VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI

Scheme of Teaching and Examinations (2026)

Bachelor of Computer Applications (BCA)

Choice-Based Credit System (CBCS) and Outcome-Based Education (OBE)

	I SEMESTER												
Sl. No	Course Type	Course Code	Course Title	Teaching & Learning Scheme					Examination				Credits
				CI		LI	TW & SL	Total Hours/Sem	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P							
1	AEC	1BBCA101A	Balake Kannada (MCQ)	28			32	60	01	50	50	100	2
		1BBCA101B	Samskrutika Kannada (MCQ)										
2	AEC	1BBCA102	Communication English (MCQ)	28			32	60	01	50	50	100	2
3	IPCC	1BBCA103	Computer Fundamentals	42		28	50	120	03	50	50	100	4
4	PCC	1BBCA104	Programming Using C	42			48	90	03	50	50	100	3
5	PCC	1BBCA105	Fundamentals of Mathematics	28	28		34	90	03	50	50	100	3
6	PCC	1BBCA106	Fundamentals of Accountancy	28	28		34	90	03	50	50	100	3
7	PCCL	1BBCAL107	Programming Using C Lab	14		28	18	60	03	50	50	100	2
8	VAC	1BBCA108	Environmental Studies (MCQ)	14			16	30	01	50	50	100	1
								TOTAL		**400**	**400**	**800**	**20**
	AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).												
	Balake Kannada (1BBCA101A) is for Non-Karnataka Students and Samskrutika Kannada (1BBCA101B) is for Karnataka Students.												
	Integrated courses (IPCC), combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.												

Bachelor of Computer Applications

II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching & Learning Scheme					Examination				Credits
				L	T	P	TW & SL	Total Hours /Semester	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	1BBCA201	Unix and Shell Scripting	42		28	50	120	03	50	50	100	4
2	PCC	1BBCA202	Data Structures Using C	42			48	90	03	50	50	100	3
3	PCC	1BBCA203	Introduction to Web Technologies	42			48	90	03	50	50	100	3
4	PCC	1BBCA204	Discrete Mathematical Structure	28	28		48	90	03	50	50	100	3
5	SEC	1BBCA205	Introduction to Fintech (MCQ)	28			32	60	01	50	50	100	2
6	PCCL	1BBCA206	Data Structure Using C Lab	14		28	18	60	03	50	50	100	2
7	PCCL	1BBCAL207	Web Technologies Lab	14		28	18	60	03	50	50	100	2
8	VAC	1BBCA208	Constitution of India (MCQ)	14			16	30	01	50	50	100	1
									Total	**400**	**400**	**800**	**20**

AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).

Integrated courses (IPCC), combining theory with practical components.
(i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week.
(ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).
(iii) The practical component shall be assessed only through CIE.

Bachelor of Computer Applications

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching & Learning Scheme					Examination				Credits
				L	T	P	TW & SL	Total Hours /Semester	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	1BBCA301	Introduction to Python Programming	42		28	50	120	03	50	50	100	4
2	PCC	1BBCA302	Object Oriented Programming with Java	42			48	90	03	50	50	100	3
3	PCC	1BBCA303	Database Management System	42			48	90	03	50	50	100	3
4	PCC	1BBCA304	Operating Systems	42			48	90	03	50	50	100	3
5	AEC	1BBCA305	Indian Knowledge System (MCQ)	28			32	60	01	50	50	100	2
6	PCCL	1BBCA306	Java Lab	14		28	18	60	03	50	50	100	2
7	PCCL	1BBCA307	DBMS Lab	14		28	18	60	03	50	50	100	2
8	VAC	1BBCA308	Business Ethics (MCQ)	14			16	30	01	50	50	100	1
									Total	**400**	**400**	**800**	**20**

AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).

Integrated courses (IPCC), combining theory with practical components.
(i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week.
(ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).
(iii) The practical component shall be assessed only through CIE.

Bachelor of Computer Applications

IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching & Learning Scheme					Examination				Credits
				L	T	P	TW & SL	Total Hours /Semester	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	1BBCA401	Introduction to Data Analytics using Python	42		28	50	120	03	50	50	100	4
2	PCC	1BBCA402	Design and Analysis of Algorithms	42			48	90	03	50	50	100	3
3	PCC	1BBCA403	PHP and MySQL	42			34	90	03	50	50	100	3
4	PCC	1BBCA404	Software Engineering	42			48	90	03	50	50	100	3
5	PCC	1BBCA405	Computer Networks	42			48	90	03	50	50	100	3
6	PCCL	1BBCA406	Design and Analysis of Algorithms Lab	14		28	18	60	03	50	50	100	2
7	PCCL	1BBCA407	PHP and MySQL Lab	14		28	18	60	03	50	50	100	2
8	MC	1BBCA408	Yoga for a Healthy Life			28			-	100	-	100	0
									Total	**450**	**350**	**800**	**20**

AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).

Integrated courses (IPCC), combining theory with practical components.
(i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week.
(ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).
(iii) The practical component shall be assessed only through CIE.

Yoga is a Mandatory Course (MC) (Non-credit). All students have to register for Yoga. Successful completion of the 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 Yoga activities. This course 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.

	Bachelor of Computer Applications												
	V SEMESTER												
Sl. No	Course	Course Code	Course Title	Teaching & Learning Scheme			TW & SL	Total Hours /Semester	Examination				Credits
				L	T	P			Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	1BBCA501	Introduction to AI	42			48	90	03	50	50	100	3
2	PCC	1BBCA502	Mobile Application Development	42			48	90	03	50	50	100	3
3	PCC	1BBCA503	Cyber Security and Cyber Laws	42			48	90	03	50	50	100	3
4	PCC	1BBCA504	Cloud Computing	42			48	90	03	50	50	100	3
5	PEC	1BBCA505X	Professional Elective Course - Group 1	42			48	90	03	50	50	100	3
6	PCCL	1BBCA506	Mobile Application Development Lab	14		28	18	60	03	50	50	100	2
7	PCCL	1BBCA507	Mini Project			56	04	60	03	50	50	100	2
8	AEC	1BBCA508	Design Thinking (Societal Project)			28	02	30	-	100	-	100	1
									Total	**450**	**350**	**800**	**20**

AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).

Design Thinking (Societal Project) – 1BCA508 – Empathize with societal problems by applying design thinking principles and multidisciplinary skills to develop user-centric solutions.

Professional Elective Course - Group 1	
Code	**Title of the Course**
1BBCA505A	Object Oriented Modelling and Design
1BBCA505B	System Software
1BBCA505C	Business Intelligence

	Bachelor of Computer Applications												
	VI SEMESTER												
Sl. No	Course	Course Code	Course Title	Teaching & Learning Scheme			TW & SL	Total Hours /Semester	Examination				Credits
				L	T	P			Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	1BBCA601	Introduction to Machine Learning	42		28	50	120	03	50	50	100	4
2	PEC	1BBCA602X	Professional Elective Course Group 2	42			48	90	03	50	50	100	3
3	PEC	1BBCA603X	Professional Elective Course Group 3	42			48	90	03	50	50	100	3
4	PROJ	1BBCA604	Project Work			84	96	180	03	50	50	100	6
5	INT	1BBCA605	Internship			84	36	120	03	50	50	100	4
									Total	**250**	**250**	**500**	**20**

AEC-Ability Enhancement Courses; PCC–Professional Core Courses; PCCL–Professional Core Course Laboratory; VAC–Value Added Courses; SEC-Skill Enhancement Course; SDA-Skill Development Activities. MCQ-Multiple Choice Question (objective type question paper).
Industry Internship of 6 weeks must be completed during the vacations of 4th to 5th or/and 5th to 6th semester.

Professional Elective Course - Group 2	
Code	**Title of the Course**
1BBCA602A	Digital Image Processing
1BBCA602B	Cryptography and Network Security
1BBCA602C	Internet of Things

Professional Elective Course - Group 3	
Code	**Title of the Course**
1BBCA603A	Software Testing
1BBCA603B	R Programming
1BBCA603C	Data Science

Overview of Courses, Credits, Projects, and Internships under VTU Curriculum

I. Abbreviations used in the Scheme of Teaching and Examinations

Abbreviations	Expanded Form of the Abbreviations
AICTE	**All India Council of Technical Education**
NCrF	**National Credit Framework**
VTU	**Visvesvaraya Technological University**
AEC	Ability Enhancement Course
ASC	Applied Science Course
BSC	Basic Science Course
CIE	Continuous Internal Evaluation
CI	Classroom Instruction
CCA	Continuous Comprehensive Assessment
CGPA	Cumulative Grade Point Average
CUL	Cultural
COE	Centre for Online Education
HSMC	Humanities Studies and Management Course
IPCC	Integrated Professional Core Course
LI	Laboratory Instruction
L	Lecture
NCMC	Non-Credit Mandatory Course
NSS	National Service Scheme
NPTEL	National Programme for Technical Enhanced Learning
OEC	Open Elective (Interdepartmental or interdisciplinary) Course

PCC	Professional Core Course
PCCL	Professional Core Course Laboratory
PEC	Professional Elective Courses
PE	Physical Education
P	Practical
SEC	Skill Enhancement Courses
SEE	Semester End Evaluation
SL	Self-Learning
SGPA	Semester Grade Point Average
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
TW	Term Work
T	Tutorial
VTU online	VTU online courses offered by Centre for Online Education,
YOG	Yoga

II. Credit Representation

1-hour Lecture (L) per week=1Credit

2-hoursTutorial(T) per week=1Credit

2-hours Practical / Drawing (P) per week=1Credit

Teaching & Learning Scheme
As per the new National Credit Framework (NCrF), 30 hours of learning of a student is considered equivalent to 1 credit. A semester is considered as a 14-week period of academic interaction with students. The learning components are categorized as follows:

1. **Classroom Instruction (CI):** Includes different instructional / implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts within the classroom measured in Number of hours per semester.
2. **Laboratory Instruction (LI):** Expressed as number of hours per semester which Includes experiments / practical performances / problem-based experiences in laboratory, workshop, field or other locations using different instructional / Implementation strategies.
3. **Term work (TW):** Includes assignments, seminars, presentations, case studies, micro projects, field activities, industrial visits, academic preparation duration and any other student activities in Number of hours per semester.
4. **Self-Learning (SL):** MOOCs (SWAYAM/NPTEL/Industry certified courses), spoken tutorials, online educational resources, self-initiated projects, Learning through digital resources etc in Number of hours per semester. (If provided in curriculum structure).

	Course Details	
1.	**One Credit Theory Courses:**	
	Teaching-Learning sessions in a semester	14 hours
	Examination pattern for CIE and SEE	Multiple Choice Question (MCQ)
	Teaching hours per week - L:T:P	1:0:0
2.	**One Credit Laboratory Courses:**	
	Teaching-Learning sessions in a semester	28 hours (2 hours session /week)
	Examination pattern for CIE and SEE	Continuous assessments, lab Internal test and SEE
	Teaching hours per week - L:T:P	0:0:2
3.	**Two Credit Theory Courses:**	
	Teaching-Learning Sessions in a semester	28 hours

	Examination pattern for CIE and SEE	Descriptive
	Teaching hours per week - L:T:P	2:0:0
4.	**Three Credit ESC/ETC/PCC/PEC/OEC Courses:**	
	Teaching-Learning Sessions in a semester	42 hours
	Examination pattern for CIE and SEE	Descriptive
	Teaching hours per week for theory courses - L:T:P	3:0:0
5.	**Four Credit Program Core Courses (PCC):**	
	Teaching-Learning Sessions in a semester	56 hours
	Examination pattern for CIE and SEE	Descriptive
	Teaching hours per week for theory courses - L:T:P	4:0:0
6.	**Four Credit Integrated Professional Core Courses (IPCC):**	
	Teaching-Learning Sessions in a semester (Teaching sessions: 42 hours + Practical sessions: 28 hours)	70 hours
	Examination pattern for CIE and SEE	Descriptive
	Practical part of examination	CIE (No SEE).
	Teaching hours per week - L: T: P	3: 0: 2

III. Details of Courses

(1) Integrated Professional Core Course (IPCC): The Integrated Professional Core Course (IPCC) refers to a core theory course that is integrated with a laboratory of the same subject. Each IPCC carries 4 credits, with Teaching–Learning hours structured (L : T : P) as either (3:0:2). The theory component of the IPCC shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). The laboratory part shall be assessed exclusively through CIE, with no SEE. However, questions derived from the laboratory part may be included in the SEE question paper to ensure comprehensive evaluation

(2) Non-Credit Mandatory Courses (NCMC): are aimed at enhancing students' knowledge, skills, and awareness beyond the core curriculum. Successful completion of the NCMC is compulsory for fulfilling the requirements of the academic program. It shall not be considered for the computation of SGPA, CGPA and vertical progression. Each student shall register for the prescribed NCMC(s) in the prescribed semester. A student who fails to qualify in the prescribed NCMC shall not be eligible for the conferment of the degree.

(3) Professional Elective Courses (PEC): A professional elective course (PEC) is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum of the same discipline.

(4) Open Elective Courses (OEC): A open elective course (OEC) is a course offered by departments other than a student's parent department. These interdepartmental /interdisciplinary courses allow students to explore disciplines beyond their core area of study. These courses are intended to promote interdisciplinary learning, broad-based education, thereby enhancing a student's overall knowledge, creativity, and employability. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor/Proctor.

(5) Ability Enhancement Course Laboratory (AEC): An Ability Enhancement Course Laboratory is a practical, skill-oriented lab course designed to strengthen students' practical abilities, professional competencies that support communication, environmental awareness, computational thinking, interdisciplinary learning, and application skills through hands-on learning experiences.

The laboratory may pertain to disciplinary or interdisciplinary involving experiments, design tasks, and mini-projects aligned with current industry practices.

(6) Skill Enhancement Courses (SEC): These courses are intended to develop specific practical skills and competencies that improve students' employability, technical proficiency, and professional readiness to bridge the gap between academic and industry requirements. These courses emphasize hands-on training, application of theoretical knowledge, and development of discipline-relevant and transferable skills required in industry and society, and develop entrepreneurship and start-up skills.

(7) Online Courses: Online courses are educational programs delivered over the Internet through a digital platform, allowing students to access lessons, assignments, and discussions from anywhere at any time. Most online courses offer flexibility, allowing students to access materials and complete assignments on their own schedule. However, students have to pass the course within a stipulated period as per the norms of the university.

(8) VTU Online Courses: VTU Online courses are online courses offered by Centre of Online Education (COE) Mysuru. A wide range of multidisciplinary courses are available to learners anywhere, anytime to earn university-prescribed credits through proctored examination for the award of a degree.

(9) NPTEL/SWAYAM Online Courses: The National Programme on Technology Enhanced Learning (NPTEL)/SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) are the specific Indian platforms to host national Massive Open Online Courses (MOOCs). It offers online courses on a wide range of disciplines to learners anywhere, anytime, to earn university-prescribed credits through proctored examination for the award of a degree. All NPTEL/SWAYAM courses are MOOCs, but not all MOOCs are offered on these specific Indian platforms.

IV. Ability Enhancement Project (AEP) / Skill Development Project (SDP)

An Ability Enhancement Project (AEP) or Skill Development Project (SDP) is a focused project aimed at enhancing specific skills or abilities in a particular domain. It's designed to bridge the gap between theoretical knowledge and practical application.

Key Objectives:

1. Develop practical skills relevant to the industry or field.
2. Enhance problem-solving, critical thinking, and analytical abilities.
3. Improve communication, teamwork, and collaboration skills.
4. Apply theoretical concepts to real-world problems or scenarios.
5. Foster creativity, innovation, and entrepreneurship.

Characteristics:

1. Practical and hands-on approach.
2. Industry-relevant skills and tools.
3. Mentorship and guidance.
4. Opportunity to work on real-world projects or case studies.
5. Emphasis on skill development and enhancement.