

SHETTY INSTITUTE OF TECHNOLOGY, KALABURAGI

(An ISO9001:2015 Certified Institution) (Affiliated to Visvesvaraya Technological University Belgaum and approved by AICTE, New Delhi)



CSE COURSE STRUCTURE

w.e.f 2021-22



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

ಖಚಿಯು ಅಧಿನಿಯಮ ೧೯೯೪∘ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ "ಜ್ಲಾನ ಸಂಗಮ", ಬೆಳಗಾವಿ−೫೯೦೦೧೮, ಕರ್ನಾಟಕ, ಭಾರತ

Visvesvaraya Technological University

(State University of Government of Karnataka Established as per the VTU Act, 1994) "Jnana Sangama" Belagavi-590018, Karnataka, India Phone: (0831) 2498100, Fax: (0831) 2405467, Website: vtu.ac.in

Dr. A. S. Deshpande B.E., M.Tech., Ph.D. Registrar Phone: (0831) 2498100 Fax: (0831) 2405467

3 DEC 2021

Date:

Ref: VTU/BGM/BOS/A9/2021-22 / 3991

CIRCULAR

Subject: 1st and 2nd -semester scheme(2021) of Teaching and Examinations

regarding...

Reference: Hon'ble Vice-Chancellor's approval dated: 03.12.2021

The courses, 21IDT19- Innovation and Design Thinking (offered in 1st semester both for chemistry and physics groups) and 21SFH29- Scientific Foundations of Health (offered in 2nd semester both for chemistry and physics group) are compulsory courses for the students admitting to 1st year B.E./B.Tech. programs.

A slight modification is made in the scheme of teaching and examinations to offer both the courses in 1st as well as 2ndsemester for 50:50 strength of intake. The scheme is attached with this circular for reference and needful. Also, 3-8 semesters scheme template has been attached for stakeholder's information.

All the principals of Engineering Colleges are hereby informed to bring the content of this circular to the notice of the concerned. Please note: corrected scheme of programs is made available @ https://vtu.ac.in/en/b-e-scheme-syllabus/#menu05

Sd/-

Registrar

REGISTRAR

Encl: As mentioned above.

To,

• All the Principals of the Engineering Colleges under the ambit of VTU Belagavi. Copy to:

- 1. The Hon'ble Vice-Chancellor through the secretary to VC for information
- 2. The Registrar(Evaluation) for information and needful
- 3. The Registrar's Office, VTU, Belagavi, for information.
- 4. The Special Officer, Academic Section, VTU Belagavi, for information.
- 5. The Director ITI SMU CNC for information and to upload the circular on the VTU web portal

	Visvesvaraya Technological University, Belagavi Scheme of Teaching and Examinations 2021												
			Outcome-Based Educat	ion(OBE) and Choice Bas	ed Crea	dit Sys	stem (C	BCS)					
I So	mostor (Physics Group)	(Effective	e from the academic year	2021 -	22)	[[ommo	n to all I	RE/RT	ch Pro	oramel	
1 30		r nysics di oupj				Teac Hours	hing /Week		Examination				
SI. No	Cou Cou	urse and rse Code	Course Title	Teaching Department (TD)and Paper Setting Board(PSB)	Theory Lecture	H Tutorial	Practical/ Drawing	o Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	21MAT11	Calculus & Differential Equations	TD and PSB: Mathematics	2	2			03	50	50	100	3
2	BSC	21PHY12	Engineering Physics	TD and PSB: Physics	2	2			03	50	50	100	3
3	ESC	21ELE13	Basic Electrical Engineering	TD and PSB: E and E Engineering	2	2			03	50	50	100	3
4	ESC	21CIV14	Elements of Civil Engineering and Mechanics	TD and PSB: Civil Engineering	3				03	50	50	100	3
5	ESC	21EVN 15	Engineering Visualization	TD: ME, Auto, IP, IEM, Mfg. Engineering PSB: Mechanical Engg	2		2		03	50	50	100	3
6	BSC	21PHYL16	Engineering Physics Laboratory	TD and PSB: Physics			2		03	50	50	100	1
7	ESC	21ELEL17	Basic Electrical Engineering Laboratory	TD and PSB: E and E Engineering			2		03	50	50	100	1
8	HSMC	21EGH18	Communicative English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
		21IDT19/29	Innovation and Design Thinking										
9	AEC		OR	Any Engineering Department	1				01	50	50	100	1
		21SFH19/29	Scientific Foundations of Health										
				TOTAL	13	07	07		24	450	450	900	20
Note	Note: BSC: Basic Science Course, ESC: Engineering Science Course, HSMC: Humanity and Social Science & Management Courses, AEC – Ability Enhancement Courses.												

L – Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination									
Credit definition:	(a) Four-credit courses are to be designed for 50 hours of Teaching-Learning process.								
1hour Lecture (L) per week = 1 Credit	(b) Three credit courses are to be designed for 40 hours of Teaching-Learning process.								
2 hours Tutorial (T) per week = 1 Credit	(c) Two credit courses are to be designed for 25 hours of Teaching-Learning process.								
2 hours Practical /Drawing (P) per week = 1 Credit	(d) One-credit courses are to be designed for 15 hours of Teaching-Learning process.								

AICTE Activity Points to be earned by students admitted to BE/B.Tech., /B.Plan day college programme (For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines):

Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE ActivityPoint Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.

The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression.

In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

Summer Internship - I (21INT36): All the students admitted to engineering programmes shall have to undergo a mandatory summer internship of **03 weeks** during the intervening vacation of II and III semesters. Summer Internship shall include Inter / Intra Institutional activities. A University Viva-voce examination (Presentation followed by question-answer session) shall be conducted during III semester and the prescribed credit shall be included in III semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)

JBoS 26.08.2021/ EC 14.09.2021

	Visvesvaraya Technological University, Belagavi												
	Scheme of Teaching and Examinations 2021 Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)												
	(Effective from the academic year 2021 – 22)												
II Se	mester (For students who	o attended I semester under Physics	Group)				[Co	ommon to	o all B.E.,	B.Tech	Program	ms]
				(01 ² 8 ()		Tea Hours	ching /Week		E	xaminatio	n		
Sl. No	Cour Code	rse and Course	Course Title	Teaching Department(Paper Settir Board (PSB	Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Fotal Marks	Credits
				_		Т	Р	S	_			F	l
1	BSC	21MAT21	Advanced Calculus and Numerical Methods	TD and PSB: Mathematics	2	2			03	50	50	100	3
2	BSC	21CHE22	Engineering Chemistry	TD and PSB: Chemistry	2	2			03	50	50	100	3
3	ESC	21PSP23	Problem-Solving through Programming	TD and PSB: Computer Science and Engineering	2	2			03	50	50	100	3
4	ESC	21ELN24	Basic Electronics & Communication Engineering	TD: ECE/E and I/ TCPSB: ECE	2	2			03	50	50	100	3
5	ESC	21EME25	Elements of Mechanical Engineering	TD: ME, Auto, IP,IEM, Mfg . Engineering PSB: Mechanical Engg	2		2		03	50	50	100	3
6	BSC	21CHEL26	Engineering Chemistry Laboratory	TD and PSB: Chemistry			2		03	50	50	100	1
7	ESC	21CPL27	Computer Programming Laboratory	TD and PSB: Computer Science and Engineering			2		03	50	50	100	1
8	HSMC	21EGH28	Professional Writing Skills in English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
		21SFH19/29	Scientific Foundations of Health										
9	AEC		OR	Any Department					01	50	50	100	1
	21IDT19/29 Innovation and Design Thinking												
		<u> </u>		TOTAL	13	09	07	<u> </u>	24	450	450	900	20
Note:	BSC: Basic	: Science Course, ES(: Engineering Science Course, HSMC : Hum	anity and Social Science & Managem	ent Cours	es, AE(-Ability	Enhance	ement Cou	rses.			
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	Visvesvaraya Technological University, Belagavi Scheme of Teaching and Examinations 2021												
	Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)												
	(Effective from the academic year 2021 – 22)												
I Se	Semester (Chemistry Group) [Common to all B.E./B.Tech. Programmes]												
							/Week		Examination				
SI. No	Cou Cou	rse and rse Code	Course Title	Teaching Department (TD)and Paper Setting Board(PSB)	Theory Lecture	+ Tutorial	Practical/ Drawing	self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	21MAT11	Calculus & Differential Equations	TD and PSB: Mathematics	2	2			03	50	50	100	3
2	BSC	21CHE12	Engineering Chemistry	TD and PSB: Chemistry	2	2			03	50	50	100	3
3	ESC	21PSP13	Problem-Solving through Programming	TD and PSB: Computer Science and Engineering	2	2			03	50	50	100	3
4	ESC	21ELN14	Basic Electronics & Communication Engineering	TD: ECE/E and I/ TCPSB: ECE	2	2			03	50	50	100	3
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		21IDT19/29	Innovation and Design Thinking										
9	AEC		OR	Any Engineering Department	1				01	50	50	100	1
21SFH19/29 Scientific Foundations of Health													
				TOTAL	13	09	07		24	450	450	900	20
Noto	Note: DSC: Desig Science Course ESC: Engineering Science Course USMC: Humanity and Social Science & Management Courses AEC Ability Enhancement Courses												
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JBoS 26.08.2021/ EC 14.09.2021

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			Effectiv	re from the academic year 20	21 - 22	system		J					
II Se	mester (For students who	o attended 1 st semester under Chem	istry Group)	<u> </u>		[Commo	on to all	B.E./B.Te	ch Prog	rams]	
						Теа	ching		Fyamination				
				(TT SB)	Hours / Week								~
SI.	Cour	rse and Course	Course Title	d (P)	ory ure	rial	ical, ving	Stud	nin S	rks	ırks	arks	edit:
NO	Code			apel a	The Lect	Tutc	ract Drav	elf-	hou	(Ma	EMa	al M	Cr
				De De	L	T	<u>е</u> . — Р	S S	Du	CII	SE	Tot	
	DSC	21 M AT21	Advanced Calculus and	TD and DCD. Mathematica		-		5					
1	DSC	21MA121	Numerical Methods	I D and PSB: Mathematics	2	2			03	50	50	100	3
2	BSC	21PHY22	Engineering Physics	TD and PSB: Physics	2	2			03	50	50	100	3
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		21SFH19/29	Scientific Foundations of Health										
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	TOTAL 13 07 07 24 450 900 20												
Note:	BSC: Basic	: Science Course, ESC	L: Engineering Science Course, HSMC : Hum	anity and Social Science & Managem	ient Cours	ses, AEC	2–Ability	Enhanc	ement Cou	rses.			
L-Leo	L-Lecture, T - Tutorial, P-Practical/Drawing, S - Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination												
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in Computer Science and Engineering Scheme of Teaching and Examinations2021 Outcome Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2021 - 22)

				(Ellectiv	e nom the academ	lic year z	.021 - 2	2)							
III SE	MESTER					Teeshine	11	A/a ala			F				
SI. No	Course and Course Cod	d le		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Theory Lecture Lecture	Hours /	Practical/	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits	
	DCC		T			L	T	Р	S						
1	21MAT31		and N	umerical Techniques	Maths	3	0	0		03	50	50	100	3	
2	1PCC 21CS32		Data S	tructures and Applications	_	3	0	2		03	50	50	100	4	
3	IPCC 21CS33		Analog	g and Digital Electronics	Any CS Board	3	0	2		03	50	50	100	4	
4	PCC 21CS34		Comp Archite	uter Organization and ecture	Department	3	0	0		03	50	50	100	3	
5	PCC 21CSL35		Object JAVA L	t Oriented Programming with aboratory		0	0	2		03	50	50	100	1	
6	UHV 21UH36		Social	Connect and Responsibility	Any Department	0	0	1		01	50	50	100	1	
7	HSMC 21KSK37/47 HSMC 21KBK37/47		7 Samskrutika Kannada 7 Balake Kannada 0R		TD and PSB: HSMC	1	0	0		01	50	50	100	1	
	HSMC 21CIP37/4	7	Consti Profes	tution of India and sional Ethics											
8	AEC 21CS38X/21 CSL38X		Ability Enhancement Course - III		TD: Concerned department PSB: Concerned Board	If offer 1 If offe	ed as Th 0 ered as I	eory Co 0 ab. cour	urse se	01 02	50	50	100	1	
						Ū	Ū	2		Total	400	400	800	18	
	for rs	NN 21	/IDC NS83	National Service Scheme (NSS)	NSS	All students have to register for any one of the course name National Service Scheme, Physical Education (PE) (Sports ar Athletics) and Yoga with the concerned coordinator of the cour							mely and urse		
9	activities semeste	NN 21	/IDC PE83	Physical Education (PE) (Sports and Athletics)	PE	during the first week of III semester. The a out from (for 5 semesters) between III set SEE in the above courses shall be conduct					The act III seme nducted	ictivities shall be carr mester to VIII semes ted during VIII semes			
	Scheduled III to VIII	NN 21'	ИDC YO83	Yoga	Yoga	SEE ma mandato The even same sh Yoga act	rks. Si ory for t nts shall all be re ivities.	id the ad uccessfu he award be appi flected i	d of th ropriat	pletion e degree ely sche colander	of the e. duled b	registe y the cc ed for th	red cours olleges and ne NSS, PE	the se is the and	
		C	Course	prescribed to lateral entry I	Diploma holders ac	mitted t	o III sei	nester	B.E./I	B.Tech	prograr	ns		-	
1	NCMC 21MATDIP3	31		Additional Mathematics - I	Maths	02	02				100		100	0	
Note Socia L –L Teac 21KS read Integ can l by C	 Note: BSC: Basic Science Course, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, INT –Internship, HSMC: Humanity and Social Science & Management Courses, AEC–Ability Enhancement Courses. UHV: Universal Human Value Course. L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination. TD-Teaching Department, PSB: Paper Setting department 21KSK37/47 Samskrutika Kannada is for students who speak, read and write Kannada and 21KBK37/47 Balake Kannada is for non-Kannada speaking, reading, and writing students. Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical's 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). Herewere, guestions from the practical part of the IPCC shall be evaluated by only CIE (no SEE). 														
SEE refei	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. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.														

21INT49 Inter/Intra Institutional Internship: All the students admitted to engineering programs under the lateral entry category shall have to undergo a mandatory 21INT49 Inter/Intra Institutional Internship of 03 weeks during the intervening period of III and IV semesters. The internship shall be slated for CIE only and will not have SEE. The letter grade earned through CIE shall be included in the IV semester grade card. The internship shall be considered as a head of passing and shall be considered for vertical progression and for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequently after satisfying the internship requirements. The faculty coordinator or mentor shall monitor the students' internship progress and interact with them for the successful completion of the internship.

Non-credit mandatory courses (NCMC):

(A) Additional Mathematics I and II:

(1) These courses are prescribed for III and IV semesters respectively to lateral entry Diploma holders admitted to III semester of B.E./B.Tech., programs. They shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the Continuous Internal Evaluation (CIE). In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured an F grade. In such a case, the student has to fulfill the course requirements during subsequent semester/s to earn the qualifying CIE marks. These courses are slated for CIE only and has no SEE.

(2) Additional Mathematics I and II shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the courses shall be mandatory for the award of degree.

(3) Successful completion of the courses Additional Mathematics I and II shall be indicated as satisfactory in the grade card. Non-completion of the courses Additional Mathematics I and II shall be indicated as Unsatisfactory.

(B) National Service Scheme/Physical Education (Sport and Athletics)/ Yoga:

(1) Securing 40 % or more in CIE,35 % or more marks in SEE and 40 % or more in the sum total of CIE + SEE leads to successful completion of the registered course.

(2) In case, students fail to secure 35 % marks in SEE, they have to appear for SEE during the subsequent examinations conducted by the University.

(3) In case, any student fails to register for NSS, PE or Yoga/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have not completed the requirements of the course. In such a case, the student has to fulfill the course requirements during subsequent semester/s to earn the qualifying CIE marks.

(4) Successful completion of the course shall be indicated as satisfactory in the grade card. Non-completion of the course shall be indicated as Unsatisfactory.

(5) These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the courses shall be mandatory for the award of degree.

	Ability Enhancement Course - III							
21CSL381	Mastering Office	21CS383						
21CS382	Programming IN c++	21CS384						

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in Computer Science and Engineering Scheme of Teaching and Examinations 2021 Outcome-Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2021 - 22)

IV SE	IV SEMESTER											
			_	Теа	ching	Hours /W	/eek		Exam	ination		
SI. No	Course and Course Code	Course Title	Teaching Department (TD and Question Paper Setting Board (PSB)	- Theory Lecture	H Tutorial	۳ Drawing	ہ Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC 21CS41	Mathematical Foundations for Computing	Maths	2	2	0		03	50	50	100	3
2	IPCC 21CS42	Design and Analysis of Algorithms		3	0	2		03	50	50	100	4
3	IPCC 21CS43	Microcontroller and Embedded SystemS	Any CS Board Department	3	0	2		03	50	50	100	4
4	PCC 21CS44	Operating SystemS		2	2	0		03	50	50	100	3
5	AEC 21BE45	Biology For Engineers	BT, CHE, PHY	2	0	0		02	50	50	100	2
6	PCC 21CSL46	Python Programming Laboratory	Any CS Board Department	0	0	2		03	50	50	100	1
7	HSMC 21KSK37/47 HSMC 21KBK37/47	Samskrutika Kannada Balake Kannada	HSMC	1	0	0		01	50	50	100	1
	HSMC 21CIP37/47	OR Constitution of India & Professional Ethics				Ū		01	50	50	100	-
8	AEC 21CS48X/21C SL48X	Ability Enhancement Course- IV	TD and PSB: Concerned department	If offe 1 If off	red as 0 fered a	theory 0 0 as lab. co	Course ourse	01	50	50	100	1
9	UHV 21UH49	Universal Human Values	Any Department	1	0	0		01	50	50	100	1
10	10INT 21INT49Inter/Intra Institutional InternshipEvaluation By appropriate authoritiesCompleted during the intervening period of II and III semesters by students admitted to first year of BE./B.Tech and during the intervening period of III and IV semesters by Lateral entry students admitted to III31001002								2			
		·						Total	550	450	1000	22
		urse prescribed to lateral entry Diplor	na holders admi	itted to	III se	mester	of Engi	neering	g progra	ams		
1	1 Additional Mathematics - II Maths 02 02 100 100 0											
HSN L –Le	HSMC: Humanity and Social Science and Management Courses, UHV- Universal Human Value Courses. L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.											
21KS	K3//4/ Samskrut	tika Kannada is for students who speak, re	ead and write Kan	nada an	a 21Kl	зкз7/47	Balake	Kannada	a is for n	on-Kann	ada spea	king,
Inter	reading, and writing students.											

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical's 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 practical part of IPCC shall be included in the SEE question paper. For more details the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.

Non – credit mandatory course (NCMC):

Additional Mathematics - II:

(1) Lateral entry Diploma holders admitted to III semester of B.E./B.Tech., shall attend the classes during the IV semester to complete all the formalities of the course and appear for the Continuous Internal Evaluation (CIE). In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured an F grade. In such a case, the student has to fulfil the course requirements during subsequent semester/s to earn the qualifying CIE marks. These courses are slated for CIE only and has no SEE.

(2) Additional Mathematics I and II shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the courses shall be mandatory for the award of degree.

(3) Successful completion of the course Additional Mathematics II shall be indicated as satisfactory in the grade card. Non-completion of the courses Additional Mathematics II shall be indicated as Unsatisfactory.

	Ability Enhancement Course - IV									
21CSL481	Web Programming	21CSL483	R Programming							
21CS482 Unix Shell Programming 21CS484										
21CS482	Unix Shell Programming	21CS484								

Internship of 04 weeks during the intervening period of IV and V semesters; 21INT68 Innovation/ Entrepreneurship/ Societal based Internship.

(1) All the students shall have to undergo a mandatory internship of 04 weeks during the intervening period of IV and V semesters. The internship shall be slated for CIE only and will not have SEE. The letter grade earned through CIE shall be included in the VI semester grade card. The internship shall be considered as a head of passing and shall be considered for vertical progression and for the award of degree. Those, who do not take up / complete the internship shall be considered under F (fail) grade and shall have to complete during subsequently after satisfying the internship requirements.

(2) Innovation/ Entrepreneurship Internship shall be carried out at industry, State and Central Government /Non-government organizations (NGOs), micro, small and medium enterprise (MSME), Innovation centers or Incubation centers. Innovation need not be a single major breakthrough; it can also be a series of small or incremental changes. Innovation of any kind can also happen outside of the business world.

Entrepreneurship internships offers a chance to gain hands on experience in the world of entrepreneurship and helps to learn what it takes to run a small entrepreneurial business by performing intern duties with an established company. This experience can then be applied to future business endeavours. Start-ups and small companies are a preferred place to learn the business tack ticks for future entrepreneurs as learning how a small business operates will serve the intern well when he/she manages his/her own company. Entrepreneurship acts as a catalyst to open the minds to creativity and innovation. Entrepreneurship internship can be from several sectors, including technology, small and medium-sized, and the service sector.

(3) Societal or social internship.

Urbanization is increasing on a global scale; and yet, half the world's population still resides in rural areas and is devoid of many things that urban population enjoy. Rural internship, is a work-based activity in which students will have a chance to solve/reduce the problems of the rural place for better living.

As proposed under the AICTE rural internship programme, activities under Societal or social internship, particularly in rural areas, shall be considered for 40 points under AICTE activity point programme.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in **Computer Science and Engineering** Scheme of Teaching and Examinations 2021 Outcome Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2021 - 22)

V SE	MESTER											
			(Teachir	ng Hours	/Week			Exami	nation		
SI. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
				L	т	Р	S					
1	BSC 21CS51	Automata Theory and compiler Design		3	0	0		03	50	50	100	3
2	IPCC 21CS52	Computer Networks		3	0	2		03	50	50	100	4
3	3 PCC Database Management Systems		Any CS Board Department	3	0	0		03	50	50	100	3
4	4 PCC Artificial Intelligence and Machine 21CS54 Learning			3	0	0		03	50	50	100	3
5	PCC 21CSL55	Database Management Systems Laboratory with Mini Project		0	0	2		03	50	50	100	1
6	AEC 21XX56	Research Methodology & Intellectual Property Rights	TD: Any Department PSB: As identified by university	2	0	0		02	50	50	100	2
7	HSMC 21CIV57	Environmental Studies	TD: Civil/ Environmental /Chemistry/ Biotech. PSB: Civil Engg	1	0	0		1	50	50	100	1
	450			If offe	ered as T	Theory c	ourses	01				
8	ALC 21CS58X/21	Ability Enhancement Course-V	Concerned	1	0	0		01	50	50	100	1
0	CS58LX		Board	If of	fered as	s lab. coι	irses	02	50	50	100	-
				0	0	2						40
		۸ h.	ility Enhancom	ont Course	- IV			Iotal	400	400	800	18
2109	1581 Angular	AD		2105583	= - 1V							
2103	582 C# and I	Net Framework		2105584	+							
00					1							

Note: BSC: Basic Science Course, PCC: Professional Core Course, IPCC: Integrated Professional Core Course, AEC – Ability Enhancement Course INT – Internship, HSMC: Humanity and Social Science & Management Courses.

L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): refers to Professional Theory Core Course Integrated with Practical 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). Theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in Computer Science and Engineering Scheme of Teaching and Examinations 2021 Outcome-Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2021 - 22)

VI SE	I SEMESTER											
			(Teaching	Hours	/Week			Exami	nation		
SI. No	Course ar Course Co	d Course Title	Teaching epartment (TD and Question Paper Setting Board (PSB)	Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Fotal Marks	Credits
			Δ	L	т	Р	S				•	
1	HSMC 21CS61	Software Engineering & Project Management		2	2	0		03	50	50	100	3
2	IPCC 21CS62	Fullstack Development	Any CS Board	3	0	2		03	50	50	100	4
3	PCC 21CS63	Computer Graphics and Fundamentals of Image Processing	Department	3	0	0		03	50	50	100	3
4	PEC 21XX64x	Professional Elective Course-I		3	0	0		03	50	50	100	3
5	OEC 21XX65x	Open Elective Course-I	Concerned Department	3	0	0		03	50	50	100	3
6	PCC 21CSL66	Computer Graphics and Image Processing Laboratory	Any CS Board Department	0	0	2		03	50	50	100	1
7	MP 21CSMP67	Mini Project		Two con interacti faculty a	tact ho on bet nd stu	ours /we ween th dents.	ek for e		100		100	2
8	INT 21INT68	Innovation/Entrepreneurship /Societal Internship	Completed duri and V semester	ng the inte s.	rvenin	ig period	of IV		100		100	3
	Total 500 300 800 22											
			Professional Fl	octivo - I								
2100	6/1	gilo Tochpology	210	CCUVE - 1	Adve	ancod Co	moutor	Architac	turo			
21CS641 Agile Technology 21CS642 Advanced IAVA Programming			210	S611	Data		and Visi		n			
2103	21CS642 Advanced JAVA Programming 2				μυαια		anu V130	uanzatio				

	Open Electives – I offered by the Dep	Open Electives – I offered by the Department to other Department students											
21CS651	Introduction to Data Structures	21CS653	Introduction to Cyber Security										
21CS652	Introduction to Database Management Systems	21CS654	Programming in JAVA										

Note: HSMC: Humanity and Social Science & Management Courses, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, PEC: Professional Elective Courses, OEC–Open Elective Course, MP –Mini Project, INT –Internship.

L –Lecture, T – Tutorial, P - Practical / Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with Practical 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 CIE only and there shall be no SEE. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech) 2021-22 may be referred.

Professional Elective Courses (PEC):

A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course out of five courses. The minimum students' strength for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the programme is less than 10.

Open Elective Courses:

Students belonging to a particular stream of Engineering and Technology are not entitled for the open electives offered by their parent Department. However, they can opt an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor.

Selection of an open elective shall not be allowed if,

- (i) The candidate has studied the same course during the previous semesters of the program.
- (ii) The syllabus content of open electives is similar to that of the Departmental core courses or professional electives.

(iii) A similar course, under any category, is prescribed in the higher semesters of the program.

In case, any college is desirous of offering a course (not included in the Open Elective List of the University) from streams such as Law, Business

(MBA), Medicine, Arts, Commerce, etc., can seek permission, at least one month before the commencement of the semester, from the University by submitting a copy of the syllabus along with the details of expertise available to teach the same in the college.

The minimum students' strength for offering open electives is 10. However, this conditional shall not be applicable to cases where the admission to the programme is less than 10.

Mini-project work: Mini Project is a laboratory-oriented course which will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications.

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini- project can be assigned to an individual student or to a group having not more than 4 students.

CIE procedure for Mini-project:

(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(ii) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project. The CIE marks awarded for the Mini-project, shall be based on the evaluation of project report, project presentation skill, and question and answer

session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. No SEE component for Mini-Project.

VII semester Classwork and Research Internship /Industry Internship (21INT82)

Swapping Facility

Institutions can swap VII and VIII Semester Scheme of Teaching and Examinations to accommodate research internship/ industry internship after the VI semester.

(2) Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether VII or VIII semester is completed during the beginning of IV year or later part of IV year of the program.

Elucidation:

At the beginning of IV year of the programme i.e., after VI semester, VII semester classwork and VIII semester Research Internship /Industrial Internship shall be permitted to be operated simultaneously by the University so that students have ample opportunity for internship. In other words, a good percentage of the class shall attend VII semester classwork and similar percentage of others shall attend to Research Internship or Industrial Internship.

Research/Industrial Internship shall be carried out at an Industry, NGO, MSME, Innovation centre, Incubation centre, Start-up, Centers of Excellence (CoE), Study Centre established in the parent institute and /or at reputed research organizations / institutes. The internship can also be rural internship.

The mandatory Research internship /Industry internship is for 24 weeks. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the internship shall be declared fail and shall have to complete during the subsequent University examination after satisfying the internship requirements.

INT21INT82 Research Internship/ Industry Internship/Rural Internship

Research internship: A research internship is intended to offer the flavour of current research going on in the research field. It helps students get familiarized with the field and imparts the skill required for carrying out research.

Industry internship: Is an extended period of work experience undertaken by students to supplement their degree for professional development. It also helps them learn to overcome unexpected obstacles and successfully navigate organizations, perspectives, and cultures. Dealing with contingencies helps students recognize, appreciate, and adapt to organizational realities by tempering their knowledge with practical constraints.

Rural internship: A long-term goal, as proposed under the AICTE rural internship programme, shall be counted as rural internship activity.

The student can take up Interdisciplinary Research Internship or Industry Internship.

The faculty coordinator or mentor has to monitor the students' internship progress and interact with them to guide for the successful completion of the internship.

The students are permitted to carry out the internship anywhere in India or abroad. University shall not bear any expenses incurred in respect of internship.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in Computer Science and Engineering Scheme of Teaching and Examinations 2021 Outcome-Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2021 - 22)

Swap	Swappable VII and VIII SEMESTER												
VII S	EMESTER	8							r				
				ô	Teachir	ng Hours	/Week	1		Exam	ination		-
SI. No	Cours Course	e and e Code	Course Title	Teaching Department (TI and Question Paper Setting	Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	Т	Р	S					
1	PCC 21CS71		Big Data Analytics		3	0	0		3	50	50	100	3
2	PCC		Cloud Computing	Any CS Boar	2	0	0		3	50	50	100	2
3	PEC	v	Professional elective Course-II	Departmen	t 3	0	0		3	50	50	100	3
4	21XX73 PEC 21XX74	x	Professional elective Course-III		3	0	0		3	50	50	100	3
5	OEC 21XX75	<u>х</u>	Open elective Course-II	Concerned Departmen	t 3	0	0		3	50	50	100	3
6	Project 21CSP7	6	Project work	Two co inter fac	ontact h raction l culty and	ours /we between d studen	eek for the ts.	3	100	100	200	10	
								Total	350	350	700	24	
	CRAFCE	D											
VIIIS	DEIVIESTE	ĸ		1	Teachir	ng Hours	/Week			Fxam	ination		
SI. No	Cours Course	e and e Code	Course Title	Teaching Department	T Lecture	Tutorial	ط Tutorial ط Practical/ Drawing self-Study		Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	Semina 21CS81	r	Technical Seminar		One co inter fac	ontact h raction l culty and	iour /we between d studen	ek for the ts.		100		100	01
2	INT 21INT8	2	Research Internship/ Industry Internship		Two co inter fac	ontact h raction l culty and	ours /we between d studen	eek for 1 the ts.	03 (Batch wise)	100	100	200	15
3	2	1NS83	National Service Scheme (NSS)	NSS	Co	mplatad	during	the					
	2 NCMC	1PE83	Physical Education (PE) (Sports and Athletics)	PE	inte seme	rvening ster to V	period o VIII seme	of III ester.		50	50	100	0
	2	1YO83	Yoga	Yoga									
									Tota	250	150	400	16
				Professiona	l Elective -	- 11							
2109	5731	Object	oriented Modelling and Design		21CS734	Bloc	kchain T	echnolo	gy				
21CS732 Digital Image Processing 2					21CS735	Inter	rnet of T	hings					
210	5733	Crypto	graphy and Network Security										
				Professiona	Flective -								
2109	5741	Softwa	are Architecture and Design Patterns	10103510110	21CS744	Robe	otic Proc	ess Aut	omation	Design a	and Deve	lopment	
24.00												- spinent	
2103	5/42	Multia	igent Systems		21CS745	NoS	QL Data	Base					

Open Electives - II offered by the Department to other Department students 21CS754 Introduction to Data Science 21CS751 Programming in Python 21CS752 Introduction to AI and ML 21CS755 21CS753 Introduction to Big Data Note: PCC: Professional Core Course, PEC: Professional Elective Courses, OEC-Open Elective Course, AEC - Ability Enhancement Courses. L-Lecture, T-Tutorial, P-Practical / Drawing, S - Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination. Note: VII and VIII semesters of IV year of the programme (1) Institutions can swap VII and VIII Semester Scheme of Teaching and Examinations to accommodate research internship/ industry internship after the VI semester. (2) Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether VII or VIII semester is completed during the beginning of IV year or later part of IV year of the programme. PROJECT WORK (21XXP76): The objective of the Project work is (i) To encourage independent learning and the innovative attitude of the students. (ii) To develop interactive attitude, communication skills, organization, time management, and presentation skills. (iii) To impart flexibility and adaptability. (iv) To inspire team working. (v) To expand intellectual capacity, credibility, judgment and intuition. (vi) To adhere to punctuality, setting and meeting deadlines. (vii) To instil responsibilities to oneself and others. (viii)To train students to present the topic of project work in a seminar without any fear, face the audience confidently, enhance communication skills, involve in group discussion to present and exchange ideas. **CIE procedure for Project Work:** (1) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. (2) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. SEE procedure for Project Work: SEE for project work will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. TECHNICAL SEMINAR (21XXS81): The objective of the seminar is to inculcate self-learning, present the seminar topic confidently, enhance communication skill, involve in group discussion for exchange of ideas. Each student, under the guidance of a Faculty, shall choose, preferably, a recent topic of his/her interest relevant to the programme of Specialization. (i) Carry out literature survey, systematically organize the content. (ii) Prepare the report with own sentences, avoiding a cut and paste act. (iii) Type the matter to acquaint with the use of Micro-soft equation and drawing tools or any such facilities. (iv) Present the seminar topic orally and/or through PowerPoint slides. (v) Answer the gueries and involve in debate/discussion. (vi) Submit a typed report with a list of references.

The participants shall take part in the discussion to foster a friendly and stimulating environment in which the students are motivated to reach high standards and become self-confident.

Evaluation Procedure:

The CIE marks for the seminar shall be awarded (based on the relevance of the topic, presentation skill, participation in the question and answer session, and quality of report) by the committee constituted for the purpose by the Head of the Department. The committee shall consist of three teachers from the department with the senior-most acting as the Chairman.

Marks distribution for CIE of the course:

Seminar Report:50 marks

Presentation skill:25 marks

Question and Answer: 25 marks. ■ No SEE component for Technical Seminar

Non – credit mandatory courses (NCMC):

National Service Scheme/Physical Education (Sport and Athletics)/ Yoga:

(1) Securing 40 % or more in CIE,35 % or more marks in SEE and 40 % or more in the sum total of CIE + SEE leads to successful completion of the registered course.

(2) In case, students fail to secure 35 % marks in SEE, they has to appear for SEE during the subsequent examinations conducted by the University.

(3) In case, any student fails to register for NSS, PE or Yoga/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have not completed the requirements of the course. In such a case, the student has to fulfill the course requirements during subsequently to earn the qualifying CIE marks subject to the maximum programme period.

(4) Successful completion of the course shall be indicated as satisfactory in the grade card. Non-completion of the course shall be indicated as Unsatisfactory.

(5) These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the courses shall be mandatory for the award of degree.

			Visvesvaraya Tech SchemeofTeach Outcome-Based Education (O	nological Universi ing and examinatio DBE)andChoiceBased	ty, Bel ons-20 dCredit	agavi 22 Syster	n(CBCS	5)					
ICom	actor (CSE)	Stream) (Dhu	(Effectivefrom	theacademicyear 20	22-23]								
ISelli	ester (USE 3	Stream) (Phy				Teac Hours	hing /Week			Examiı	nation		
SI. No	Course ai co	nd course de	Course titlee	TD/PSB	Theory Lecture	H Tutorial	Practical/ Drawing	A SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	*ASC(IC)	BMATS101	Mathematics-I for CSE Stream	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	BPHYS102	Applied Physics for CSE stream	Physics	2	2	2	0	03	50	50	100	04
3	ESC	BPOPS103	Principles of Programming Using C	CSE	2	0	2	0	03	50	50	100	03
4	ESC-I	BESCK104x	Engineering Science Course-I	Respective Engg Dept	3	0	0	0	03	50	50	100	03
	ETC-I	BETCK105x	Emerging Technology Course-I		3	0	0	0	03				
5			OR	Any Dept						50	50	100	03
	PLC-I	BPLCK105x	Programming Languages Course-I		2	0	2	0	03				
		BENGK106	Communicative English										
6	AEC		OR	Humanities	1	0	0	0	01	50	50	100	01
		BPWSK106	Professional Writing Skills in English										
_		BKSKK107 BKBKK107	Samskrutika Kannada/ Balake Kannada		4	0			01	50	50	100	01
/	HSMC		OR	Humanities	1	0	0	0	01	50	50	100	01
		BICOK107	Indian Constitution										
		BIDTK158	Innovation and Design Thinking		1	0	0	0	02				
8	AEC/SDC		OR	Any Dept						50	50	100	01
BSFHK158 Scientific Foundations of Health				1	0	0	0	01					
				TOTAL						400	400	800	20
SDA-S	Skill Developn	nent Activities	, TD/PSB- Teaching Department / Paper	r Setting Board, ASC- A	pplied	Science	Course	, ESC-	Enginee	ring Scie	ence Cou	rses, E	TC-

Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMS**-Humanity and Social Science and management Course, **SDC**- Skill Development Course, **CIE**-Continuous Internal Evaluation, **SEE**- Semester End Examination, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

Credit Definition:	04-Credits courses are to be designed for 50 hours of Teaching-Learning Session
1-hour Lecture (L) per week=1Credit	04-Credits (IC) are to be designed for 40 hours' theory and 12-14 hours of practical
2-hoursTutorial (T) per week= 1Credit	sessions
2-hours Practical / Drawing (P) per week= 1Credit	03-Credits courses are to be designed for 40 hours of Teaching-Learning Session
2-hous Skill Development Actives (SDA) per week = 1 Credit	02- Credits courses are to be designed for 25 hours of Teaching-Learning Session
	01-Credit courses are to be designed for 12-15 hours of Teaching-Learning sessions

Student's Induction Program: Motivating (Inspiring) Activities under the Induction program – The main aim of the induction program is to provide newly admitted students a broad understanding of society, relationships, and values. Along with the knowledge and skill of his/her study, students' character needs to be nurtured as an essential quality by which he/she would understand and fulfill the responsibility as an engineer. The following activities are to be covered in 21 days. Physical Activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to Local areas, Familiarization with Department/Branch and Innovation, etc. For details, refer the ANNEXURE-I of Induction Programs notification of the University published at the beginning of the 1st semester.

AICTE Activity Points to be earned by students admitted to BE/ B.Tech., / B. Plan day college program (For more details refer to Chapter 6, AICTE Activity Point Program, Model Internship Guidelines): Over and above the academic grades, every regular student admitted to the 4 years Degree program and every student entering 4 years Degree programs through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Program. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, any time during the semester weekends, and holidays, as per the liking and convenience of the student from the year of entry to the program. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, an Eighth Semester Grade Card shall be issued only after earning the required activity points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

*- BMATS101Shall have the 03 hours of theory examination (SEE), however, practical sessions question shall be included in the theory question papers. ** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.

#- BPHYS102SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination

ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or **if the nature then, of course, required practical learning** syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0).

All 01 Credit- courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

	(ESC-I) Engineering Science Courses-I					(ETC-I) Emerging Technology Courses-I			
Code	Title	L	Т	Р	Code	Title	L	Т	Р
BESCK104A	Introduction to Civil Engineering	3	0	0	BETCK105A	Smart Materials and Systems	3	0	0
BESCK104B	Introduction to Electrical Engineering	3	0	0	BETCK105B	Green Buildings	3	0	0
BESCK104C	Introduction to Electronics	3	0	0	BETCK105C	Introduction to Nano Technology	3	0	0
	Communication								
BESCK104D	Introduction to Mechanical Engineering	3	0	0	BETCK105D	Introduction to Sustainable Engineering	3	0	0
BESCK104E	Introduction to C Programming	2	0	2	BETCK105E	Renewable Energy Sources	3	0	0
					BETCK105F	Waste Management	3	0	0
					BETCK105G	Emerging Applications of Biosensors	3	0	0
					BETCK105H	Introduction to Internet of Things (IOT)	3	0	0
					BETCK105I	Introduction to Cyber Security	3	0	0
					BETCK105J	Introduction to Embedded System	3	0	0
(PLC-I) Prog	ramming Language Courses-I								
Code	Title	L	Т	Р					
BPLCK105A	Introduction to Web Programming	2	0	2					
BPLCK105B	Introduction to Python Programming	2	0	2					
BILLCK105CBasics of JAVA programming2				2					
BPLCK105D	Introduction to C++ Programming	2	0	2					
The course 2 DEPARTMEN	22ESC145/245, Introduction to C Program	min	ıg, a	nda	all courses un	der PLC and ETC groups can be taught by ANY			

- The student has to select one course from the ESC-I group.
- CSE/ISE and allied branches Students shall opt for any one of the courses from the ESC-I group **except**, BESCK104E-Introduction to C **Programming**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-I or PLC-I group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

	Visvesvaraya Technological University, Belagavi Schemeof Teaching and Examinations-2022												
			Outcome-Based Education (OBE)andChoiceBased	CreditS	z vstem	(CBCS)						
IISom	octor(CSFStra	am)	(Effectivefromthea	academicyear 202	22-23)	st com	octor une	lor Dh	veice Cr				
iiseiii		anij				Tea	ching		E	xaminatio	n		
SI. No	Course a Co	nd Course de	Course Title	TD/PSB	Theory Lecture	Tutorial	Practical/ Drawing	SDA	iration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	Т	_ Р	S	Du				
1	*ASC(IC)	BMATS201	Mathematics-II forCSE Stream	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	BCHES202	Applied Chemistry for CSE Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	BCEDK203	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-II	BESCK204x	Engineering Science Course-II	Respective Engg. Dept	3	0	0	0	03	50	50	100	03
	PLC-II	BETCK205x	Programming Language Course-II		2	00	2	0	03				
5			OR	Any Dept						50	50	100	03
	ETC-II	BPLCK205x	Emerging Technology Course-II		3 0	0	0	0	03				
		BPWSK206	Professional Writing Skills in English										
6	AEC		OR	Humanities	1	0	0	0	01	50	50	100	01
		BENGK206	Communicative English										
		BICOK207	Indian Constitution		1	0	0	0					
7	HSMS		OR	Humanities					01	50	50	100	01
		BKSKK207/ BKBKK207	Samskrutika Kannada/ Balake Kannada		1	0	0	0					
		BSFHK258	Scientific Foundations of Health		1	0	0	0	01				
8	HSMS		OR	Any Dept						50	50	100	01
		KIDTK258		1	0	0	0	01					
			TOTAL						400	400	800	20	

SDA-Skill Development Activities, **TD/PSB**- Teaching Department / Paper Setting Board, **ASC**-Applied Science Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMS**-Humanity and Social Science and management Course, **SDC**- Skill Development Course, **CIE**-Continuous Internal Evaluation, **SEE**- Semester End Examination, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

*- BMATS201Shall have the 03 hours of theory examination(SEE), however, practical sessions question shall be included in the theory question papers. ** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.

#- BCHES202- SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination

ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or if the nature the of course required experimental learning syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0),

All 01 Credit- courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

	(ESC-II) Engineering Science Courses-II				(ETC-II) Emerging Technology Courses-II									
Code	Title	L	Τ	Р	Code	Title	L	Τ	Р					
BESCK204A	Introduction to Civil Engineering	3	0	0	BETCK205A	Smart materials and Systems	3	0	0					
BESCK204B	Introduction to Electrical Engineering	3	0	0	BETCK205B	Green Buildings	3	0	0					
BESCK204C	Introduction to Electronics	3	0	0	BETCK205C	Introduction to Nano Technology	3	0	0					
	Communication													
BESCK204D	Introduction to Mechanical Engineering	3	0	0	BETCK205D	Introduction to Sustainable Engineering	3	0	0					
BESCK204E	Introduction to C Programming	2	0	2	BETCK205E	Renewable Energy Sources	3	0	0					
					BETCK205F	Waste Management	3	0	0					
					BETCK205G	Emerging Applications of Biosensors	3	0	0					
					BETCK205H	Introduction to Internet of Things(IoT)	3	0	0					
					BETCK205I	Introduction to Cyber Security	3	0	0					
					BETCK205J	Introduction to Embedded System	3	0	0					
(PLC-II) Prog	gramming Language Courses-II													
Code	Title	L	Т	Р										
BPLCK205A	Introduction to Web Programming	2	0	2										
BPLCK205B	Introduction to Python Programming	2	0	2										
BPLCK205C	Basics of JAVA programming	2	0	2										
BPLCK205D	Introduction to C++ Programming	2	0	2										
The course	BESCK204E, Introduction to C Program	mir	ıg,	and	all courses	under PLC and ETC groups can be taugh	t by	/ Al	NY					
DEPARTMEN	NT													

- The student has to select one course from the ESC-II group.
- CSE/ISE and allied branches Students shall opt for any one of the courses from the ESC-II group **except**, BESCK245E-**Introduction to C Programming**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-II or PLC-II group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

	Visvesvaraya Technological University, Belagavi Schemeof Teaching and Examinations-2022												
			Outcome-Based Education(OBE)andChoiceBased	CreditSy	vstem	(CBCS)						
I Sem	ester (CSE St	ream)	Lenecuveiromthe	academicyear 202	22-23)				(For Ch	emistry	Group)		
						Tea Hours	ching s/Week		E	xaminatio	n		
SI. No	Course ai Co	nd Course de	Course Title	TD/PSB	Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	*ASC(IC)	BMATS101	Mathematics-I forCSE Stream	Maths	L 2	1 2	2	0	03	50	50	100	04
2	#ASC(IC)	BCHES102	Applied Chemistry for CSE Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	BCEDK103	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-I	BESCK104x	Engineering Science Course-I	Respective Engg Dept	3	0	0	0	03	50	50	100	03
	ETC-I	BETCK105x	Emerging Technology Course-I		3	0	0	0	03				
5		I	OR	Any Dept						50	50	100	03
	PLC-I	BPLCK105x	Programming Language Course-I		2	0	2	0	03				
		BPWSK106	Professional Writing Skills in English										
6	AEC		OR	Humanities	1	0	0	0	01	50	50	100	01
		BENGK106	Communicative English										
		BICOK107	Indian Constitution		1	0	0	0					
7	HSMS		OR	Humanities					01	50	50	100	01
		BKSKK107/ BKBKK107	Samskrutika Kannada/ Balake Kannada		1	0	0	0					
	BSFHK158 Scientific Foundations of Health	Scientific Foundations of Health		1	0	0	0	01					
8	HSMS		OR	Any Dept						50	50	100	01
		- 1 -	1	0	0	0	02						
				TOTAL						400	400	800	20

SDA-Skill Development Activities, **TD/PSB**- Teaching Department / Paper Setting Board, **ASC**-Applied Science Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMS**-Humanity and Social Science and management Course, **SDC**- Skill Development Course, **CIE** -Continuous Internal Evaluation, **SEE**- Semester End Examination, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

*- BMATS101Shall have the 03 hours of theory examination (SEE), however, practical sessions question shall be included in the theory question papers. ** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.

#- BCHES102- SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination

ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or if the nature the of course required experimental learning syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0),

All 01 Credit- courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

Credit Definition:	04-Credits courses are to be designed for 50 hours of Teaching-Learning Session
1-hour Lecture (L) per week= 1Credit	04-Credits (IC) are to be designed for 40 hours' theory and 12-14 hours of practical sessions
2-hoursTutorial (T) per week= 1Credit	03-Credits courses are to be designed for 40 hours of Teaching-Learning Session
2-hours Practical / Drawing (P) per week= 1Credit	02- Credits courses are to be designed for 25 hours of Teaching-Learning Session
2-hous Skill Development Actives (SDA) per week = 1 Credit	01-Credit courses are to be designed for 12-15 hours of Teaching-Learning sessions

Student's Induction Program: Motivating (Inspiring) Activities under the Induction program – The main aim of the induction program is to provide newly admitted students a broad understanding of society, relationships, and values. Along with the knowledge and skill of his/her study, students' character needs to be nurtured as an essential quality by which he/she would understand and fulfill the responsibility as an engineer. The following activities are to be covered in 21 days. Physical Activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to Local areas, Familiarization with Department/Branch and Innovation, etc. For details, refer the ANNEXURE-I of Induction Programs notification of the University published at the beginning of the 1st semester.

AICTE Activity Points to be earned by students admitted to BE/ B.Tech., / B. Plan day college program (For more details refer to Chapter 6, AICTE Activity Point Program, Model Internship Guidelines): Over and above the academic grades, every regular student admitted to the 4 years Degree program and every student entering 4 years Degree programs through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Program. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, any time during the semester weekends, and holidays, as per the liking and convenience of the student from the year of entry to the program. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, an Eighth Semester Grade Card shall be issued only after earning the required activity points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

	(ESC-I) Engineering Science Courses-I				(ETC-I) Emerging Technology Courses-I								
Code	Title	L	Τ	Р	Code	Title	L	Τ	Р				
BESCK104A	Introduction to Civil Engineering	3	0	0	BETCK105A	Smart Materials and Systems	3	0	0				
BESCK104B	Introduction to Electrical Engineering	3	0	0	BETCK105B	Green Buildings	3	0	0				
BESCK104C	Introduction to Electronics	3	0	0	BETCK105C	Introduction to Nano Technology	3	0	0				
	Communication												
BESCK104D	Introduction to Mechanical Engineering	3	0	0	BETCK105D	Introduction to Sustainable Engineering	3	0	0				
BESCK104E	Introduction to C Programming	2	0	2	BETCK105E	Renewable Energy Sources	3	0	0				
					BETCK105F	Waste Management	3	0	0				
					BETCK105G	Emerging Applications of Biosensors	3	0	0				
					BETCK105H	Introduction to Internet of Things (IOT)	3	0	0				
					BETCK105I	Introduction to Cyber Security	3	0	0				
					BETCK105J	Introduction to Embedded System	3	0	0				
(PLC-I) Prog	ramming Language Courses-I												
Code	Title	L	Т	Р									
BPLCK105A	Introduction to Web Programming	2	0	2									
BPLCK105B	Introduction to Python Programming	2	0	2									
BPLCK105C	Basics of JAVA programming	2	0	2									
BPLCK105D	Introduction to C++ Programming	2	0	2									
The course	BESCK104E, Introduction to C Program	mir	ıg,	and	all courses	under PLC and ETC groups can be taugh	t by	/ Al	NY				
DEPARTMEN	JT												

- The student has to select one course from the ESC-I group.
- CSE/ISE & allied branch students shall opt for any one of the courses from the ESC-I group **except**, BESCK145E-**Introduction to C Programming**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-I or PLC-I group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

			Visvesvaraya Tech Scheme of Teach	nological Universit	y, Bela 3ns-20	gavi 22							
			Outcome-Based Education(O	BE)andChoiceBased	CreditS	ystem(CBCS)						
II Ser	nester (CSE	Streams)	(Effectivefrom	theacademicyear 20	22-23) (For sti	<u>idents v</u>	who att	ended	1 st seme	ster und	ler Chen	nistry (From)
	(002					Teac	hing /Wook			Exami	nation		
SI. No	Course ai Co	nd Course de	Course Title	TD/PSB	Theory Lecture	Tutorial	Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	*ASC(IC)	BMATS201	Mathematics-II for CSEStream	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	BPHYS202	Applied Physics for CSE Stream	Physics	2	2	2	0	03	50	50	100	04
3	ESC	BPOPS203	Principles of Programming Using C	CSE	2	0	2	0	03	50	50	100	03
4	ESC-II	BESCK204x	Engineering Science Course-II	Respective Engg dept	3	0	0	0	03	50	50	100	03
	ETC-II	BPLCK205x	Programming Language Course-II		2	00	2	0	03				
5			OR	Any Dept						50	50	100	03
	PLC-II	BETCK205x	Emerging Technology Course-II		3	0	0	0	03				
		BENGK206	Communicative English										
6	AEC		OR	Humanities	1	0	0	0	01	50	50	100	01
		BPWSK206	Professional Writing Skills in English										
-	UCMC	BKSKK207 BKBKK207	Samskrutika Kannada/ Balake Kannada	Humonition	1		0		01	50	50	100	01
/	HSMC		OR	numanities		0	0	0	01	50	50	100	01
		BICOK207	Indian Constitution										
		BIDTK258	Innovation and Design Thinking		1	0	0	0	01			100	
8	AEC/SDC		OR	Any Dept						50	50	100	01
	BSFHK258 Scientific Foundations of Health				1	0	0	0	01				
	ΤΟΤΑ									400	400	800	20

SDA-Skill Development Activities, **TD/PSB**- Teaching Department / Paper Setting Board, **ASC**-Applied Science Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMS**-Humanity and Social Science and management Course, **SDC**- Skill Development Course, **CIE**-Continuous Internal Evaluation, **SEE**- Semester End Examination, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

*- BMATS201Shall have the 03 hours of theory examination(SEE), however, practical sessions question shall be included in the theory question papers. ** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.

#- BPHYS202SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination

ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or if the nature of the of course required experimental learning syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0). All 01 Credit- courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

	(ESC-II) Engineering Science Courses-II					(ETC-II) Emerging Technology Courses-II					
Code	Title	L	Т	Р	Code	Title	L	Т	Р		
BESCK204A	Introduction to Civil Engineering	3	0	0	BETCK205A	Smart materials and Systems	3	0	0		
BESCK204B	Introduction to Electrical Engineering	3	0	0	BETCK205B	Green Buildings	3	0	0		
BESCK204C	Introduction to Electronics	3	0	0	BETCK205C	Introduction to Nano Technology	3	0	0		
	Communication										
BESCK204D	Introduction to Mechanical Engineering	3	0	0	BETCK205D	Introduction to Sustainable Engineering	3	0	0		
BESCK204E	Introduction to C Programming	2	0	2	BETCK205E	Renewable Energy Sources	3	0	0		
					BETCK205F	Waste Management	3	0	0		
					BETCK205G	Emerging Applications of Biosensors	3	0	0		
					BETCK205H	Introduction to Internet of Things (IoT)	3	0	0		
					BETCK205I	Introduction to Cyber Security	3	0	0		
					BETCK205J	Introduction to Embedded System	3	0	0		
(PLC-II) Prog	gramming Language Courses-II										
Code	Title	L	Τ	Р							
BPLCK205A	Introduction to Web Programming	2	0	2							
BPLCK205B	Introduction to Python Programming	2	0	2							
BPLCK205C	Basics of JAVA programming	2	0	2							
BPLCK205D Introduction to C++ Programming 2 0 2											
The course	BESCK204E, Introduction to C Program	mir	ıg,	and	all courses	under PLC and ETC groups can be taugh	it b	y A	NY		
DEPARTMEN	NT										

- The student has to select one course from the ESC-II group.
- Civil Engineering Students shall opt for any one of the courses from the ESC-II group **except**, BESCK204E-**Introduction to C Programming**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-II or PLC-II group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

			VISVESVARAYA B.F. in C	TECHNOLOGICAL UN omputer Science an	NIVERSITY, d Enginee	, BELAGA ring	AVI						
			Scheme o	f Teaching and Exar	ninations	2022							
			Outcome Based Educat	ion (OBE) and Choice	- Based Cr	edit Svst	em (CB	(5)					
			(Effective	from the academic	vear 2023	(-74)		63)					
III SEN	MESTER		(Encetive		ycur 2023	, 24)							
-	-				Те	eaching Hou	rs /Week			Exan	nination		_
SI. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Theory Lecture	Tut orial	Prac tical / Dra win g	SDA	Dur atio n in hou rs	CIE Mar ks	SEE Mar ks	Total Marks	C r d i t
					L	Т	Р	S					s
1	PCC/BS C	BCS301	Mathematics for Computer Science	TD: Maths PSB: Maths/CS	3	2	0		03	50	50	100	4
2	IPCC	BCS302	Digital Design & Computer Organization	TD: CS PSB : CS	3	0	2		03	50	50	100	4
3	IPCC	BCS303	Operating Systems	TD: CS PSB : CS	3	0	2		03	50	50	100	4
4	PCC	BCS304	Data Structures and Applications	TD: CS PSB : CS	3	0	0		03	50	50	100	3
5	PCCL	BCSL305	Data Structures Lab	TD: CS PSB : CS	0	0	2		03	50	50	100	1
6	ESC	BCS306x	ESC/ETC/PLC	TD: CS PSB : CS	2	0	2		03	50	50	100	3
7	UHV	BSCK307	Social Connect and Responsibility	Any Department	0	0	2		01	100		100	1
				TD: Concerned	If th	ne course is	a Theory		01				
8	AEC/	BCS358x	Ability Enhancement Course/Skill Enhancement	department	1		0		~-	50	50	100	1
	SEC			1 30.03	0		aboratory		02				
		BNSK359	National Service Scheme (NSS)	NSS coordinator									
9	МС	BPEK359	Physical Education (PE) (Sports and Athletics)	Physical Education Director	0	0	2			100		100	0
		BYOK359	Yoga	Yoga Teacher									
									Total	550	350	900	2 1

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JBOS 10.02.2023 / V5

14.09.2023

PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation.K :This letter in the course code indicates common to all the stream of engineering. ESC: Engineering Science Course, ETC: Emerging Technology Course, PLC: Programming Language Course

•											
Engineering Science Course (ESC/ETC/PLC) (Note- Student should opt for the course which should not be similar to the course opted in 1 st Year)											
BCS306A	Object Oriented Programming with Java										
BCS306B Object Oriented Programming with C++											
	Ability Enhancemer	nt Course – III									
BCS358A	BCS358A Data analytics with Excel BCS358C Project Management with Git										
BCS358B	CS358B R Programming BCS358D Data Visualization with Python										

Professional Core Course (IPCC): Refers to 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. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23 may please be refered.

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.

			ναβάνα τες η Ν		SITY BE		/I						
			B.E. in Comp	uter Science and E	inginee	ring	, i						
			Scheme of Te	aching and Examir	nations	2022							
			Outcome Based Education (OBE) and Choice B	ased Cr	edit Sv	ystem (C	CBCS)					
			(Effective fro	m the academic ye	ar 2023	-24)							
IV SEM	MESTER		· · · · · · · · · · · · · · · · · · ·		•								T
				Teaching	1	Гeaching т	Hours /We	ek I		Exam	ination		
SI. No	Cour Cours	rse and se Code	Course Title	and Question Paper Setting Board (PSB)	The ory Lect ure	u t o ri a l	Prac tical / Dra win g	Self - Study	Dur atio n in hou rs	CIE Mar ks	SEE Mark s	Total Mar ks	C r d it s
		1			L	т	Р	S					
1	PCC/BS C	BCS401	Analysis & Design of Algorithms	TD: CS PSB : CS	3	0	0		03	50	50	100	3
2	IPCC	BCS402	Microcontrollers	TD: CS PSB : CS	3	0	2		03	50	50	100	4
3	IPCC	BCS403	Database Management Systems	TD: CS PSB : CS	3	0	2		03	50	50	100	4
4	PCCL	BCSL404	Analysis & Design of Algorithms Lab	TD: CS PSB : CS	0	0	2		03	50	50	100	1
5	ESC	BCS405x	ESC/ETC/PLC	TD: CS/Maths PSB : CS/Maths	2	2	0		03	50	50	100	3
					lf th	ie cou	rse is Th	eory	01				
c	AEC/	DCCAECY	Ability Enhancement Course/Skill	TD: Concerned	1	0	0		01	50	50	100	1
0	SEC	BC3450X	Enhancement Course- IV	PSB:CS	lf t	he co	urse is a	lab	02	50	50	100	1
					0	0	2		02				
4	BSC	BBOK407	Biology For Engineers	TD / PSB: BT, CHE,	2	0	0		03	50	50	100	2
7	UHV	BUHK408	Universal human values course	Any Department	1	0	0		01	50	50	100	1
		BNSK459	National Service Scheme (NSS)	NSS coordinator									
9	МС	BPEK459	Physical Education (PE) (Sports and Athletics)	Physical Education Director	0	0	2			100		100	0
		BYOK459	Yoga	Yoga Teacher									

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			Total	500	400	900	19						
PCC: Profession	al Core Course, PCCL: Professional Core Course laboratory, UHV: Uni	versal Human	Value Course, MC : Mandatory C	ourse (N	lon-credit), AEC : A	bility						
Enhancement C	course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practic	cal S= SDA : Skill	l Development Activity, CIE : Cont	tinuous I	nternal Ev	valuation	, SEE :						
Semester End E	valuation. K :This letter in the course code indicates common to all the	stream of engin	eering.										
	Ability Enhancement Course / Ski	ll Enhancemei	nt Course – IV										
BCS456A	Green IT and Sustainability	BCS456C	UI/UX (Lab)										
BCS456B	Capacity Planning for IT	BCS456D	Technical writing using LATE	X (Lab)									
	Engineering Science Course (ESC/ETC/PLC)												
BCS405A	CS405A Discrete Mathematical Structures BCS405C Optimization Technique												
BCS405B	CS405B Graph Theory BCS405C Optimization rectinique												
Professional Co	re Course (IPCC): Refers to Professional Core Course Theory Integrated	d with practical	of the same course. Credit for I	PCC can	be 04 and	its Teac	hing–						
Learning hours	(L : T : P) can be considered as $(3 : 0 : 2)$ or $(2 : 2 : 2)$. The theory part	t of the IPCC sh	all be evaluated both by CIE and	SEE. Th	e practica	I part sh	all be						
evaluated by o	nly CIE (no SEE). However, questions from the practical part of IPCC	shall be includ	led in the SEE question paper. F	or more	e details, t	the regul	lation						
governing the D	Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23												
National Servio	e Scheme /Physical Education/Yoga: All students have to register	for any one o	f the courses namely National	Service	Scheme (NSS), Ph [.]	ysical						
Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator c	of the course du	ring the first week of III semester	rs. Activ	ities shall	be carrie	d out						
between III sen	etween 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 ev	gree. 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 calcu	ulation of SGPA	and CGPA, but completion of th	ne cours	es is man	datory fc	or the						
award of degre	2.		· ·			-							

						BELA	GAVI						
			VISVESVARATA TEC	autor Science and	Enginoo	, DELA ring	GAVI						
			B.E. In Com	the title of the pro	aram	iiig							
			B.L. III Schomo of T	aching and Exami	nations	2022							
			Outcome Pased Education	(ORE) and Chaica E		ZUZZ	uctor (
			(Effective fre	(OBE) and Choice E	aseu Ci	euit 5	ystem (LDC3					
V SEM	IFSTER		(Effective fic			9-24)							
				Teaching	L I	eaching	Hours /We	ek		Exam	ination		
SI. No	Cc Co	ourse and urse Code	Course Title	Department (TD) and Question Paper Setting Board (PSB)	The ory Lect ure	T u t o ri a l	Prac tical / Dra win g	SDA	Dur atio n in hou rs	CIE Mar ks	SEE Mark S	Total Mar ks	C r d it s
					L	т	Р	S					
1	HSMS	BCS501	Software Engineering & Project Management (This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course title should bear the word Management.)	TD: CS PSB : CS	3	0	0		03	50	50	100	3
2	IPCC	BCS502	Computer Networks	TD: CS PSB : CS	3	0	2		03	50	50	100	4
3	PCC	BCS503	Theory of Computation	TD: CS PSB : CS	3	2	0		03	50	50	100	4
4	PCCL	BCSL504	Web Technology Lab	TD: CS PSB : CS	0	0	2		03	50	50	100	1
5	PEC	BCS515x	Professional Elective Course	TD: CS PSB : CS	3	0	0		03	50	50	100	3
6	PROJ	BCS586	Mini Project	TD: CS PSB : CS	0	0	4		03	100		100	2
7	AEC	BRMK557	Research Methodology and IPR	TD: HSM PSB : HSM	2	2	0		02	50	50	100	3
8	МС	BESK508	Environmental Studies	TD: HSM PSB : HSM	2	0	0		02	50	50	100	2
9	мс	BNSK559	National Service Scheme (NSS)	NSS coordinator	0	0	2			100		100	0
	IVIC	BPEK559	Physical Education (PE) (Sports and Athletics)	Director	0	0	2			100		100	

	BYOK559	Yoga		Yoga Teacher									
									Total	500	300	800	22
	Professional Elective Course												
BCS51	L5A Computer	Graphics		BCS51	5C	Unix S	System F	Programm	ning				
BCS51	5B Artificial Ir	BCS51	5D	Distri	buted Sv	stems							

PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SCS: Semester End Evaluation. K: The letter in the course code indicates common to al the stream of engineering. PROJ: Project /Mini Project. PEC: Professional Elective Course

Professional Core Course (IPCC): Refers to 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. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23

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.

Mini-project work: Mini Project is a laboratory-oriented/hands on course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications etc. Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini- project can be assigned to an individual student or to a group having not more than 4 students.

CIE procedure for Mini-project:

(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batches mates.

(ii) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project.

The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

No SEE component for Mini-Project.

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Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering a professional elective is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

B.E. in Computer Science and Engineering

Scheme of Teaching and Examinations2022

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

(Effective from the academic year 2023-24)

				Teachi	ing		Teaching	Hours /Wee	ek		Exam	nination		
SI. No	Co Coι	urse and Irse Code	Course Title	Departmen and Ques Paper Se Board (1	nt (TD) stion tting PSB)	The ory Lect ure	T u t o ri al	Prac tical / Dra win g	SDA	Dur atio n in hou rs	CIE Mar ks	SEE Mark s	Total Mark s	C r d it s
						L	т	Р	S					
1	IPCC	BCS601	Cloud Computing (Open Stack /Google)	TD: C PSB : (cs	3	0	2		03	50	50	100	4
2	PCC	BCS602	Machine Learning	TD: (PSB ·	CS	4	0	0		03	50	50	100	4
3	PEC	BCS613x	Professional Elective Course	TD: C PSB : (is cs	3	0	0		03	50	50	100	3
4	OEC	BCS654x	Open Elective Course	TD: C PSB : (TD: CS PSB : CS 3 0		0	0		03	50	50	100	3
5	PROJ	BCS685	Project Phase I	TD: C PSB : (TD: CS PSB : CS		0	4		03	100		100	2
6	PCCL	BCSL606	Machine Learning lab	TD: C PSB : (:S CS	0	0	2		03	50	50	100	1
7						If the co	urse is o	ffered as a	Theory	-				
	AEC/SD	BCS657v	Ability Enhancement Course/Skill Development	TD and I	PSB: ned	1	0	0		01	50	50	100	1
	С	BC3037X	Course V	departm	nent	If cours	e is offe	ered as a	practical	01	50	50	100	1
						0	0	2						
		BNSK658	National Service Scheme (NSS)	NSS coord	linator									
8	MC	BPEK658	Physical Education (PE) (Sports and Athletics)	Physical Education Director		0	0	2			100		100	0
		BYOK658	Yoga	Yoga Tea	acher									
									Total	500	300	800	18	
Professional Elec				tive Cou	irse									
BCS61	BCS613A Blockchain Technology			BCS613	C	Compi	ler Design							
BCS61	3CS613B Computer Vision				BCS613	D	Advan	iced Java						

VI SEMESTER

	Open Elective Course										
BC\$6544	Introduction to Data Structures	BCS654C	Mobile Application Development								
BCS654B	Fundamentals of Operating Systems	BCS654D	Introduction to Al								
	Ability Enhancement Course / S	kill Enhancement (Course-V								
BCS657A	Progressive App Development	BCS657C	Agile								
BCS657B	I osca – Automated Software Testing	BCS657D									
PCC: Professio	onal Core Course, PCCL: Professional Core Course laboratory, UHV: U	niversal Human	Value Course, MC: Mandatory Course (Non-credit), AEC: Ability								
Enhancement	Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Prac	tical S= SDA : Sk	ill Development Activity, CIE : Continuous Internal Evaluation, SEE :								
Semester End	Evaluation. \mathbf{K} : The letter in the course code indicates common to al t	he stream of en	gineering. PROJ : Project /Mini Project. PEC : Professional Elective								
Course. PROJ:	Project Phase -I, OEC: Open Elective Course										
Professional C	Core Course (IPCC): Refers to Professional Core Course Theory Integrate	ed with practica	Is of the same course. Credit for IPCC can be 04 and its Teaching-								
Learning hour	s (L : T : P) can be considered as $(3:0:2)$ or $(2:2:2)$. The theory particular terms of the theory particular terms of the terms of t	art of the IPCC s	hall be evaluated both by CIE and SEE. The practical part shall be								
evaluated by	valuated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation										
governing the	Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23										
National Serv	ice Scheme /Physical Education/Yoga: All students have to registe	er 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 d	uring the first week of III semesters. Activities shall be carried out								
between III se	mester 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 e	vents shall be appropriately scheduled by the colleges and the same	shall be reflect	ed 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 cal	culation of SGP	A and CGPA, but completion of the course is mandatory for the								
award of degr	ee.										
Professional E	elective Courses (PEC): A professional elective (PEC) course is intended	to enhance the	e depth and breadth of educational experience in the Engineering								
and Technolog	gy curriculum. Multidisciplinary courses that are added supplement the	he latest trend	and advanced technology in the selected stream of engineering.								
Each group wi	ll provide an option to select one course. The minimum number of stuc	dents' strengths	for offering professional electives is 10. However, this conditional								
shall not be ap	pplicable to cases where the admission to the program is less than 10.										
Open Elective	Courses:										
Students belo	nging to a particular stream of Engineering and Technology are not enti	tled to the oper	n electives offered by their parent Department. However, they can								
opt for an elec	tive offered by other Departments, provided they satisfy the prerequis	ite condition if a	any. Registration to open electives shall be documented under the								
guidance of th	e Program Coordinator/ Advisor/Mentor. The minimum numbers of st	udents' strengt	h for offering Open Elective Course is 10. However, this condition								
shall not be ap	pplicable to class where the admission to the program is less than 10.										
Project Phase	-I: Students have to discuss with the mentor /guide and with their help	he/she has to c	omplete the literature survey and prepare the report and finally								

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define the problem statement for the project work.

			VISVESVARAYA TE	CHNOLOGICAL	UNIVERSI	TY, BE	LAGAVI						
			B.E. in Com	puter Science	and Engin	eering	Z						
			Scheme of T	eaching and E	Examinatio	ns202	2						
			Outcome Based Education	(OBE) and Ch	oice Based	Credit	t Svstem (CBCS)					
			(Effective fro	om the acader	mic vear 20	23-24	, , .)	,					
VIISEN	IESTER (Sw	vappable VII and V	/III SEMESTER)		- 1		/						
				Teaching		Teachi	ng Hours /Wee	ek		Exam	ination	T	_
SI. No	Co Coi	urse and urse Code	Course Title	Department (and Questio Paper Settin Board (PSE	TD) n The g ory 3) Lect ure	l u t o ri al	Prac tical / Dra win g	SDA	Dur atio n in hou rs	CIE Mar ks	SEE Mark s	Total Mark s	C r d it s
					L	т	Р	S					
1	IPCC	BCS701	Internet of Things	TD: CS PSB : CS	3	0	2		03	50	50	100	4
2	IPCC	BCS702	Parallel Computing	TD: CS PSB : CS	3	0	2		03	50	50	100	4
3	PCC	BCS703	Cryptography & Network Security	TD: CS PSB : CS	4	0	0		03	50	50	100	4
4	PEC	BCS714x	Professional Elective Course	TD: CS PSB : CS	3	0	0		03	50	50	100	3
5	OEC	BCS755x	Open Elective Course	TD: CS PSB : CS	3	0	0		01	50	50	100	3
6	PROJ	BCS786	Major Project Phase-II	TD: CS PSB : CS	0	0	12		03	100	100	200	6
										400	300	700	24
		-	Pro	ofessional Electiv	ve Course				•				
BCS71	4A	Deep Learning		B	BCS714C	Ente	erprise Data V	Varehousi	ng				
BCS/1	4B	Natural Langu		Open Elective C	BCS/14D	Big L	Data Analytic	S					
BCS75	5A	Introduction to	o DBMS	B	BCS755C	Soft	ware Enginee	ering					
BCS75	5B	Introduction to	o Algorithms	В	SCS755D								
PCC:	Professio	onal Core Cou	rse, PCCL: Professional Core Course laborator	ry, PEC : Profess	ional Electiv	e Cou	rse, OEC : C	Open Ele	ctive Cou	irse PR: P	roject Wo	ork, L: Lee	cture,
T: Tu	torial, P :	Practical S= S	SDA: Skill Development Activity, CIE: Continue	ous Internal Eva	aluation, SE	E: Sem	ester End	Evaluatio	on. TD- T	eaching I	Departme	nt, PSB : I	Paper
Settir	ng depart	:ment, OEC : 0	Open Elective Course, PEC: Professional Electiv	ve Course. PRO	J: Project w	ork							
Nat -	N/11 1												

Note: VII and VIII semesters of IV years of the program

(1) Institutions can swap the VII and VIII Semester Schemes of Teaching and Examinations to accommodate research internships/ industry internships after the VI semester.

(2) Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether the VII or VIII semesters is completed during the beginning of the IV year or the later part of IV years of the program.

Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.

Open Elective Courses:

Students belonging to a particular stream of Engineering and Technology are not entitled to the open electives offered by their parent Department. However, they can opt for an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor. The minimum numbers of students' strength for offering Open Elective Course is 10. However, this condition shall not be applicable to class where the admission to the program is less than 10.

PROJECT WORK (21CSP75): The objective of the Project work is

(i) To encourage independent learning and the innovative attitude of the students.

(ii) To develop interactive attitude, communication skills, organization, time management, and presentation skills.

(iii) To impart flexibility and adaptability.

(iv) To inspire team working.

(v) To expand intellectual capacity, credibility, judgment and intuition.

(vi) To adhere to punctuality, setting and meeting deadlines.

(vii) To install responsibilities to oneself and others.

(viii)To train students to present the topic of project work in a seminar without any fear, face the audience confidently, enhance communication skills, involve in group discussion to present and exchange ideas.

CIE procedure for Project Work:

(1) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work, shall be based on the evaluation of the project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(2) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all guides of the college. Participation of external

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guide/s, if any, is desirable. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates. **SEE procedure for Project Work:** SEE for project work will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25.

	VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI B.E. in Computer Science and Engineering													
			B.E. in Comp	uter Scien	ce and	Engine	ering							
			Scheme of Te	aching and	l Exam	ination	s 2022							
			Outcome Based Education (OBE) and C	hoice	Based C	redit S	ystem (CBCS)					
			(Effective from	m the acad	emic y	ear 202	3-24)							
VIII S	MESTER (S	wappable VII and	VIII SEMESTER)				,							
				Teachi	ng		Teaching	Hours /We	ek		Exan	ination	1	_
				Departmen and Oues	t (TD) tion	The	u I	Prac tical		Dur				C
SI.	Co	urse and		Paper Set	ting	ory	t	/	SDA	atio	CIE	SEE	Total	e
No	C οι	irse Code	Course litle	Board (P	SB)	Lect	0	Dra	304	n in	Mar	Mark	Mark	d
						ure	al	g		hou rs	ks	S	S	it
						L	т	Р	S					
1	PEC BCS801x Professional Elective (Online Courses) Only through NPTEL PSB : CS 3 0 03 50 50 100 3													
2	OEC BCS802x Open Elective (Online Courses) Only through NPTEL PSB : CS 3 0 01 50 50 100 3													
3	INT	BCS803	Internship (Industry/Research) (14 - 20 weeks)			0	0	12		03	100	100	200	10
											200	200	400	16
			Professional	Elective Cou	rse (Onl	ine cours	es)							
BCS8	01A	BOS will publis	h courses based on the availability		BCS801	<u>C</u>								
BC280	01B		Onen Ele	octive Courses	BCS801	D Courses)								
BCS8)2A	BOS will publis	h courses based on the availability	cuve courses	BCS802	C								
BCS8)2B				BCS802	D								
L: Le	cture, T : ⁻	Tutorial, P : Pr	ractical S= SDA: Skill Development Activity, CIE	: Continuou	us Inter	nal Evalu	uation,	SEE: Ser	nester E	nd Evalua	ation. TD	- Teachin	g Depart	ment,
PSB:	PSB : Paper Setting department, OEC : Open Elective Course, PEC : Professional Elective Course. PROJ : Project work, INT : Industry Internship / Research Internship /													
Rura	Rural Internship													
Note	Note: VII and VIII semesters of IV years of the program													
Swa	oping Faci	lity												

- Institutions can swap VII and VIII Semester Scheme of Teaching and Examinations to accommodate research internships/ industry internships/Rural Internship after the VI semester.
- Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether VII or VIII semester is completed during the beginning of IV year or later part of IV year of the program.
- Note: For BCS801x and BCS802x courses BOS will announce the list of courses in 6th, 7th & 8th Sem. Students can register in any of the semesters to earn the credits in 8th Sem.

Elucidation:

At the beginning of IV years of the program i.e., after VI semester, VII semester classwork and VIII semester **Research Internship /Industrial Internship / Rural Internship** shall be permitted to be operated simultaneously by the University so that students have ample opportunity for an internship. In other words, a good percentage of the class shall attend VII semester classwork and a similar percentage of others shall attend to Research Internship or Industrial Internship or Rural Internship.

Research/Industrial /Rural Internship shall be carried out at an Industry, NGO, MSME, Innovation center, Incubation center, Start-up, center of Excellence (CoE), Study Centre established in the parent institute and /or at reputed research organizations/institutes.

The mandatory Research internship /Industry internship / Rural Internship is for 14 to 20 weeks. The internship shall be considered as a head of passing and shall be considered for the award of a degree. Those, who do not take up/complete the internship shall be declared to fail and shall have to complete it during the subsequent University examination after satisfying the internship requirements.

Research internship: A research internship is intended to offer the flavor of current research going on in the research field. It helps students get familiarized with the field and imparts the skill required for carrying out research.

Industry internship: Is an extended period of work experience undertaken by students to supplement their degree for professional development. It also helps them learn to overcome unexpected obstacles and successfully navigate organizations, perspectives, and cultures. Dealing with contingencies helps students recognize, appreciate, and adapt to organizational realities by tempering their knowledge with practical constraints.

Rural Internship: Rural development internship is an initiative of Unnat Bharat Abhiyan Cell, RGIT in association with AICTE to involve students of all departments studying in different academic years for exploring various opportunities in techno-social fields, to connect and work with Rural India for their upliftment.

The faculty coordinator or mentor has to monitor the student's internship progress and interact with them to guide for the successful completion of the internship.

The students are permitted to carry out the internship anywhere in India or abroad. University shall not bear any expenses incurred in respect of the internship.

With the consent of the internal guide and Principal of the Institution, students shall be allowed to carry out the internship at their hometown (within or outside the state or abroad), provided favorable facilities are available for the internship and the student remains regularly in contact with the internal guide. University shall not bear any cost involved in carrying out the internship by students. However, students can receive any financial assistance extended by the organization.

Professional Elective /Open Elective Course: These are ONLINE courses suggested by the respective Board of Studies. Details of these courses shall be made available for students on the VTU web portal.

Please note: If any clarifications / suggestions please email to sbhvtuso@yahoo.com