
2	https://web.iitd.ac.in/~burra/teaching/burra19aud-lectures-contents.pdf

Constitution of India / Samskruthika Kannada / Communicative English / Professional writing skills in English/ Innovation Design & Thinking

1 Credit Courses – Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory				50	----	----	20	
CIE	Theory	Internal Assessment Test (IAT) – I (MCQ)	Module - 1 & 2	50	(50+50+50) / 3	25	10	Average of Three Internal test each of 50 Marks scale down the marks to 15 Marks
		Internal Assessment Test (IAT) – II (MCQ)	Module - 3 & 4	50				
		Internal Assessment Test (IAT) – III (QUIZ)	Module - 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	25	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory						50	20

SEE		Theory exam – (MCQ Type)	Entire syllabus	50	----	50	18	SEE Exam is theory Exam with MCQ type Question Papers of 50 Questions with each question 1 Mark each. Examination duration is 1 Hour
CIE + SEE				100	----	----	40	

- The Minimum Marks to be secured in CIE to appear for SEE shall be 10 (40% of Maximum Marks – 25) in the Theory Component and 10 (40% of Maximum Marks – 25) in the Practical component.
- The Laboratory Component for the IPCC shall be for CIE only.
- However, in SEE, the Questions from the Laboratory Component shall be included in the respective Modules only.

Assessment Pattern (both CIE and SEE)

1 Credit Course - Theory

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Crossword, Maize, Debate, Role Play, Community Service, Mind Map, Concept Map, Case Study, Group Discussions, Ideathon

The faculty may adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the internal assessment test shall be **25 Marks** and for the continuous and comprehensive assessment (CCA) shall be **25 Marks**.

Internal Assessment test:

The IA test questions are to be framed to map the course outcomes, program outcomes and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests (MCQ) each of **50 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 70%)
- Third test after 14th week of semester (syllabus completion of 90 – 100%)

The average score of three test is taken and scaled down to **25 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **25 Marks**.

- CCA1 to be conducted after 4th week
- CCA2 to be conducted after 9th week.
- The evaluation of CCAs includes either through quiz or rubrics

Total score for CCA is **25 Marks**

Total Marks scored for theory component of CIE (IAT + CCA) is **50 Marks**

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject .
- The question paper shall be set for 50 Marks. The medium of the question paper shall be English. **The duration of SEE is 01 hours.**
- The question paper will have 50 MCQs **covering all modules**. The questions shall map with the course outcome, program outcome and Blooms RBT level.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory					Practical
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)		Practical Test
	IAT-1	IAT-2	IAT-3	CCA-1	CCA-2	
	50 Marks	50 Marks	50 Marks	50 Marks	50 Marks	
Remember	-	-	-	-	-	-
Understand	50	50	50	50	50	-
Apply	-	-	-	-	-	-
Analyse	-	-	-	-	-	-
Evaluate	-	-	-	-	-	-
Create	-	-	-	-	-	-

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2		Test-3		
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	-	-	-	-	-	-	-
CO2	25	25	25	25	50	150	100
CO3	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-
Total	25	25	25	25	50	150	100

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (90% Theory+10% Practical Questions)
Remember	--
Understand	50
Apply	--
Analyse	--
Evaluate	--
Create	--

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	--	--	--	--	10	20%
CO2	--	10	--	--	--	10	20%
CO3	--	--	10	--	--	10	20%
CO4	--	--	--	10	--	10	20%
CO5	--	--	--	--	10	10	20%
Total	10	10	10	10	10	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Module 1: Introduction to the Indian constitution Introduction to the Indian constitution, importance of Indian Constitution	1
1	Drafting of the Constitution, Salient features of India Constitution	1
1	Preamble of Indian Constitution, structure of the Indian Constitution	1
2	Module 2: Fundamental Rights and Directive Principles of State Policy Fundamental Rights (FR's) and its Restriction and limitations,	1
2	Directive Principles of State Policy (DPSP's) and its present relevance in Indian society	1
2	Fundamental Duties and its Scope and significance in Nation	1
3	Module 3: The Union Executive Union Executive: Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet	1
3	Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies	1
3	Judicial System of India, Supreme Court of India, Judges of Supreme Court	1
4	Module 4: The State Executive State Executive: State Legislature System, State Executive – Governor, Chief Minister, State Cabinet	1
4	State Legislature – Vidhana Sabha and Vidhana Parishad	1
4	Judicial System of state, High Court of State, Judges of High Court	1
5	Module 5: Elections, Emergency Provisions and Constitutional Amendments Election Commission of India, Elections & Electoral Process	1
5	Emergency Provisions, types of emergencies, effects of emergency	1
5	Amendment to Constitution, and Important Constitutional Amendments till today, Special Provisions for certain classes.	1
Total		15 Hrs

AEC/SDC



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	1 st			
Course Title	:	Innovation And Design Thinking			
Course Code	:	BIDTC108			
Course Type (Theory/Practical/Integrated)	:	Theory			
Course Category	:	AEC/SDC			
Stream	:	Common to all Branches	CIE	:	50 Marks
Teaching hours/ week (L:T:P:S)	:	1:0:0:0	SEE	:	50 Marks
Total Hours	:	15 Hrs T	SEE	:	01 Hour
Credits	:	01	Duration	:	

Course Learning Objectives: Students will be taught

CLO's	Course Objectives
CLO1	Inculcate the fundamental concepts of design thinking.
CLO2	Enable students as a good designer by imparting creativity and problem-solving ability.
CLO3	Involve students to conceive, conceptualize, design and demonstrate their innovative ideas.
CLO4	Emphasize project-based learning for real time applications.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Design process: Traditional design, Design thinking, Existing sample design projects, Study on designs around us, Compositions/structure of a design, Innovative design: Breaking of patterns, reframe existing design problems, Principles of creativity Empathy: Customer Needs, Shared model in team-based design – Theory and practice in Design thinking – Explore presentation signers across globe – MVP or Prototyping	3
Pedagogy	Lecture: Introduction to design thinking process. Presentation and Videos.	
2	Idea generation and Conceptualization: Visual thinking, Drawing/sketching, new concept thinking, Concept Generation Methodologies, Concept Selection, Concept Testing, Opportunity identification, Empathy for design – Collaboration in distributed Design	3
Pedagogy	Ideate the problem and analysis through Journey mapping, customer mapping	
3	Analyze Phase: 5-Whys and 1How Recognize the difference between symptoms and root cause, overcoming common challenges during “5Whys” process. Understanding the purpose “1How” technique. Connecting 1How to the insights from the 5Whys analysis. Creating a problem-solving framework using both techniques, align problem solving with user needs and empathy	3
Pedagogy	Group Activity: Conducting a collaborative activity “5Whys Analysis” on the Identified problem. Brainstorming potential solution using “1How” approach.	
4	Project Management Fundamentals and Prototyping Project management terms, Approaches: Waterfall, Agile, Hybrid. Roles and Responsibilities and competencies of project manager, phases of project-Initiate and plan, execute, close. Rapid prototyping, Strategy and Organization – Business Model design.	3
Pedagogy	Design a solution combining insights from “5Whys and 1How” technique and project Canva for the identified problem.	
5	Finding Solution Through IDEATION Apply ideation, critical thinking and problem-solving skills, to real-world problems and overcome barriers and find innovative solutions.	3
Pedagogy	Presentation by Team	

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage learning (International edition) Second Edition, 2013.
2	Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press, 2009.
3	Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013
4	Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011..
5	Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers..
6	Gavin Ambrose, Paul Harris, "Basics Design - 8: Design Thinking", illustrated, reprint, AVA Publishing, 2010
7	Christian Müller-Roterberg, "Handbook of Design Thinking", Kindle Direct Publishing ISBN: 978-1790435371, November 2018
8	Stuart Pugh, Total Design: Integrated Methods for Successful Product Engineering, Bjarki Hallgrimsson, Prototyping and model making for product design, 2012, Laurence King Publishing Ltd.
9	Kevin Henry, Drawing for Product designers, 2012, Laurence King Publishing Ltd

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the different methods employed in design thinking and establish a framework to use in their practices	Understand	L2
CO2	Apply the different steps of design thinking to ideate the problem.	Apply	L3
CO3	Develop creative solution using the tools/model-based approach and strategies of design thinking.	Apply	L3
CO4	Analyse and validate the devised solution for real time problem	Analyse	L4

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	-	3	-	-	-	2	2	-	-	-	-	-
CO3	-	-	3	-	2	-	-	-	2	-	-	-
CO4	-	-	-	3	-	2	2	-	-	2	2	2

Weblinks and Video Lectures (e-Resources)	
1	What is design thinking, Daylight design firm https://www.youtube.com/watch?v=Ee4CKIPkIk&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=3
2	Design thinking, 3 major stages HBR https://www.youtube.com/watch?v=z3lbHLfcyWo&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=23
3	The Importance of Empathy https://www.youtube.com/watch?v=UzPMMSKfKZQ&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=21
4	How to create a customer journey map https://www.youtube.com/watch?v=mSxpVRo3BLq&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=6
5	Personas - Design Thinking Book https://www.youtube.com/watch?v=W1kw5xK1C30&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=8
6	How to build your creative confidence, David Kelley https://www.youtube.com/watch?v=16p9YRF0I-g&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=20
7	Apply Design Thinking in Your Work https://www.youtube.com/watch?v=U499U4TcyY8&list=PLo2Y_6-IlgFXbyOjTcTg_IJQ0fZghjjQw&index=4
8	Brainstorming https://www.mindtools.com/acv0de1/brainstorming
9	Design Thinking 101 https://www.nngroup.com/articles/design-thinking/
10	The 5 Stages in the Design Thinking Process https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process
11	Tools for taking action https://dschool.stanford.edu/resources
12	Design Thinking - A Primer https://onlinecourses.nptel.ac.in/noc19_mg60/preview

Assessment Pattern (both CIE and SEE)

Constitution of India / Samskruthika Kannada / Communicative English / Professional writing skills in English/Innovation and Design Thinking

1 Credit Courses – Theory

Assessment Method	Component	Type of Assessments	Syllabus Coverage	Maximum Marks	Average	Reduced Marks	Minimum Passing Marks	Evaluation Details
Total CIE Theory				50	----	----	20	
CIE	Theory	Internal Assessment Test (IAT) – I (MCQ)	Module - 1 & 2	50	(50+50+50) / 3	25	10	Average of Three Internal test each of 50 Marks scale down the marks to 25 Marks
		Internal Assessment Test (IAT) – II (MCQ)	Module - 3 & 4	50				
		Internal Assessment Test (IAT) – III (MCQ)	Module - 5	50				
	Continuous Comprehensive Assessment (CCA)	CCA-1- Pedagogical Initiatives	Considering all the Modules	50	(50+50) / 2	25	10	Two CCA methods as per VTU Clause 22OB4.2 of regulations to be adopted. If CCA chosen is Project Based Learning, then one assessment method may be adopted
		CCA-2- Pedagogical Initiatives		50				
	Total CIE Theory						50	20

								25
SEE		Theory exam – (MCQ Type)	Entire syllabus	50	----	50	18	SEE Exam is theory Exam with MCQ type Question Papers of 50 Questions with each question 1 Mark each. Examination duration is 1 Hour
CIE + SEE				100	----	----	40	

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.

The minimum passing mark for the CIE is 40% of the maximum Marks (20 Marks out of 50).

The minimum passing mark for the SEE is 35% of the maximum Marks (18 Marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 Marks out of 100) in the total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Possible continuous and comprehensive assessment:

Crossword, Maize, Debate, Role Play, Community Service, Mind Map, Concept Map, Case Study, Group Discussions, Ideathon

The faculty may adopt any other CCA method of implementation and its assessment with prior approval of Program Assessment Committee (PAC).

Continuous Internal Evaluation (CIE):

The CIE Marks for the internal assessment test shall be **25 Marks** and for the continuous and comprehensive assessment (CCA) shall be **25 Marks**.

Internal Assessment test:

The IA test questions are to be framed to map the course outcomes, program outcomes and the Blooms RBT Levels. Emphasis to be given for higher order RBT levels

Three Tests (MCQ) each of **50 Marks**

- First test after 6th week of the semester (syllabus completion of 35 – 40%)
- Second test after 10th week of semester (syllabus completion of 65 – 70%)
- Third test after 14th week of semester (syllabus completion of 90 – 100%)

The average score of two test is taken and scaled down to **25 Marks**.

Continuous and Comprehensive Assessment (CCA):

Two of continuous and comprehensive assessment (CCA) to be conducted to attain COs and POs, evaluated each for **50 Marks**. Total Marks scored will be CCA1+CCA2 and scaled down to **25 Marks**.

- CCA1 to be conducted after 4th week
- CCA2 to be conducted after 9th week.
- The evaluation of CCAs includes either through quiz or rubrics

Total score for CCA is **25 Marks**

Total Marks scored for theory component of CIE (IAT + CCA) is **50 Marks**

Semester End Examination (SEE):

- Theory SEE will be conducted as per the scheduled timetable, with common question papers for the subject
- The question paper shall be set for 50 Marks. The medium of the question paper shall be English. The duration of SEE is 01 hours.

The question paper will have 50 MCQs **covering all modules**. The questions should map with the course outcome, program outcome and Blooms RBT level.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory					Practical
	Continuous Assessment Tests			Continuous Comprehensive Assessment (CCA)		Practical Test
	IAT-1	IAT-2	IAT-3	CCA-1	CCA-2	
	50 Marks	50 Marks	50 Marks	50 Marks	50 Marks	
Remember	-	-	-	-	-	-
Understand	20	20	10	20	-	-
Apply	30	30	20	20	20	-
Analyse	-	-	20	10	20	-
Evaluate	-	-	-	-	10	-
Create	-	-	-	-	-	-

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage (%)
	Test-1		Test-2		Test-3		
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	10	50	33
CO2	10	10	10	10	10	50	33
CO3	-	10	-	10	10	30	20
CO4	-	-	-	-	20	20	14
Total	20	30	20	30	50	150	100

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (100% Theory)
Remember	-
Understand	20%
Apply	60%
Analyse	20%
Evaluate	-
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage (%)
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	05	-	05	-	-	10	20
CO2	05	05	05	-	-	15	30
CO3	-	05	-	05	05	15	30
CO4	-	-	-	05	05	10	20
Total	10	10	10	10	10	50	100

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lectures
1	Design process: Traditional design, Design thinking, Existing sample design projects, Study on designs around us, Compositions/structure of a design.	1
1	Innovative design: Breaking of patterns, reframe existing design problems, Principles of creativity Empathy.	1
1	Customer Needs, Shared model in team-based design – Theory and practice in Design thinking – Explore presentation signers across globe – MVP or Prototyping	1
2	Idea generation and Conceptualization: Visual thinking, Drawing/sketching, new concept thinking.	1
2	Patents and Intellectual Property, Concept Generation Methodologies.	1
2	Concept Selection, Concept Testing, Opportunity identification, Empathy for design – Collaboration in distributed Design	1
3	Analyze Phase: 5-Whys and 1How Recognize the difference between symptoms and root cause, overcoming common challenges during “5Whys” process.	1
3	Understanding the purpose “1How” technique. Connecting 1How to the insights from the 5Whys analysis.	1
3	Creating a problem-solving framework using both techniques, align problem solving with user needs and empathy	1
4	Project Management Fundamentals and Prototyping Project management terms, Approaches: Waterfall, Agile, Hybrid.	1
4	Roles and Responsibilities and competencies of project manager, phases of project-Initiate and plan, execute, close.	1
4	Rapid prototyping, Strategy and Organization – Business Model design..	1
5	Finding Solution Through IDEATION Apply ideation, critical thinking and problem-solving skills, to real-world problems and overcome barriers and find innovative solutions.	3
Total		15 Hrs

