Visvesvaraya Technological University, Belagavi
Regulations Governing the Degree of Bachelor of Engineering/ Technology (B.E/B.Tech)
Under Choice Based Credit System (CBCS)
(w.e.f. the academic year 2017 – 18)

Annexure -1

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

I SEMESTER B.E./B.Tech. (PHYSICS GROUP)

Sl. No	Course Code	Course Title	Teaching Department	Board	Teaching Hours /Week		Examination				Credits
					Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT11	Engineering Mathematics -I	Mathematics	Basic Science	04	--	03	60	40	100	4
2	17PHY12	Engineering Physics	Physics	Basic Science	04	--	03	60	40	100	4
3	17CIV13	Elements of Civil Engineering and Mechanics	Civil Engineering	Civil Engineering	04	--	03	60	40	100	4
4	17EME14	Elements of Mechanical Engineering	Mechanical Engineering	Mechanical Engineering	04	--	03	60	40	100	4
5	17ELE15	Basic Electrical Engineering	E and E Engineering	E and E Engineering	04	--	03	60	40	100	4
6	17WSL16	Workshop Practice	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	01Hour Instruction 02Hour Practical		03	60	40	100	2
7	17PHYL17	Engineering Physics Laboratory	Physics	Basic Science	01Hour Instruction 02Hour Practical		03	60	40	100	2
8	17ENG18	Language – English (Audit Course)	Humanities	--	01		--	--	--	--	--
				TOTAL	**Theory:21 hours Practical: 06 hours**		**21**	**420**	**280**	**700**	**24**

II SEMESTER B.E./B.Tech. (CHEMISTRY GROUP)

1	17MAT21	Engineering Mathematics -II	Mathematics	Basic Science	04	--	03	60	40	100	4
2	17CHE22	Engineering Chemistry	Chemistry	Basic Science	04	--	03	60	40	100	4
3	17PCD23	Programming in C and Data Structures	Any Engineering Department	Computer Science and Engineering	04	--	03	60	40	100	4
4	17CED24	Computer Aided Engineering Drawing	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	02Hour Instruction 04-Hour Practice		03	60	40	100	4
5	17ELN25	Basic Electronics	ECE/EEE/TC/E and I.	E and C Engineering	04	--	03	60	40	100	4
6	17CPL26	Computer Programming Laboratory	Any Engineering Department	Computer Science and Engineering	01Hour Tutorial 02Hour Practical		03	60	40	100	2
7	17CHEL27	Engineering Chemistry Laboratory	Chemistry	Basic Science	01Hour Tutorial 02Hour Practical		03	60	40	100	2
8	17CIV28	Environmental Studies (Audit Course)	Civil/ Environmental Engineering	Civil Engineering	01Tutorial		--	30	20	50	--
				TOTAL	**Theory:21 hours Practical: 08 hours**		**21**	**450**	**300**	**750**	**24**

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Visvesvaraya Technological University, Belagavi
Regulations Governing the Degree of Bachelor of Engineering/ Technology (B.E/B.Tech.)
Under Choice Based Credit System (CBCS)
(w.e.f. academic year 2017 – 18)

Annexure -1

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

I SEMESTER B.E./B.Tech (CHEMISTRY GROUP)

Sl. No	Course Code	Course Title	Teaching Department	Board	Teaching Hours /Week		Examination				Credits
					Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT11	Engineering Mathematics -I	Mathematics	Basic Science	04	--	03	60	40	100	4
2	17PHY12	Engineering Chemistry	Chemistry	Basic Science	04	--	03	60	40	100	4
3	17PCD13	Programming in C and Data Structures	Any Engineering Department	Computer Science and Engineering	04	--	03	60	40	100	4
4	17CED14	Computer Aided Engineering Drawing	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	02Hour Instruction 04Hour Practice		03	60	40	100	4
5	17ELN15	Basic Electronics	ECE/EEE/TC/E and I.	E and C Engineering	04	--	03	60	40	100	4
6	17CPL16	Computer Programming Laboratory	Any Engineering Department	Computer Science and Engineering	01Hour Tutorial 02Hour Practical		03	60	40	100	2
7	17CHEL17	Engineering Chemistry Laboratory	Chemistry	Basic Science	01Hour Tutorial 02Hour Practical		03	60	40	100	2
8	17CIV18	Environmental Studies (Audit Course)	Civil/ Environmental Engineering	Civil Engineering	01HourTutorial		--	30	20	50	--
				TOTAL	**Theory:21 hours Practical: 08 hours**		**21**	**450**	**300**	**750**	**24**

II SEMESTER B.E./B.Tech (PHYSICS GROUP)

1	17MAT21	Engineering Mathematics -II	Mathematics	Basic Science	04	--	03	60	40	100	4
2	17PHY22	Engineering Physics	Physics	Basic Science	04	--	03	60	40	100	4
3	17CIV23	Elements of Civil Engineering and Mechanics	Civil Engineering	Civil Engineering	04	--	03	60	40	100	4
4	17EME24	Elements of Mechanical Engineering	Mechanical Engineering	Mechanical Engineering	04	--	03	60	40	100	4
5	17ELE25	Basic Electrical Engineering	E and E Engineering	E and E Engineering	04	--	03	60	40	100	4
6	17WSL26	Workshop Practice	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17PHYL27	Engineering Physics Laboratory	Physics	Basic Science	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ENG28	Language – English (Audit Course)	Humanities	--	01		--	--	--	--	--
				TOTAL	**Theory:21 hours Practical: 06 hours**		**21**	**420**	**280**	**700**	**24**

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E- BIOTECHNOLGY

III SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics –III*	Maths	04		03	60	40	100	4
2	17BT32	Unit Operations	BT/CHE	04		03	60	40	100	4
3	17BT33	Biochemistry	BT	04		03	60	40	100	4
4	17BT34	Microbiology	BT	04		03	60	40	100	4
5	17BT35	Cell Biology and Genetics	BT	04		03	60	40	100	3
6	17BT36	Basics of Computer Applications	BT/CSE/ISE /MCA	03		03	60	40	100	4
7	17BTL37	Unit Operation Laboratory	BT/CHE/ME	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
8	17BTL38	Microbiology Laboratory	BT	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
TOTAL				Theory: 24hours Practical: 06 hours		25	510	340	850	28

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E- BIOTECHNOLOGY

IV SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical / Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17BT41	Biostatistics and Biomodeling	Mathematics/BT	04		03	60	40	100	4
2	17BT42	Biochemical Thermodynamics	BT/CHE/ME	04		03	60	40	100	3
3	17BT43	Molecular Biology	BT	04		03	60	40	100	4
4	17BT44	Bioprocess Principles & Calculations	BT/CHE	04		03	60	40	100	4
5	17BT45	Structural Biology	BT	04		03	60	40	100	4
6	17BT46	Clinical Biochemistry	BT	03		03	60	40	100	4
7	17BTL47	Cell and Molecular Biology Laboratory	BT	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17BTL48	Clinical Biochemistry Laboratory	BT	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/[illegible]	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	[illegible]		01	[illegible]	20	50	[illegible]
			TOTAL	Theory: 24hours Practical: 06 hours		25	510	340	850	28

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters

2.Audit Course:

(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics II	Maths	03		03	60		60	

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E-BIOTECHNOLOGY

V SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17BT51	Bio-Kinetics & Bioreaction Engineering	BT/CHE	04		03	60	40	100	4
2	17BT52	Genetic Engineering & Applications	BT	04		03	60	40	100	4
3	17BT53	Immunotechnology	BT	04		03	60	40	100	4
4	17BT54	Bioinformatics	BT	04		03	60	40	100	4
5	17BT55X	Professional Elective-1	BT/CHE	03		03	60	40	100	3
6	17BT56X	Open Elective-1	BT	03		03	60	40	100	3
7	17BTL57	Genetic Engineering & Immunotechnology Laboratory	BT	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
8	17BTL58	Bioinformatics Laboratory	BT	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
			TOTAL	Theory: 22hours Practical: 06 hours		24	480	320	800	26

Professional Elective-1		Open Elective – 1*** (List offered by Civil Engg Board only)	
17BT551	Microbial Biotechnology	17BT561	Biology for Engineers
17BT552	Transport Phenomena	17BT562	Biomaterials
17BT553	Animal Biotechnology	17BT563	Biotechnology for Sustainable Environment
17BT554	Bioinstrumentation & Biosensors		

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E-BIOTECHNOLOGY

VI SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17BT61	Bio-business and Entrepreneurship	BT/MBA	04		03	60	40	100	4
2	17BT62	Bioprocess Control & Automation	BT/CHE	04		03	60	40	100	4
3	17BT63	Enzyme Technology & Biotransformation	BT	04		03	60	40	100	4
4	17BT64	Bioprocess Equipment Design & CAED	BT/CHE/ME	04		03	60	40	100	4
5	17BT65X	Professional Elective-2	BT/CHE	03		03	60	40	100	3
6	17BT66X	Open Elective-2	BT/CHE	03		03	60	40	100	3
7	17BTL67	Bioprocess Control & Automation Laboratory	BT/CHE	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
8	17BTL68	Biokinetics & Enzyme Technology Laboratory	BT/CHE	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
			TOTAL	**Theory:22hours** **Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-2			**Open Elective – 2*** (List offered by Civil Engg Board only)**	
17BT651	Biomolecular Engineering		17BT661	Biological Data Management
17BT652	Advanced Microbiology		17BT662	Nano Biotechnology
17BT653	Cell Culture Techniques		17BT663	Good Manufacturing Practices
17BT654	Economics and Plant Design			

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- The candidate has studied similar content course during previous semesters.
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SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E-BIOTECHNOLOGY

VII SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17BT71	Fermentation Technology	BT/CHE	04		03	60	40	100	4
2	17BT72	Genomics & Proteomics	BT	04		03	60	40	100	4
3	17BT73	Plant Biotechnology	BT	04		03	60	40	100	4
4	17BT74X	Professional Elective-3	BT/CHE	03		03	60	40	100	3
5	17BT75X	Professional Elective-4	BT/CHE	03		03	60	40	100	3
6	17BTL76	Fermentation Technology Laboratory	BT/CHE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17BTL77	Plant Biotechnology Laboratory	BT	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17BTP78	Project Work Phase–I + Project work Seminar	BT		03	--	--	100	100	2
		TOTAL		**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		Professional Elective-4	
17BT741	Health Informatics	17BT751	Dairy Biotechnology
17BT742	Bioreactor Design Concepts	17BT752	Forensic Science
17BT743	Lab to Industrial Scaling	17BT753	Molecular Diagnostics
17BT744	Food Biotechnology	17BT754	Big Data Management

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2017-2018

B.E-BIOTECHNOLOGY

VIII SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17BT81	Clinical & Pharmaceutical Biotechnology	BT	4	-	3	60	40	100	4
2	17BT82	Regulatory affairs in Biotech Industry	BT/MBA	4	-	3	60	40	100	4
3	17BT83X	Professional Elective-5	BT	3	-	3	60	40	100	3
4	17BT84	Internship/ Professional Practice	BT	Industry Oriented		3	50	50	100	2
5	17BTP85	Project Work-II	BT	-	6	3	100	100	200	6
6	17BTS86	Seminar on current trends in Engineering and Technology	BT	-	4	-	-	100	100	1
		TOTAL		**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17BT831	Protein Engineering and insilico drug design
17BT832	Metbolic Engineering
17BT833	Environmental Biotechnology

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

III SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MA131	Engineering Mathematics –III*	Maths	04		03	60	40	100	4
2	17CV32	Strength of Materials	Civil Engg.	04		03	60	40	100	4
3	17CV33	Fluid Mechanics	Civil Engg.	04		03	60	40	100	4
4	17CV34	Basic Surveying	Civil Engg.	04		03	60	40	100	4
5	17CV35	Engineering Geology	Civil Engg.	04		03	60	40	100	3
6	17CV36	Building Materials and Construction	Civil Engg.	03		03	60	40	100	4
7	17CVL37	Building Materials Testing Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CVL38	Basic Surveying Practice	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
		TOTAL		**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

IV SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics –IV*	Maths	04		03	60	40	100	4
2	17CV42	Analysis of Determinate Structures	Civil Engg.	04		03	60	40	100	3
3	17CV43	Applied Hydraulics	Civil Engg.	04		03	60	40	100	4
4	17CV44	Concrete Technology	Civil Engg.	04		03	60	40	100	4
5	17CV45	Basic Geotechnical Engineering	Civil Engg.	04		03	60	40	100	4
6	17CV46	Advanced Surveying	Civil Engg.	03		03	60	40	100	4
7	17CVL47	Fluid Mechanics Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CVL48	Engineering Geology Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
			TOTAL	**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2.Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics –II	Maths	03		03	60	--	60	--

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

V SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CV51	Design of RC Structural Elements	Civil Engg.	04		03	60	40	100	4
2	17CV52	Analysis of Indeterminate Structures	Civil Engg.	04		03	60	40	100	4
3	17CV53	Applied Geotechnical Engineering	Civil Engg.	04		03	60	40	100	4
4	17CV54	Computer Aided Building Planning and Drawing	Civil Engg.	04		03	60	40	100	4
5	17CV55X	Professional Elective-1	Civil Engg.	03		03	60	40	100	3
6	17CV56X	Open Elective-1	Civil Engg.	03		03	60	40	100	3
7	17CVL57	Geotechnical Engineering Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CVL58	Concrete and Highway Materials Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	**Theory: 22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-1			**Open Elective – 1*** (List offered by Civil Engg Board only)**	
17CV551	Air pollution and Control		17CV561	Traffic Engineering
17CV552	Railways, Harbours, tunneling and Airports		17CV562	Sustainability Concepts in Engineering
17CV553	Masonry Structures		17CV563	Remote Sensing and GIS
17CV554	Theory of Elasticity		17CV563	Occupational Health and Safety
			17CV563	NCC

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· The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).
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CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

VI SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CV61	Construction Management and Entrepreneurship	Civil Engg.	04		03	60	40	100	4
2	17CV62	Design of Steel Structural Elements	Civil Engg.	04		03	60	40	100	4
3	17CV63	Highway Engineering	Civil Engg.	04		03	60	40	100	4
4	17CV64	Water Supply and Treatment Engineering	Civil Engg.	04		03	60	40	100	4
5	17CV65X	Professional Elective-2	Civil Engg.	03		03	60	40	100	3
6	17CV66X	Open Elective-2	Civil Engg.	03		03	60	40	100	3
7	17CVL67	Software Application Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CVL68	Extensive Survey Project /Camp	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	**Theory:22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-2			**Open Elective – 2*** (List offered by Civil Engg Board only)**	
17CV651	Solid Waste Management		17CV661	Water Resource Management
17CV652	Matrix Method of Structural Analysis		17CV662	Environmental Protection and Management
17CV653	Alternative Building Materials		17CV663	Numerical Methods and Applications
17CV654	Ground Improvement Techniques		17CV664	Finite Element Analysis

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

Principal
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

VII SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CV71	Municipal and Industrial Waste Water Engineering	Civil Engg.	04		03	60	40	100	4
2	17CV72	Design of RCC and Steel Structures	Civil Engg.	04		03	60	40	100	4
3	17CV73	Hydrology and Irrigation Engineering	Civil Engg.	04		03	60	40	100	4
4	17CV74X	Professional Elective-3	Civil Engg.	03		03	60	40	100	3
5	17CV75X	Professional Elective-4	Civil Engg.	03		03	60	40	100	3
6	17CVL76	Environmental Engineering Laboratory	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17CVL77	Computer Aided Detailing of Structures	Civil Engg.	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CVP78	Project Work Phase–I + Project work Seminar	Civil Engg.		03	--	--	100	100	2
TOTAL				**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		**Professional Elective-4**	
17CV741	Design of Bridges	17CV751	Urban Transportation and Planning
17CV742	Ground Water & Hydraulics	17CV752	Prefabricated Structures
17CV743	Design Concept of Building Services	17CV753	Rehabilitation and Retrofitting of Structures
17CV744	Structural Dynamics	17CV754	Reinforced Earth Structures

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION **2017-2018**

B.E: CIVIL ENGINEERING

VIII SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CV81	Quantity Surveying and Contracts Management	Civil Engg.	4	-	3	60	40	100	4
2	17CV82	Design of Pre Stressed Concrete Elements	Civil Engg.	4	-	3	60	40	100	4
3	17CV83X	Professional Elective-5	Civil Engg.	3	-	3	60	40	100	3
4	17CV84	Internship/ Professional Practice	Civil Engg.	Industry Oriented		3	50	50	100	2
5	17CVP85	Project Work-II	Civil Engg.	-	6	3	100	100	200	6
6	17CVS86	Seminar on current trends in Engineering and Technology	Civil Engg.	-	4	-	-	100	100	1
TOTAL				**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17CV831	Earthquake Engineering
17CV832	Hydraulic Structures
17CV833	Pavement Design
17CV834	Advanced Foundation Design

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: Computer Science and Engineering

III SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics - III	Maths	04		03	60	40	100	4
2	17CS32	Analog and Digital Electronics	CS/IS	04		03	60	40	100	4
3	17CS33	Data Structures and Applications	CS/IS	04		03	60	40	100	4
4	17CS34	Computer Organization	CS/IS	04		03	60	40	100	4
5	17CS35	Unix and Shell Programming	CS/IS	03		03	60	40	100	3
6	17CS36	Discrete Mathematical Structures	CS/IS	04		03	60	40	100	4
7	17CSL37	Analog and Digital Electronics Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL38	Data Structures Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
TOTAL				**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1.Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: Computer Science and Engineering

IV SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics - IV	Maths	04		03	60	40	100	4
2	17CS42	Object Oriented Concepts	CS/IS	03		03	60	40	100	3
3	17CS43	Design and Analysis of Algorithms	CS/IS	04		03	60	40	100	4
4	17CS44	Microprocessors and Microcontrollers	CS/IS	04		03	60	40	100	4
5	17CS45	Software Engineering	CS/IS	04		03	60	40	100	4
6	17CS46	Data Communication	CS/IS	04		03	60	40	100	4
7	17CSL47	Design and Analysis of Algorithm Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL48	Microprocessors Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
			TOTAL	**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2.Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week

1	17MATDIP41	Additional Mathematics –II	Maths	03		03	60	--	60	--

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Choice Based Credit System (CBCS)

B.E: Computer Science and Engineering

V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS51	Management and Entrepreneurship for IT Industry	CS/IS	04		03	60	40	100	4
2	17CS52	Computer Networks	CS/IS	04		03	60	40	100	4
3	17CS53	Database Management System	CS/IS	04		03	60	40	100	4
4	17CS54	Automata theory and Computability	CS/IS	04		03	60	40	100	4
5	17CS55x	Professional Elective-1	CS/IS	03		03	60	40	100	3
6	17CS56x	Open Elective-1	CS/IS	03		03	60	40	100	3
7	17CSL57	Computer Network Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL58	DBMS Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	**Theory: 22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-1			Open Elective – 1*** (List offered by CSE Board only)	
17CS551	Object Oriented Modeling and Design		17CS561	Programming in JAVA *(Not for CSE/ISE students)*
17CS552	Introduction to Software Testing		17CS562	Artificial Intelligence
17CS553	Advanced JAVA and J2EE		17CS563	Embedded Systems
17CS554	Advanced Algorithms		17CS564	Dot Net framework for application development;
			17CS565	Cloud Computing *(Not for CSE/ISE students)*

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E: Computer Science and Engineering

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS61	Cryptography, Network Security and Cyber Law	CS/IS	04		03	60	40	100	4
2	17CS62	Computer Graphics and Visualization	CS/IS	04		03	60	40	100	4
3	17CS63	System Software and Compiler Design	CS/IS	04		03	60	40	100	4
4	17CS64	Operating Systems	CS/IS	04		03	60	40	100	4
5	17CS65x	Professional Elective-2	CS/IS	03		03	60	40	100	3
6	17CS66x	Open Elective-2	CS/IS	03		03	60	40	100	3
7	17CSL67	System Software and Operating System Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL68	Computer Graphics Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	**Theory.22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-2			**Open Elective – 2*** (List offered by CSE Board only)**	
17CS651	Data Mining and Data Warehousing		17CS661	Mobile Application Development
17CS652	Software Architecture and Design Patterns		17CS662	Big Data Analytics *(Not for CSE/ISE students)*
17CS653	Operations research		17CS663	Wireless Networks and Mobile computing
17CS654	Distributed Computing system		17CS664	Python Application Programming
			17CS665	Service Oriented Architecture
			17CS666	Multicore Architecture and Programming

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E: Computer Science and Engineering

VII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS71	Web Technology and its applications	CS/IS	04		03	60	40	100	4
2	17CS72	Advanced Computer Architectures	CS/IS	04		03	60	40	100	4
3	17CS73	Machine Learning	CS/IS	04		03	60	40	100	4
4	17CS74x	Professional Elective 3	CS/IS	03		03	60	40	100	3
5	17CS75x	Professional Elective 4	CS/IS	03		03	60	40	100	3
6	17CSL76	Machine Learning Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17CSL77	Web Technology Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSP78	Project Work Phase–I + Project work Seminar	CS/IS		03	--	--	100	100	2
		TOTAL		**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		Professional Elective-4	
17CS741	Natural Language Processing	17CS751	Soft and Evolutionary Computing
17CS742	Cloud Computing and its Applications	17CS752	Computer Vision and Robotics
17CS743	Information and Network Security	17CS753	Digital Image Processing
17CS744	Unix System Programming	17CS754	Storage Area Networks

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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B.E: Computer Science and Engineering

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS81	Internet of Things and Applications	CS/IS	4	-	3	60	40	100	4
2	17CS82	Big Data Analytics	CS/IS	4	-	3	60	40	100	4
3	17CS83X	Professional Elective-5	CS/IS	3	-	3	60	40	100	3
4	17CS84	Internship/ Professional Practice	CS/IS	Industry Oriented		3	50	50	100	2
5	17CSP85	Project Work-II	CS/IS	-	6	3	100	100	200	6
6	17CSS86	Seminar	CS/IS	-	4	-	-	100	100	1
		TOTAL		**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17CS831	High Performance Computing
17CS832	User Interface Design
17CS833	Network management
17CS834	System Modeling and Simulation

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: Information Science and Engineering

III SEMESTER

Sl.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics - III	Maths	04		03	60	40	100	4
2	17CS32	Analog and Digital Electronics	CS/IS	04		03	60	40	100	4
3	17CS33	Data Structures and Applications	CS/IS	04		03	60	40	100	4
4	17CS34	Computer Organisation	CS/IS	04		03	60	40	100	4
5	17CS35	Unix and Shell Programming	CS/IS	03		03	60	40	100	3
6	17CS36	Discrete Mathematical Structures	CS/IS	04		03	60	40	100	4
7	17CSL37	Analog and Digital Electronics Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL38	Data Structures Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
TOTAL				Theory: 24hours Practical: 06 hours		25	510	340	850	28

1.Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – 1, which is 03 contact hours per week.

	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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B.E: Information Science and Engineering

IV SEMESTER

SL No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics - IV	Maths	04		03	60	40	100	4
2	17CS42	Object Oriented Concepts	CS/IS	03		03	60	40	100	3
3	17CS43	Design and Analysis of Algorithms	CS/IS	04		03	60	40	100	4
4	17CS44	Microprocessors and Microcontrollers	CS/IS	04		03	60	40	100	4
5	17CS45	Software Engineering	CS/IS	04		03	60	40	100	4
6	17CS46	Data Communication	CS/IS	04		03	60	40	100	4
7	17CSL47	Design and Analysis of Algorithm Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL48	Microprocessors Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
			TOTAL	**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2.Audit Course:
(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

	17MATDIP41	Additional Mathematics -II	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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B.E: Information Science and Engineering

V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS51	Management and Entrepreneurship for IT Industry	CS/IS	04		03	60	40	100	4
2	17CS52	Computer Networks	CS/IS	04		03	60	40	100	4
3	17CS53	Database Management System	CS/IS	04		03	60	40	100	4
4	17CS54	Automata theory and Computability	CS/IS	04		03	60	40	100	4
5	17CS/IS55x	Professional Elective-1	CS/IS	03		03	60	40	100	3
6	17CS56x	Open Elective-1	CS/IS	03		03	60	40	100	3
7	17CSL57	Computer Network Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17CSL58	DBMS Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	**Theory: 22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-1			Open Elective – 1*** (List offered by CSE Board only)	
17CS551	Object Oriented Modeling and Design		17CS561	Programming in JAVA *(Not for CSE/ISE students)*
17IS552	Social Network Analysis		17CS562	Artificial Intelligence
17CS553	Advanced JAVA and J2EE		17CS563	Embedded Systems
17IS554	Programming Languages		17CS564	Dot Net framework for application development;
			17CS565	Cloud Computing *(Not for CSE/ISE students)*

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
[illegible]tion of an open elective is not allowed, if:
[illegible] candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

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B.E: Information Science and Engineering

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS61	Cryptography, Network Security and Cyber Law	CS/IS	04		03	60	40	100	4
2	17IS62	File Structures	CS/IS	04		03	60	40	100	4
3	17IS63	Software Testing	CS/IS	04		03	60	40	100	4
4	17CS64	Operating Systems	CS/IS	04		03	60	40	100	4
5	17CS/IS65x	Professional Elective-2	CS/IS	03		03	60	40	100	3
6	17CS66x	Open Elective-2	CS/IS	03		03	60	40	100	3
7	17ISL67	Software Testing Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ISL68	File Structures Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	Theory:22hours Practical: 06 hours		24	480	320	800	26

Professional Elective-2			Open Elective – 2*** (List offered by CSE Board only)	
17CS651	Data Mining and Data Warehousing		17CS661	Mobile Application Development
17IS652	System Software		17CS662	Big Data Analytics *(Not for CSE/ISE students)*
17CS653	Operations research		17CS663	Wireless Networks and Mobile computing
17CS654	Distributed Computing system		17CS664	Python Application Programming
			17CS665	Service Oriented Architecture
			17CS666	Multicore Architecture and Programming

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: Information Science and Engineering

VII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS71	Web Technology and its applications	CS/IS	04		03	60	40	100	4
2	17IS72	Software Architecture and Design Patterns	CS/IS	04		03	60	40	100	4
3	17CS73	Machine Learning	CS/IS	04		03	60	40	100	4
4	17CS/IS74x	Professional Elective 3	CS/IS	03		03	60	40	100	3
5	17CS/IS75x	Professional Elective 4	CS/IS	03		03	60	40	100	3
6	17CSL76	Machine Learning Laboratory	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17CSL77	Web Technology Laboratory with mini project	CS/IS	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ISP78	Project Work Phase–I + Project work Seminar	CS/IS		03	--	--	100	100	2
		TOTAL		**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		Professional Elective-4	
17CS741	Natural Language Processing	17CS751	Soft and Evolutionary Computing
17CS742	Cloud Computing and its Applications	17CS752	Computer Vision and Robotics
17CS743	Information and Network Security	17IS753	Information Management System
17CS744	Unix System Programming	17CS754	Storage Area Networks

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: Information Science and Engineering

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17CS81	Internet of Things and Applications	CS/IS	4	-	3	60	40	100	4
2	17CS82	Big Data Analytics	CS/IS	4	-	3	60	40	100	4
3	17CS/IS83X	Professional Elective-5	CS/IS	3	-	3	60	40	100	3
4	17IS84	Internship/ Professional Practice	CS/IS	Industry Oriented		3	50	50	100	2
5	17ISP85	Project Work-II	CS/IS	-	6	3	100	100	200	6
6	17ISS86	Seminar	CS/IS	-	4	-	-	100	100	1
		TOTAL		**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17CS831	High Performance Computing
17CS832	User Interface Design
17IS833	Virtual Reality
17CS834	System Modeling and Simulation

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period

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Program Specific Outcomes (PSOs)

At the end of the B.E Electronics & Communication Engineering program, students are expected to have developed the following program specific outcomes.

PSO1: Specify, design, build and test analog, digital and embedded systems for signal processing

PSO2: Understand and architect wired and wireless analog and digital communication systems as per specifications, and determine their performance.

Note

1. The Course Outcomes and RBT levels indicated for each course in the syllabus are indicative/suggestive. The faculty can set them appropriately according to their lesson plan.

2. The Question Paper format for the theory courses is as follows:

Question Paper Pattern for Theory Courses (2017 Scheme):

- The question paper will have TEN questions.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of Four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- Students will have to answer 5 full questions, selecting one full question from each module.

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SCHEME OF TEACHING AND EXAMINATION
B.E Electronics & Communication Engineering / Telecommunication Engineering
(Common to Electronics & Communication and Telecommunication Engineering)

III SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics –III*	Maths	04		03	60	40	100	4
2	17EC32	Electronic Instrumentation	EC	03		03	60	40	100	3
3	17EC33	Analog Electronics	EC	04		03	60	40	100	4
4	17EC34	Digital Electronics	EC	04		03	60	40	100	4
5	17EC35	Network Analysis	EC	04		03	60	40	100	4
6	17EC36	Engineering Electromagnetics	EC	04		03	60	40	100	4
7	17ECL37	Analog Electronics Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL38	Digital Electronics Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
		TOTAL		**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1.Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:

(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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B.E Electronics & Communication Engineering / Telecommunication Engineering
(Common to Electronics & Communication and Telecommunication Engineering)

IV SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics –IV*	Maths	04		03	60	40	100	4
2	17EC42	Signals and Systems	EC	04		03	60	40	100	4
3	17EC43	Control Systems	EC	04		03	60	40	100	4
4	17EC44	Principles of Communication Systems	EC	04		03	60	40	100	4
5	17EC45	Linear Integrated Circuits	EC	04		03	60	40	100	4
6	17EC46	Microprocessor	EC	03		03	60	40	100	3
7	17ECL47	Microprocessor Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL48	Linear ICs and Communication Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
TOTAL				**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2.Audit Course:

(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics –II	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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B.E.: Electronics & Communication Engineering

V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17ES51	Management and Entrepreneurship Development	EC	04		03	60	40	100	4
2	17EC52	Digital Signal Processing	EC	04		03	60	40	100	4
3	17EC53	Verilog HDL	EC	04		03	60	40	100	4
4	17EC54	Information Theory & Coding	EC	04		03	60	40	100	4
5	17EC55X	Professional Elective-1	EC	03		03	60	40	100	3
6	17EC56X	Open Elective-1	EC	03		03	60	40	100	3
7	17ECL57	DSP Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL58	HDL Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
TOTAL				**Theory: 22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-1			**Open Elective – 1*** (List offered by EC/TC Board only)**	
17EC551	Nanoelectronics		17EC561	Automotive Electronics
17EC552	Switching & Finite Automata Theory		17EC562	Object Oriented Programming Using C++
17EC553	Operating System		17EC563	8051 Microcontroller
17EC554	Electrical Engineering Materials			
17EC555	MSP430 Microcontroller			

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:
- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E.: Electronics & Communication Engineering

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC61	Digital Communication	EC	04		03	60	40	100	4
2	17EC62	ARM Microcontroller & Embedded Systems	EC	04		03	60	40	100	4
3	17EC63	VLSI Design	EC	04		03	60	40	100	4
4	17EC64	Computer Communication Networks	EC	04		03	60	40	100	4
5	17EC65X	Professional Elective-2	EC	03		03	60	40	100	3
6	17EC66X	Open Elective-2	EC	03		03	60	40	100	3
7	17ECL67	Embedded Controller Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL68	Computer Networks Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
TOTAL				**Theory: 22hours Practical: 06 hours**		**24**	**480**	**320**	**800**	**26**

Professional Elective-2			**Open Elective – 2*** (List offered by EC/TC Board only)**	
17EC651	Cellular Mobile Communication		17EC661	Data Structures Using C++
17EC652	Adaptive Signal Processing		17EC662	Power Electronics *(not for E&C students)*
17EC653	Artificial Neural Networks		17EC663	Digital System Design using Verilog
17EC654	Digital Switching Systems			
17EC655	Microelectronics			

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
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- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E.: Electronics & Communication Engineering

VII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC71	Microwave and Antennas	EC	04		03	60	40	100	4
2	17EC72	Digital Image Processing	EC	04		03	60	40	100	4
3	17EC73	Power Electronics	EC	04		03	60	40	100	4
4	17EC74X	Professional Elective-3	EC	03		03	60	40	100	3
5	17EC75X	Professional Elective-4	EC	03		03	60	40	100	3
6	17ECL76	Advanced Communication Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17ECL77	VLSI Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECP78	Project Work Phase–I + Project work Seminar	EC		03		-	100	100	2
		TOTAL		**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		Professional Elective-4	
17EC741	Multimedia Communication	17EC751	DSP Algorithms and Architecture
17EC742	Biomedical Signal Processing	17EC752	IOT and Wireless Sensor Networks
17EC743	Real Time Systems	17EC753	Pattern Recognition
17EC744	Cryptography	17EC754	Advanced Computer Architecture
17EC745	CAD for VLSI	17EC755	Satellite Communication

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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B.E.: Electronics & Communication Engineering

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC81	Wireless Cellular and LTE 4G Broadband	EC	4	-	3	60	40	100	4
2	17EC82	Fiber Optics & Networks	EC	4	-	3	60	40	100	4
3	17EC83X	Professional Elective-5	EC	3	-	3	60	40	100	3
4	17EC84	Internship/Professional Practice	EC	Industry Oriented		3	50	50	100	2
5	17ECP85	Project Work	EC	-	6	3	100	100	200	6
6	17ECS86	Seminar	EC	-	4	-	-	100	100	1
TOTAL				**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17EC831	Micro Electro Mechanical Systems
17EC832	Speech Processing
17EC833	Radar Engineering
17EC834	Machine learning
17EC835	Network and Cyber Security

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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Choice Based Credit System (CBCS)

B.E: ELECTRICAL AND ELECTRONICS ENGINEERING
CHOICE BASED CREDIT SYSTEM (CBCS)

III SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics-III (Core)	Mathematics	04		03	60	40	100	4
2	17EE32	Electric Circuit Analysis (Core)	EEE	04		03	60	40	100	4
3	17EE33	Transformers and Generators (Core)	EEE	04		03	60	40	100	4
4	17EE34	Analog Electronic Circuits (Core)	EEE	04		03	60	40	100	4
5	17EE35	Digital System Design (Core)	EEE	04		03	60	40	100	4
6	17EE36	Electrical and Electronic Measurements (Foundation course)	EEE	03		03	60	40	100	3
7	17EEL37	Electrical Machines Laboratory -1	EEE	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
8	17EEL38	Electronics Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
		TOTAL		**Theory: 24hours Practical: 06 hours**		**25**	**510**	**340**	**850**	**28**

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2. Audit Course:

(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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Choice Based Credit System (CBCS)

B.E: ELECTRICAL AND ELECTRONICS ENGINEERING
CHOICE BASED CREDIT SYSTEM (CBCS)

IV SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics IV (Core)	Mathematics	04		03	60	40	100	4
2	17EE42	Power Generation and Economics (Core)	EEE	04		03	60	40	100	4
3	17EE43	Transmission and Distribution (Core)	EEE	04		03	60	40	100	4
4	17EE44	Electric Motors (Core)	EEE	04		03	60	40	100	4
5	17EE45	Electromagnetic Field Theory (Core)	EEE	04		03	60	40	100	4
6	17EE46	Operational Amplifiers and Linear ICs (Foundation course)	EEE	03		03	60	40	100	3
7	17EEL47	Electrical Machines Laboratory -2	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17EEL48	Op- amp and Linear ICs Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
			TOTAL	Theory: 24hours Practical: 06 hours		25	510	340	850	28

1. Kannada/Constitution of India, Professional Ethics and Human Rights: 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

2.Audit Course:

(i) *All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics –II	Maths	03		03	60	--	60	--

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

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B.E: ELECTRICAL AND ELECTRONICS ENGINEERING

CHOICE BASED CREDIT SYSTEM (CBCS)

V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EE51	Management and Entrepreneurship	EEE	04		03	60	40	100	4
2	17EE52	Microcontroller(Core)	EEE	04		03	60	40	100	4
3	17EE53	Power Electronics(Core)	EEE	04		03	60	40	100	4
4	17EE54	Signals and Systems(Core)	EEE	04		03	60	40	100	4
5	17EE55X	Professional Elective – I	EEE	03		03	60	40	100	3
6	17EE56Y	Open Elective - I	EEE	03		03	60	40	100	3
7	17EEL57	Microcontroller Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17EEL58	Power Electronics Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL	Theory: 22hours Practical: 06 hours		24	480	320	800	26

Professional Elective-I		Open Elective – I*** (List offered by EEE Board only)	
17EE551	Introduction to Nuclear Power	17EE561	Electronic Communication systems
17EE552	Electrical Engineering Materials	17EE562	Programmable Logic controllers
17EE553	Estimating and Costing	17EE563	Renewable Energy Systems
17EE554	Special Electrical Machines	17EE564	Business Communication

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).
Selection of an open elective is not allowed, if:

- The candidate has no pre –requisiteknowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E: ELECTRICAL AND ELECTRONICS ENGINEERING

CHOICE BASED CREDIT SYSTEM (CBCS)

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EE61	Control Systems(Core)	EEE	04		03	60	40	100	4
2	17EE62	Power System Analysis – 1(Core)	EEE	04		03	60	40	100	4
3	17EE63	Digital Signal Processing(Core)	EEE	04		03	60	40	100	4
4	17EE64	Electrical Machine Design(Core)	EEE	04		03	60	40	100	4
5	17EE65X	Professional Elective – II	EEE	03		03	60	40	100	3
6	17EE66Y	Open Elective - II	EEE	03		03	60	40	100	3
7	17EEL67	Control System Laboratory	EEE	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
8	17EEL68	Digital Signal Processing Laboratory	EEE	01- Hour Instruction 02- Hour Practical		03	60	40	100	2
			TOTAL	**Theory:22hours Practical: 06 hours**		Core Course	**480**	**320**	**800**	**26**

Professional Elective-2			**Open Elective – 2*** (List offered by EEE Board only)**	
17EE651	Computer Aided Electrical Drawing		17EE661	Artificial Neural Networks and Fuzzy logic
17EE652	Advanced Power Electronics		17EE662	Sensors and Transducers
17EE653	Energy Audit and Demand side Management		17EE663	Batteries and Fuel Cells for Commercial, Military and Space Applications
17EE654	Solar and Wind Energy		17EE664	Industrial Servo Control Systems

***Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).

Selection of an open elective is not allowed, if:

- The candidate has no pre –requisiteknowledge.
- The candidate has studied similar content course during previoussemesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied as Professional elective(s).
- A similar course, under any category, is prescribed in the higher semesters.

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

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B.E: ELECTRICAL AND ELECTRONICS ENGINEERING
CHOICE BASED CREDIT SYSTEM (CBCS)

VII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EE71	Power System Analysis – 2(Core)	EEE	04		03	60	40	100	4
2	17EE72	Power System Protection(Core)	EEE	04		03	60	40	100	4
3	17EE73	High Voltage Engineering(Core)	EEE	04		03	60	40	100	4
4	17EE74X	Professional Elective – III	EEE	03		03	60	40	100	3
5	17EE75Y	Professional Elective – IV	EEE	03		03	60	40	100	3
6	17EEL76	Power system Simulation Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17EEL77	Rely and High Voltage Laboratory	EEE	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17EEP78	Project Work Phase–I + Project work Seminar	EEE		03	--	--	100	100	2
		TOTAL		**Theory:18 hours Practical and Project: 09 hours**		**21**	**420**	**380**	**800**	**24**

Professional Elective-3		Professional Elective-4	
17EE741	Advanced Control Systems	17EE751	FACTs and HVDC Transmission
17EE742	Utilization of Electrical Power	17EE752	Testing and Commissioning of Power System Apparatus
17EE743	Carbon Capture and Storage	17EE753	Spacecraft Power Technologies
17EE744	Power System Planning	17EE754	Industrial Heating

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E: ELECTRICAL AND ELECTRONICS ENGINEERING
CHOICE BASED CREDIT SYSTEM (CBCS)

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EE81	Power System Operation and Control (Core)	EEE	4	-	3	60	40	100	4
2	17EE82	Industrial Drives and Applications(Core)	EEE	4	-	3	60	40	100	4
3	17EE83X	Professional Elective-5	EEE	3	-	3	60	40	100	3
4	17EE84	Internship/ Professional Practice (Core)	EEE	Industry Oriented		3	50	50	100	2
5	17EEP85	Project Work-II(Core)	EEE	-	6	3	100	100	200	6
6	17EES86	Seminar (Core)	EEE	-	4	-	-	100	100	1
		TOTAL		**Theory: 11 hours Project and Seminar: 10 hours**		**15**	**330**	**370**	**700**	**20**

Professional Elective -5	
17EE831	Smart Grid
17EE832	Operation and Maintenance of Solar Electric Systems
17EE833	Integration of Distributed Generation
17EE834	Power System in Emergencies

1. Internship/ Professional Practice: 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period.

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B.E. Mechanical Engineering

III SEMESTER

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week			Examination				Credits
				Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics – III	Maths	04			03	60	40	100	4
2	17ME32	Materials Science	ME	04			03	60	40	100	4
3	17ME33	Basic Thermodynamics	ME	03	02		03	60	40	100	4
4	17ME34	Mechanics of Materials	ME	03	02		03	60	40	100	4
5	17ME35A/ 17ME35B	Metal Casting and Welding	ME	04			03	60	40	100	4
		Machine Tools and Operations	ME								
6	17ME36 A/ 17ME36B	Computer Aided Machine Drawing	ME	01		4	03	60	40	100	3
		Mechanical Measurements and Metrology	ME	03							
7	17MEL37A/ 17MEL37B	Materials Testing Lab/	ME	1		2	03	60	40	100	2
		Mechanical Measurements and Metrology Lab	ME								
8	17MEL38A/ 17MEL38B	Foundry and Forging Lab	ME	1		2	03	60	40	100	2
		Machine Shop/	ME								
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	1			01	30	20	50	1
		TOTAL		22/24	04	08/04		510	340	850	28

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B.E. Mechanical Engineering

IV SEMESTER

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week			Examination				Credits
				Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics – III	Maths	04			03	60	40	100	04
2	17ME42	Kinematics of Machinery	ME	03	02		03	60	40	100	04
3	17ME43	Applied Thermodynamics	ME	03	02		03	60	40	100	04
4	17ME44	Fluid mechanics	ME	03	02		03	60	40	100	04
5	17ME45A/	Metal Casting and Welding	ME	04			03	60	40	100	04
	17ME45B	Machine Tools and Operations	ME								
6	17ME46 A/	Computer Aided Machine Drawing	ME	01		4	03	60	40	100	03
	17ME46B	Mechanical Measurements and Metrology	ME	03							
7	17MEL47A/	Materials Testing Lab/	ME	1		2	03	60	40	100	02
	17MEL47B	Mechanical Measurements and Metrology Lab	ME								
8	17MEL48A/	Foundry and Forging Lab	ME	1		2	03	60	40	100	02
	17MEL48B	Machine Shop/	ME								
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	1			01	30	20	50	1
TOTAL				21/23	06	08/04		510	340	850	28

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V SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17ME51	Management and Engineering Economics	3	2	0	03	60	40	100	4
2	17ME52	Dynamics of Machinery	3	2	0	03	60	40	100	4
3	17ME53	Turbo Machines	3	2	0	03	60	40	100	4
4	17ME54	Design of Machine Elements - I	3	2	0	03	60	40	100	4
5	17ME55X	Professional Elective-I	3	0	0	03	60	40	100	3
6	17ME56X	Open Elective-I	3	0	0	03	60	40	100	3
7	17MEL57	Fluid Mechanics & Machinery Lab	1	0	2	03	60	40	100	2
8	17MEL58	Energy Lab	1	0	2	03	60	40	100	2
		TOTAL	**20**	**08**	**04**		**480**	**320**	60	40

Professional Elective-I		Open Elective-I	
17ME551	Refrigeration and Air-conditioning	17ME561	Optimization Techniques
17ME552	Theory of Elasticity	17ME562	Energy and Environment
17ME553	Human Resource Management	17ME563	Automation and Robotics
17ME554	Non Traditional Machining	17ME564	Project Management

1. **Core subject:** This is the course, which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.
2. **Professional Elective:** Elective relevant to chosen specialization/ branch
3. **Open Elective:** Electives from other technical and/or emerging subject areas.

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B.E. Mechanical Engineering

VI SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17ME61	Finite Element Analysis	3	2	0	03	60	40	100	4
2	17ME62	Computer integrated Manufacturing	4	0	0	03	60	40	100	4
3	17ME63	Heat Transfer	3	2	0	03	60	40	100	4
4	17ME64	Design of Machine Elements -II	3	2	0	03	60	40	100	4
5	17ME65X	Professional Elective-II	3	0	0	03	60	40	100	3
6	17ME66X	Open Elective-II	3	0	0	03	60	40	100	3
7	17MEL67	Heat Transfer Lab	1	0	2	03	60	40	100	2
8	17MEL68	Modeling and Analysis Lab(FEA)	1	0	2	03	60	40	100	2
		TOTAL	**21**	**6**	**04**		**480**	**320**	60	40

Professional Elective-II		Open Elective-II	
17ME651	Computational Fluid Dynamics	17ME661	Energy Auditing
17ME652	Mechanics of Composite Materials	17ME662	Industrial Safety
17ME653	Metal Forming	17ME663	Maintenance Engineering
17ME654	Tool Design	17ME664	Total Quality Management
17ME655	Automobile Engineering		

1. **Core subject:** This is the course, which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.
2. **Professional Elective:** Elective relevant to chosen specialization/ branch
3. **Open Elective**: Electives from other technical and/or emerging subject areas.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2015-2016

VII SEMESTER **B.E. Mechanical Engineering**

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17ME71	Energy Engineering	3	2	0	03	60	40	100	4
2	17ME72	Fluid Power Systems	4	0	0	03	60	40	100	4
3	17ME73	Control Engineering	3	2	0	03	60	40	100	4
4	17ME74X	Professional Elective - III	3	0	0	03	60	40	100	3
5	17ME75X	Professional Elective-IV	3	0	0	03	60	40	100	3
6	17MEL76	Design Lab	1	0	2	03	60	40	100	2
7	17MEL77	CIM Lab	1	0	2	03	60	40	100	2
8	17MEP78	Project Phase – I	-	-	-	-	60	40	100	2
		TOTAL	**18**	**4**	**04**		**480**	**320**	**60**	**24**

Professional Elective-III		Professional Elective-IV	
17ME741	Design of Thermal Equipment's	17ME751	Automotive Electronics
17ME742	Tribology	17ME752	Fracture Mechanics
17ME743	Financial Management	17ME753	Human Resource Management
17ME744	Design for Manufacturing	17ME754	Mechatronics
17ME745	Smart Materials & MEMS	17ME755	Advanced Vibrations

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1. Core subject: This is the course, which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

2. Professional Elective: Elective relevant to chosen specialization/ branch

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2015-2016

VIII SEMESTER **B.E. Mechanical Engineering**

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	SEE Marks	CIE Marks	Total Marks	
1	17ME81	Operations Research	3	2	0	03	60	40	100	4
2	17ME82	Additive Manufacturing	4	0	0	03	60	40	100	4
3	17ME83X	Professional Elective - V	3	0	0	03	60	40	100	3
4	17ME84	Internship / Professional Practice	Industry Oriented			03	60	40	60	40
5	17ME85	Project Phase – II	-	6	-	03	60	40	200	6
6	17MES86	Seminar	-	4	-	-	60	40	100	1
		TOTAL	**10**	**12**	**-**		**480**	**320**	**700**	**20**

Professional Elective-V	
15ME831	Cryogenics
15ME832	Experimental Stress Analysis
15ME833	Theory of Plasticity
15ME834	Green Manufacturing
15ME835	Product life cycle management

1. **Core subject:** This is the course, which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.
2. **Professional Elective:** Elective relevant to chosen specialization/ branch
3. **Internship / Professional Practice:** To be carried out between 6th & 7th semester vacation or 7th & 8th semester vacation.

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