Maharaja Institute of Technology Mysore

Approved by AICTE, New Delhi,
Affiliated to Visvesvaraya Technological University, Belagavi
Recognized by Government of Karnataka

Ref: MITM/Principal/2022/163   Dated: 21.03.2022

DECLARATION

The List of Courses Offered in the College across the various programs during the Assessment period 2015-16 to 2019-20 are as follows. The Institute hereby submits the error that has occurred and requests the NAAC through the DVV to accept the corrections and oblige.
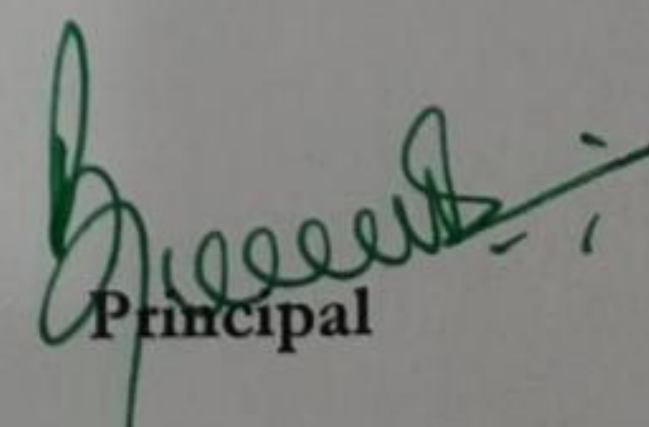
S/L	Program Name	Program Code	Academic Year	No. of Courses Offered
1	B.E. in Computer Science and Engineering	B.E./CSE	2019-20	68
			2018-19	64
			2017-18	61
			2016-17	63
			2015-16	63
2	B.E. in Civil Engineering	B.E./CV	2019-20	70
			2018-19	70
			2017-18	66
			2016-17	67
			2015-16	67
3	B.E. in Electronics and Communication Engineering	B.E./ECE	2019-20	63
			2018-19	63
			2017-18	62
			2016-17	62
			2015-16	62
4	B.E. in Information Science and Engineering	B.E./ISE	2019-20	63
			2018-19	65
			2017-18	62
			2016-17	64

#				
6			2015-16	64
5	B.E. in Mechanical Engineering	B.E./ME	2019-20	73
			2018-19	72
			2017-18	71
			2016-17	71
			2015-16	71
6	M.Tech in Signal Processing	M.Tech/ECE	2019-20	20
			2018-19	20
			2017-18	21
			2016-17	22
			2015-16	-
7	M.Tech in Thermal Power Engineering	M.Tech/MTP	2019-20	22
			2018-19	22
			2017-18	22
			2016-17	15
			2015-16	15
8	Master of Business Administration	MBA	2019-20	32
			2018-19	32
			2017-18	32
			2016-17	32
			2015-16	31
9	Master of Computer Applications	MCA	2019-20	45
			2018-19	45
			2017-18	42
			2016-17	41
			2015-16	41

Principal

SCHEME OF TEACHING & EXAMINATION
BE CIVIL ENGINEERING
III SEMESTER

Sl. No	Subject Code	Title	Teaching Dept.	Teaching hours /week		Examination				
				Th.	Pr.	Dur-ation	I.A. Max. Marks	Theory/ Pract. Max. Marks	Total Marks Max. Marks
1	10 MAT 31	Engineering Mathematics –III	Maths	4	--	3	25	100	125
2	10 CV 32	Building Materials and Construction Technology	Civil	4	--	3	25	100	125
3	10 CV 33	Strength of Materials	Civil	4	--	3	25	100	125
4	10 CV 34	Surveying – I	Civil	4	--	3	25	100	125
5	10 CV 35	Fluid Mechanics	Civil	4	--	3	25	100	125
6	10 CV 36	Applied Engineering Geology	Civil/Geo.	4	--	3	25	100	125
7	10 CVL 37	Civil Engg. Material Testing Laboratory	Civil	--	3	3	25	50	75
8	10 CVL 38	Surveying Practice – I	Civil	--	3	3	25	50	75
		Total		22	08	24	200	700	900

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SCHEME OF TEACHING & EXAMINATION
BE CIVIL ENGINEERING
IV SEMESTER

S. No	Subject Code	Title	Teaching Dept.	Teaching hours /week			Examination		
				Th.	Pr.	Dur-ation	I.A. Max. Marks	Theory/ Pract. Max. Marks	Total Marks Max. Marks
1	10 MAT 41	Engineering Mathematics –IV	Maths	4	---	3	25	100	125
2	10 CV 42	Concrete Technology	Civil	4	---	3	25	100	125
3	10 CV 43	Structural Analysis – I	Civil	4	---	3	25	100	125
4	10 CV 44	Surveying – II	Civil	4	---	3	25	100	125
5	10 CV 45	Hydraulics and Hydraulic Machines	Civil	4	---	3	25	100	125
6	10 CV 46	Building Planning & Drawing	Civil	1	6	4	25	100	125
7	10 CVL 47	Surveying Practice-II Laboratory	Civil	---	3	3	25	50	75
8	10 CVL 48	Applied Engineering Geology Laboratory	Civil/Geo.	---	3	3	25	50	75
		Total		21	12	25	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
B.E. CIVIL EINGINEERING
V SEMESTER

SL. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination				
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total	
1	10 AL 51	Management & Entrepreneurship	Any Dept.	04	-	03	25	100	125	
2	10 CV 52	Design of RCC Structural Elements	Civil	04	--	03	25	100	125	
3	10 CV 53	Structural Analysis – II	Civil	04	--	03	25	100	125	
4	10 CV 54	Geotechnical Engineering – I	Civil	04	--	03	25	100	125	
5	10 CV 55	Hydrology and Irrigation Engineering	Civil	04	--	03	25	100	125	
6	10 CV 56	Transportation Engineering – I	Civil	04	--	03	25	100	125	
7	10 CVL 57	Hydraulics and Hydraulic Machinery Lab.	Civil	--	03	03	25	50	75	
8	10 CVL 58	Computer Aided Design Lab.	Civil	--	03	03	25	50	75	
		TOTAL		24	06	24	200	700	900	

SCHEME OF TEACHING AND EXAMINATION
B.E. CIVIL EINGINEERING
VI SEMESTER

SL. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination				
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total	
1	10 CV 61	Environmental Engineering – I	Civil	04	--	03	25	100	125	
2	10 CV 62	Design & Drawing of RC structures	Civil	02	03	04	25	100	125	
3	10 CV 63	Transportation Engineering – II	Civil	04	--	03	25	100	125	
4	10 CV 64	Geotechnical Engineering. – II	Civil	04	--	03	25	100	125	
5	10 CV 65	Hydraulic Structures and Irrigation Design-Drawing	Civil	02	03	04	25	100	125	
6	10 CV 66x	Elective-I (Group A)	Civil	04	--	03	25	100	125	
7	10 CVL 67	Geotechnical Engineering. Lab.	Civil	--	03	03	25	50	75	
8	10 CVL 68	Extensive Survey Viva Voce	Civil	--	03	03	25	50	75	
		TOTAL		20	12	25	200	700	900	

Elective-I (Group A)

10 CV 661 Theory of Elasticity
10 CV 662 Alternative Building Materials and Technologies
10 CV 663 Ground Improvement Techniques
10 CV 664 Advanced Surveying

10 CV 665 Ground Water Hydrology
10 CV 666 Rural Water Supply and Sanitation
10 CV 667 Traffic Engineering

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SCHEME OF TEACHING AND EXAMINATION
B.E. CIVIL ENGINEERING
VII SEMESTER

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination			Marks
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
1	10 CV 71	Environmental Engineering -II	Civil	04	--	03	25	100	125
2	10 CV 72	Design of Steel Structures	Civil	04	--	03	25	100	125
3	10 CV 73	Estimation and Valuation	Civil	04	--	03	25	100	125
4	10 CV 74	Design of Pre Stressed Concrete Structures	Civil	04	--	03	25	100	125
5	10 CV 75x	Elective-II (Group B)	Civil	04	--	03	25	100	125
6	10 CV 76x	Elective-III (Group C)	Civil	04	--	03	25	100	125
7	10 CVL 77	Environmental Engineering Lab	Civil	--	03	03	25	50	75
8	10 CVL 78	Concrete and Highway Materials lab	Civil	--	03	03	25	50	75
		TOTAL		24	06	24	200	700	900

Elective-II (Group B)

10 CV 751	Matrix Method of Structural Analysis
10 CV 752	Advanced Design of RC Structures
10 CV 753	Design of Masonry Structures
10 CV 754	Earth and Earth Retaining Structures
10 CV 755	Highway Geometric Design
10 CV 756	Open Channel Hydraulics
10 CV 757	Solid Waste Management

Elective-III (Group C)

10 CV 761	Numerical methods in Civil Engineering
10 CV 762	Rock Mechanics
10 CV 763	Pavement Materials and Construction
10 CV 764	Photogrammetry and Remote Sensing
10 CV 765	Air Pollution and Control
10 CV 766	Design and Drawing of Bridges.: * (2 Hrs of Theory + 3 Hrs of Drawing) * (Exam Duration : 4 Hrs)
10 CV 767	Structural Dynamics

SCHEME OF TEACHING AND EXAMINATION
B.E. CIVIL ENGINEERING
VIII SEMESTER

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination			Marks
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
1	10 CV 81	Advanced Concrete Technology	Civil	04	--	03	25	100	125
2	10 CV 82	Design and Drawing of Steel Structures	Civil	02	03	04	25	100	125
3	10 CV 83x	Elective-IV (Group D)	Civil	04	--	03	25	100	125
4	10 CV 84x	Elective-V (Group E)	Civil	04	--	03	25	100	125
5	10 CV 85	Project Work	Civil	--	06	03	100	100	200
6	10 CV 86	Seminar	Civil	--	03	03	50	--	50
		TOTAL		14	12	19	250	500	750

Elective-IV (Group D)

10 CV 831	Advanced Pre-stressed Concrete Structures
10 CV 832	Advanced Foundation Design
10 CV 833	Pavement Design
10 CV 834	Earthquake Resistant Design of Structures
10 CV 835	Industrial Waste Water Treatment
10 CV 836	Quality Management System in Civil Engineering

Elective-V (Group E)

10 CV 841	Finite Element Analysis
10 CV 842	Reinforced Earth Structures
10 CV 843	Urban Transport Planning
10 CV 844	Geographic Information System
10 CV 845	Advanced Design of Steel Structures
10 CV 846	Water Resources Engineering
10 CV 847	Environmental Impact Assessment

B.E

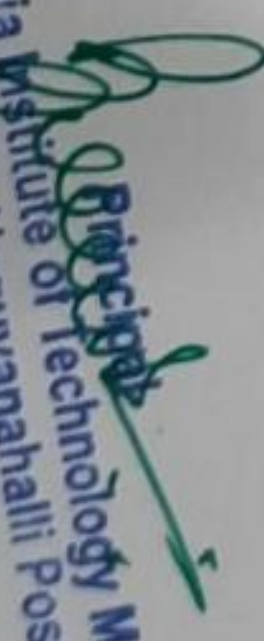Computer Science and Engineering

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM

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SCHEME OF TEACHING AND EXAMINATION
B.E. COMPUTER SCIENCE AND ENGINEERING
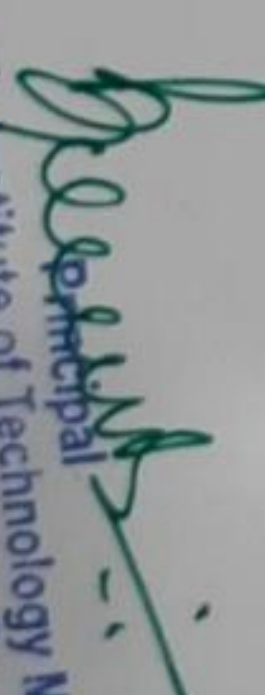### (Common to CSE & ISE)

III SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10MAT31	Engineering Mathematics - III	Mathematics	04	-	03	25	100	125
2	10CS32	Electronic Circuits	CSE/ISE	04	-	03	25	100	125
3	10CS33	Logic Design	CSE/ISE	04	-	03	25	100	125
4	10CS34	Discrete Mathematical Structures	CSE/ISE	04	-	03	25	100	125
5	10CS35	Data Structures with C	CSE/ISE	04	-	03	25	100	125
6	10CS36	Object Oriented Programming with C++	CSE/ISE	04	-	03	25	100	125
7	10CSL37	Data Structures with C/C++ Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL38	Electronic Circuits & Logic Design Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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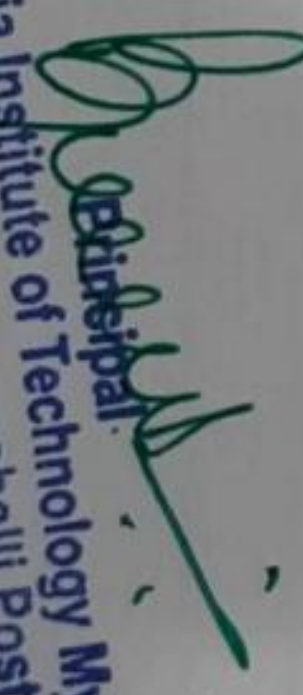## B.E. COMPUTER SCIENCE AND ENGINEERING
(Common to CSE & ISE)

IV SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10MAT41	Engineering Mathematics - IV	Maths	04	-	03	25	100	125
2	10CS42	Graph Theory and Combinatorics	CSE/ISE	04	-	03	25	100	125
3	10CS43	Design and Analysis of Algorithms	CSE/ISE	04	-	03	25	100	125
4	10CS44	Unix and Shell Programming	CSE/ISE	04	-	03	25	100	125
5	10CS45	Microprocessors	CSE/ISE	04	-	03	25	100	125
6	10CS46	Computer Organization	CSE/ISE	04	-	03	25	100	125
7	10CSL47	Design and Analysis of Algorithms Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL48	Microprocessors Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
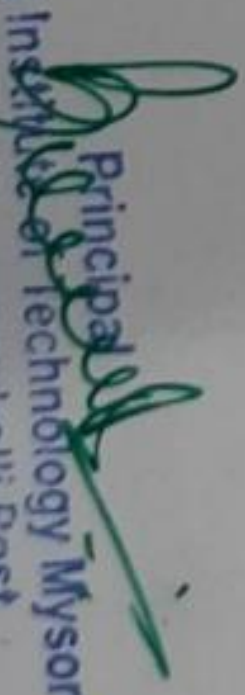## B.E. COMPUTER SCIENCE AND ENGINEERING

V SEMESTER

No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10IS51	Software Engineering	CSE/ISE	04	-	03	25	100	125
2	10CS52	Systems Software	CSE/ISE	04	-	03	25	100	125
3	10CS53	Operating Systems	CSE/ISE	04	-	03	25	100	125
4	10CS54	Database Management Systems	CSE/ISE	04	-	03	25	100	125
5	10CS55	Computer Networks - I	CSE/ISE	04	-	03	25	100	125
6	10CS56	Formal Languages and Automata Theory	CSE/ISE	04	-	03	25	100	125
7	10CSL57	Database Applications Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL58	Systems Software & Operating Systems Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
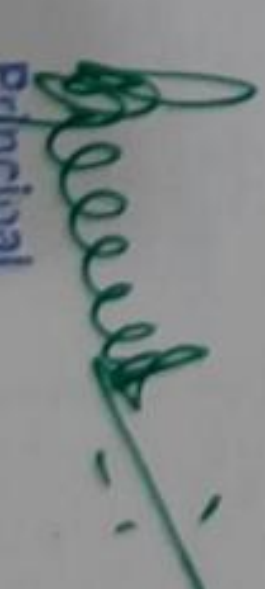## B.E. COMPUTER SCIENCE AND ENGINEERING

VI SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration (Hrs)	IA	Exam	Total
1	10AL61	Management and Entrepreneurship	CSE/ISE/ MBA	04	-	03	25	100	125
2	10CS62	Unix System Programming	CSE/ISE	04	-	03	25	100	125
3	10CS63/ 10IS662	Compiler Design	CSE/ISE	04	-	03	25	100	125
4	10CS64	Computer Networks - II	CSE/ISE	04	-	03	25	100	125
5	10CS65 / 10IS665	Computer Graphics and Visualization	CSE/ISE	04	-	03	25	100	125
6	10CS66x	Elective I (Group-A)	CSE/ISE	04	-	03	25	100	125
7	10CSL67	Computer Graphics and Visualization Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL68	Unix System Programming and Compiler Design Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
B.E. COMPUTER SCIENCE AND ENGINEERING

VII SEMESTER
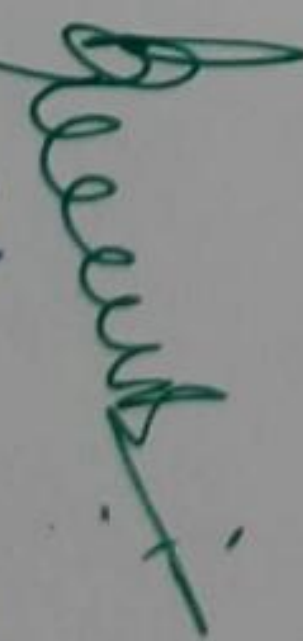
S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10CS71	Object-Oriented Modeling and Design	CSE/ISE	04	-	03	25	100	125
2	10CS72/ 10IS752	Embedded Computing Systems	CSE/ISE	04	-	03	25	100	125
3	10CS73	Programming the Web	CSE/ISE	04	-	03	25	100	125
4	10CS74	Advanced Computer Architectures	CSE/ISE	04	-	03	25	100	125
5	10CS75x	Elective II (Group-B)	CSE/ISE	04	-	03	25	100	125
6	10CS76x	Elective III(Group-C)	CSE/ISE	04	-	03	25	100	125
7	10CSL77	Networks Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL78	Web Programming Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

SCHEME OF TEACHING AND EXAMINATION
B.E. COMPUTER SCIENCE AND ENGINEERING

VIII SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration	IA	Exam	Total
							Marks		
1	10IS81	Software Architectures	CSE/ISE	04	-	03	25	100	125
2	10CS82	System Modeling and Simulation	CSE/ISE	04	-	03	25	100	125
3	10CS83x	Elective IV (Group-D)	CSE/ISE	04	-	03	25	100	125
4	10CS84x	Elective V (Group-E)	CSE/ISE	04	-	03	25	100	125
5	10CS85	Project Work	CSE	-	06	03	100	100	200
6	10CS86	Seminar	CSE	-	-	-	50	-	50
		Total		16	06		250	500	750

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Elective IV – Group D

10CS831/10IS831	Wireless Networks and Mobile Computing
10CS832/10IS832	Web 2.0 and Rich Internet Applications
10CS833	VLSI Design and Algorithms
10CS834/10IS834	Network Management Systems
10CS835/10IS835	Information and Network Security
10CS836/10IS836	Microcontroller-Based Systems

Elective V – Group E

10CS841/10IS841	Ad-hoc Networks
10CS842	Software Testing
10CS843	ARM Based System Design
10CS844/10IS844	Services Oriented Architecture
10CS845/10IS845	Clouds, Grids and Clusters
10CS846	Multi-core Architecture and Programming

NOTE: Students have to register for one Elective from each of the five Elective Group.

SCHEME OF TEACHING & EXAMINATION
ELECTRONICS & COMMUNICATION ENGINEERING
III SEMESTER (COMMON TO EC/TC/ML)

Subject Code	Title	Teaching Dept.	Teaching hours/week		Examination			
			Theory	Practical	Duration	I. A	Theory/ Practical	Total Marks
10MAT – 31	Engg. Mathematics - III	Mat	04		03	25	100	125
10ES – 32	Analog Electronic Ckts	@	04		03	25	100	125
10ES – 33	Logic Design	@	04		03	25	100	125
10ES – 34	Network Analysis	@	04		03	25	100	125
10IT– 35	Electronic Instrumentation	@	04		03	25	100	125
10ES – 36	Field Theory	@	04		03	25	100	125
10ESL – 37	Analog Electronics Lab	@		03	03	25	50	75
10ESL – 38	Logic Design Lab	@		03	03	25	50	75
		Total	24	06	24	200	700	900

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SCHEME OF TEACHING & EXAMINATION
ELECTRONICS & COMMUNICATION ENGINEERING
IV SEMESTER (COMMON TO EC/TC/ML)

Subject Code	Title	Teach Dept.	Teaching hours/week		Examination			
			Theory	Practical	Duration	I. A	Theory/ Practical	Total Marks
10MAT – 41	Engg. Mathematics – IV	Mat	04		03	25	100	125
10ES– 42	Microcontrollers	@	04		03	25	100	125
10ES – 43	Control Systems	@	04		03	25	100	125
10EC – 44	Signals & Systems	@	04		03	25	100	125
10EC– 45	Fundamentals of HDL	@	04		03	25	100	125
10EC – 46	Linear ICs & Applications	@	04		03	25	100	125
10ESL – 47	Microcontrollers Lab	@		03	03	25	50	75
10ECL – 48	HDL Lab	@		03	03	25	50	75
		Total	24	06	24	200	700	900

Note : @ indicates concerned discipline. ES (for theory) & ECL (for Lab) in the subject code indicates that the subject is common to electrical and electronics stream consisting of EE/EC/IT/TC/ML/BM branches of engineering.

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SCHEME OF TEACHING AND EXAMINATION
B.E. ELECTRONICS AND COMMUNICATION

V SEMESTER   **COMMON TO EC/TE**

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
01	10AL51	Management and Entrepreneurship	EC	4	-	3	25	100	125
02	10EC52	Digital Signal Processing	EC	4	-	3	25	100	125
03	10EC53	Analog Communication	EC	4	-	3	25	100	125
04	10EC54	Microwaves and Radar	EC	4	-	3	25	100	125
05	10EC55	Information Theory and Coding	EC	4	-	3	25	100	125
06	10EC56	Fundamentals of CMOS VLSI	EC	4	-	3	25	100	125
07	10ECL57	DSP Lab	EC	-	3	3	25	50	75
08	10ECL58	Analog Communication Lab + LIC Lab	EC	-	3	3	25	50	75
		TOTAL		24	06	24	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
B.E. ELECTRONICS AND COMMUNICATION

VI SEMESTER

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
1	10EC61	Digital Communication	EC	4	-	3	25	100	125
2	10EC62	Microprocessors	EC	4	-	3	25	100	125
3	10EC63	Microelectronics Circuits	EC	4	-	3	25	100	125
4	10EC64	Antennas and Propagation	EC	4	-	3	25	100	125
5	10EC65	Operating Systems	EC	4	-	3	25	100	125
6	10EC66x	Elective-I (Group A)	EC	4	-	3	25	100	125
7	10ECL67	Advanced Communication Lab	EC	-	3	3	25	50	75
8	10ECL68	Microprocessor Lab	EC	-	3	3	25	50	75
		TOTAL		24	06	24	200	700	900

Elective-I (Group A)
10EC661 – Analog and Mixed Mode VLSI Design
10EC662 – Satellite Communications
10EC663 – Random Process

10EC664 – Low Power VLSI Design
10EC665 – Data Structure Using C++
10EC666 – Digital System Design Using Verilog
10EC667 – Virtual Instrumentation

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SCHEME OF TEACHING AND EXAMINATION
B.E. ELECTRONICS AND COMMUNICATION

VII Semester

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
1	10EC71	Computer Communication Networks	EC	4	-	3	25	100	125
2	10EC72	Optical Fiber Communication	EC	4	-	3	25	100	125
3	10EC73	Power Electronics	EC	4	-	3	25	100	125
4	10EC74	Embedded System Design	EC	4	-	3	25	100	125
5	10EC75x	Elective-II (Group B)	EC	4	-	3	25	100	125
6	10EC76x	Elective-III (Group C)	EC	4	-	3	25	100	125
7	10ECL77	VLSI Lab	EC	-	3	3	25	50	75
8	10ECL78	Power Electronics Lab	EC	-	3	3	25	50	75
		TOTAL		24	06	24	200	700	900

Elective-II (Group B)
10EC751 – DSP Algorithms & Architecture
10EC752 - Micro and Smart Systems Technology
10EC753 – Artificial Neural Network
10EC754 – CAD for VLSI
10EC755 – Applied Embedded System Design*
10EC756 – Speech Processing

Elective-III (Group C)
10EC761 - Programming in C++
10EC762 – Real Time Systems
10EC763 - Image Processing
10EC764 - Radio Frequency Integrated Circuits
10EC765 - Wavelet Transforms
10EC766 - Modeling and Simulation of Data Networks

NOTE: 06EC757 Applied Embedded System Design   has a LAB component (syllabus is different and in the Theory Examination, questions from Lab experiments will also be there)

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SCHEME OF TEACHING AND EXAMINATION
B.E. ELECTRONICS AND COMMUNICATION

VIII SEMESTER

Sl. No.	Subject Code	Title of the Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration (Hrs)	IA	Theory / Practical	Total
1	10EC81	Wireless Communication	EC	4	-	3	25	100	125
2	10EC82	Digital Switching System	EC	4	-	3	25	100	125
3	10EC83x	Elective-IV (Group D)	EC	4	-	3	25	100	125
4	10EC84x	Elective-V (Group E)	EC	4	-	3	25	100	125
5	10ECP85	Project Work	EC	-	6	3	100	100	200
6	10ECS86	Seminar	EC	-	3	-	50	-	50
		TOTAL		16	09	15	250	500	750

Elective-IV (Group-D)
10EC831 – Distributed Systems
10EC832 – Network Security
10EC833 - Optical Networks
10EC834 – High Performance Computing Networks
10EC835 – Internet Engineering

Elective-V (Group-E)
10EE841 – Multimedia Communication
10EC842 – Real Time Operating Systems
10EC843 - GSM
10EC844 - Ad-hoc Wireless Networks
10EC845 – Optical Computing

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Scheme and Syllabus of Semesters III to VIII of B.E
(With effect from 2010-2011)

Information Science and Engineering

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM

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SCHEME OF TEACHING AND EXAMINATION
B.E. INFORMATION SCIENCE AND ENGINEERING
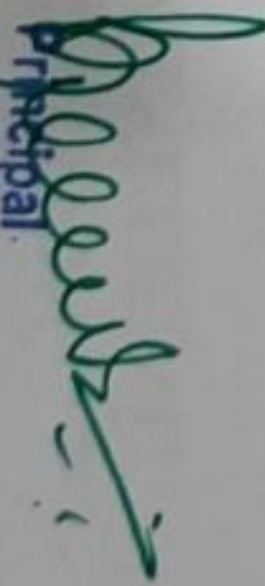### (Common to CSE & ISE)

III SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10MAT31	Engineering Mathematics - III	Mathematics	04	-	03	25	100	125
2	10CS32	Electronic Circuits	CSE/ISE	04	-	03	25	100	125
3	10CS33	Logic Design	CSE/ISE	04	-	03	25	100	125
4	10CS34	Discrete Mathematical Structures	CSE/ISE	04	-	03	25	100	125
5	10CS35	Data Structures with C/C++	CSE/ISE	04	-	03	25	100	125
6	10CS36	Object Oriented Programming with C++	CSE/ISE	04	-	03	25	100	125
7	10CSL37	Data Structures with C/C++ Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL38	Electronic Circuits & Logic Design Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

IV SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration (Hrs)	IA	Exam	Total
1	10MAT41	Engineering Mathematics - IV	Maths	04	-	03	25	100	125
2	10CS42	Graph Theory and Combinatorics	CSE/ISE	04	-	03	25	100	125
3	10CS43	Design and Analysis of Algorithms	CSE/ISE	04	-	03	25	100	125
4	10CS44	Unix and Shell Programming	CSE/ISE	04	-	03	25	100	125
5	10CS45	Microprocessors	CSE/ISE	04	-	03	25	100	125
6	10CS46	Computer Organization	CSE/ISE	04	-	03	25	100	125
7	10CSL47	Design and Analysis of Algorithms Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL48	Microprocessors Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
B.E. INFORMATION SCIENCE AND ENGINEERING

V SEMESTER

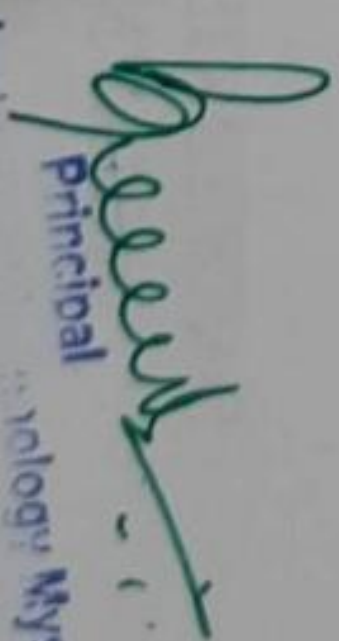| S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Duration (Hrs)	Examination Marks		
				Theory	Practical		IA	Exam	Total
1	10IS51	Software Engineering	CSE/ISE	04	-	03	25	100	125
2	10CS52	Systems Software	CSE/ISE	04	-	03	25	100	125
3	10CS53	Operating Systems	CSE/ISE	04	-	03	25	100	125
4	10CS54	Database Management Systems	CSE/ISE	04	-	03	25	100	125
5	10CS55	Computer Networks - I	CSE/ISE	04	-	03	25	100	125
6	10CS56	Formal Languages and Automata Theory	CSE/ISE	04	-	03	25	100	125
7	10CSL57	Database Applications Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL58	Systems Software & Operating Systems Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

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SCHEME OF TEACHING AND EXAMINATION
B.E. INFORMATION SCIENCE AND ENGINEERING

VI SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs /Week Theory	Teaching Hrs /Week Practical	Duration (Hrs)	IA	Exam	Total
1	10AL61	Management and Entrepreneurship	CSE/ISE/MB A	04	-	03	25	100	125
2	10CS62	Unix System Programming	CSE/ISE	04	-	03	25	100	125
3	10IS63	File Structures	CSE/ISE	04	-	03	25	100	125
4	10CS64	Computer Networks - II	CSE/ISE	04	-	03	25	100	125
5	10IS65	Software Testing	CSE/ISE	04	-	03	25	100	125
6	10IS66x	Elective I (Group-A)	CSE/ISE	04	-	03	25	100	125
7	10ISL67	File Structures Laboratory	CSE/ISE	-	03	03	25	50	75
8	10ISL68	Software Testing Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900

Columns "IA", "Exam", "Total" fall under the heading "Examination Marks".
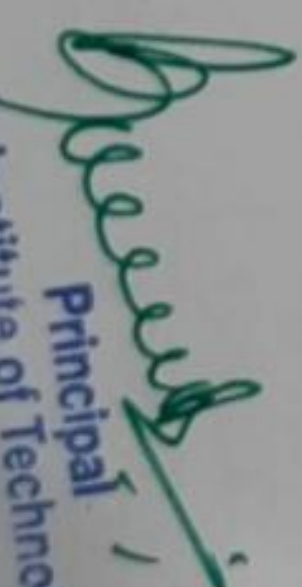
Elective I – Group A

10IS661/10CS661   Operations Research
10IS662/10CS63   Compiler Design
10IS663/10CS663   Data Compression
10IS664/10CS664   Pattern Recognition
10IS665/10CS65   Computer Graphics and Visualization
10IS666/10CS666   Programming Languages

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SCHEME OF TEACHING AND EXAMINATION
B.E. INFORMATION SCIENCE AND ENGINEERING

VII SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week		Examination			
				Theory	Practical	Duration (Hrs)	IA	Exam	Total
1	10CS71	Object Oriented Modeling and Design	CSE/ISE	04	-	03	25	100	125
2	10IS72	Information Systems	CSE/ISE	04	-	03	25	100	125
3	10CS73	Programming the Web	CSE/ISE	04	-	03	25	100	125
4	10IS74/ 10CS755	Data Warehousing and Data Mining	CSE/ISE	04	-	03	25	100	125
5	10IS75x ·	Elective II (Group-B)	CSE/ISE	04	-	03	25	100	125
6	10IS76x	Elective III(Group-C)	CSE/ISE	04	-	03	25	100	125
7	10CSL77	Networks Laboratory	CSE/ISE	-	03	03	25	50	75
8	10CSL78	Web Programming Laboratory	CSE/ISE	-	03	03	25	50	75
		Total		24	06	-	200	700	900
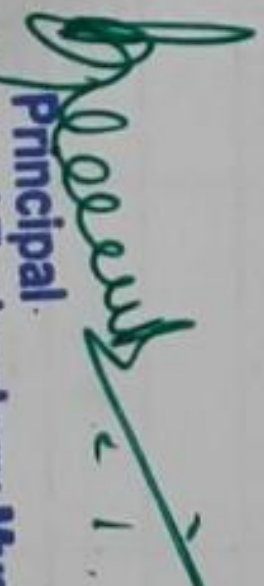
Elective II – Group B

10IS751/10CS751	Advanced DBMS
10IS752/10CS72	Embedded Computing Systems
10IS753/10CS753	JAVA and J2EE
10IS754/10CS754	Multimedia Computing
10IS755	Advanced Software Engineering
10IS756/10CS756	Neural Networks

Elective III – Group C

10IS761/10CS761	C# Programming and .Net
10IS762/10CS762	Digital Image Processing
10IS763/10CS763	Game Theory
10IS764/10CS764	Artificial Intelligence
10IS765/10CS765	Storage Area Networks
10IS766/10CS766	Fuzzy Logic

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SCHEME OF TEACHING AND EXAMINATION
B.E. INFORMATION SCIENCE AND ENGINEERING

VIII SEMESTER

S. No.	Subject Code	Subject	Teaching Dept.	Teaching Hrs / Week Theory	Practical	Duration	IA	Exam	Total
1	10IS81	Software Architectures	CSE/ISE	04	-	03	25	100	125
2	10CS82	System Modeling and Simulation	CSE/ISE	04	-	03	25	100	125
3	10IS83x	Elective IV (Group-D)	CSE/ISE	04	-	03	25	100	125
4	10IS84x	Elective V (Group-E)	CSE/ISE	04	-	03	25	100	125
5	10IS85	Project Work	ISE	-	06	03	100	100	200
6	10IS86	Seminar	ISE	-	-	-	50	-	50
		Total		16	06		250	500	750

Elective IV – Group D

10IS831/10CS831   Wireless Networks and Mobile Computing
10IS832/10CS832   Web 2.0 and Rich Internet Applications
10IS833   User Interface Design
10IS834/10CS834   Network Management Systems
10IS835/10CS835   Information and Network Security
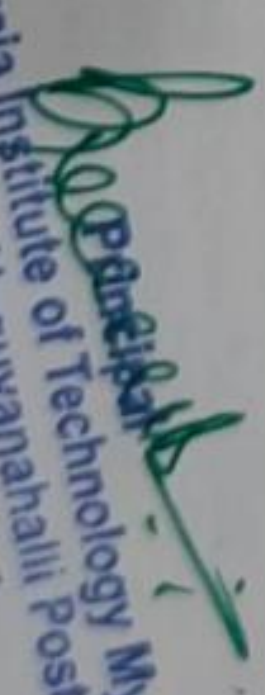10IS836/10CS836   Microcontroller-Based Systems

Elective V – Group E

10IS841/10CS841   Ad-hoc Networks
10IS842   Information Retrieval
10IS843   Supply Chain Management
10IS844/10CS844   Services Oriented Architecture
10IS845/10CS845   Clouds, Grids and Clusters
10IS846   Decision Support Systems

NOTE: Students have to register for one Elective from each of the five Elective Group

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VISVESWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF TEACHING AND EXAMINATION

III SEMESTER B.E. MECHANICAL

S.No.	Sub-Code	Title	Teaching Dept.	Teaching Hours / week		Examination			
				Theory	Pract. / Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.	Total marks
1	10MAT31	Engg. Maths – III	Mathematics	04	--	03	25	100	125
2	10ME32A/10ME32B	Material Sc. & Metallurgy / Mechanical Measurements & Metrolgy	Mechanical	04	--	03	25	100	125
3	10ME33	Basic Thermodynamics	Mechanical	04	--	03	25	100	125
4	10ME34	Mechanics of Materials	Mechanical	04	--	03	25	100	125
5	10ME35	Manufacturing Process I	Mechanical	04	--	03	25	100	125
6	10ME36A/10ME36B	Computer Aided Machine Drawing / Fluid Mechanics	Mechanical	01 04	03 --	03	25	100	125
7	10MEL37A/10MEL37B	Metallography & Material Testing Lab / Mech. Measurements & Metrology Lab	Mechanical	--	03	03	25	50	75
8	10MEL38A/10MEL38B	Foundry & Forging lab / Machine Shop	Mechanical	--	03	03	25	50	75
	III SEMESTER B.E. MECHANICAL			21/24	9	24	200	700	900

VISVESWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF TEACHING AND EXAMINATION

IV SEMESTER B.E. MECHANICAL

S.No.	Sub-Code	Title	Teaching Dept.	Teaching Hours / week			Examination		
				Theory	Pract./ Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.	Total marks
1	10MAT41	Engg. Maths – IV	Mathematics	04	--	03	25	100	125
2	10ME42A/10ME42B	Material Sc. & Metallurgy / Mechanical Measurements & Metrolgy	Mechanical	04	--	03	25	100	125
3	10ME43	Applied Thermodynamics	Mechanical	04	--	03	25	100	125
4	10ME44	Kinematics of Machines	Mechanical	04	--	03	25	100	125
5	10ME45	Manufacturing Process II	Mechanical	04	--	03	25	100	125
6	10ME46-A/10ME46B	Computer Aided Machine Drawing / Fluid Mechanics	Mechanical	01 04	03 --	03	25	100	125
7	10MEL47A/10MEL47B	Metallography & Material Testing Lab / Mech. Measurements & Metrology Lab	Mechanical	--	03	03	25	50	75
8	10MEL48A/10MEL48B	Foundry & Forging lab / Machine Shop	Mechanical	--	03	03	25	50	75
				21	09	24	200	700	900

VISVESWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF TEACHING AND EXAMINATION

V SEMESTER B.E. MECHANICAL

| S.No. | Sub-Code | Title | Teaching Hours/week | | Examination | | | Total Marks |
			Theory	Pract./ Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.	
1	10ME51	Management and Entrepreneurship	04	--	03	25	100	125
2	10ME52	Design of Machine Elements I	04	--	03	25	100	125
3	10ME53	Energy Engineering	04	--	03	25	100	125
4	10ME54	Dynamics of Machines	04	--	03	25	100	125
5	10ME55	Manufacturing Process III	04	--	03	25	100	125
6	10ME56	Turbo Machines	04	--	03	25	100	125
7	10MEL57	Fluid Mechanics & Machines Lab	--	03	03	25	50	75
8	10MEL58	Energy Conversion Engg. Lab	24	06	24	200	700	900

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SCHEME OF TEACHING AND EXAMINATION

VI SEMESTER B.E. MECHANICAL

S.No.	Sub-Code	Title	Teaching Hours/week			Examination			Total Marks
			Theory	Pract./ Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.		
1	10ME61	Computer Integrated Manufacturing	04	--	03	25	100		125
2	10ME62	Design of Machine Elements II	04	--	03	25	100		125
3	10ME63	Heat & Mass Transfer	04	--	03	25	100		125
4	10ME64	Finite Element Methods	04	--	03	25	100		125
5	10ME65	Mechatronics & □ P	04	--	03	25	100		125
6	10ME66X	Elective 'A'	04	--	03	25	100		125
7	10MEL67	Heat & Mass Transfer Lab	--	03	03	25	50		75
8	10MEL68	CAMA Lab	--	06	03	25	50		75
			24	24	24	200	700		900

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Elective 'A'	
10ME661 Theory of Elasticity	10ME662 Mechanics of Composite Materials
10ME663 Refrigeration & Air Conditioning	10ME664 Design of Heat Exchangers
10ME665 Non Traditional Machining	10ME666 Knowledge Management
10ME667 Project Management	10ME668 Statistic Quality Control

VISVESWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF TEACHING AND EXAMINATION VII SEMESTER B.E. MECHANICAL

S.No.	Sub-Code	Title	Teaching Hours/week			Examination			
			Theory	Pract. / Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.	Total Marks	
1	10ME71	Engineering Economics	04	--	03	25	100	125	
2	10ME72	Mechanical Vibrations	04	--	03	25	100	125	
3	10ME73	Hydraulics and Pneumatics	04	--	03	25	100	125	
4	10ME74	Operations Research	04	--	03	25	100	125	
5	10ME75X	Elective B	04	--	03	25	100	125	
6	10ME76X	Elective C	04	--	03	25	100	125	
7	10MEL77	Design Lab	--	03	03	25	50	75	
8	10MEL78	CIM and Automation Lab	--	03	03	25	50	75	
9	10MEL79	Project Phase 1	--	--	--	50	--	50	
			24	06	24	250	700	950	

Elective 'B'		Elective 'C'	
10ME751 Mechanism Design	10ME752 Theory of Plasticity	10ME761 Experimental Stress Analysis	10ME762 Tool Design
10ME753 Engineering Design	10ME754 Non Conventional Energy Sources	10ME763 Cryogenics	10ME764 Smart Materials
10ME755 Gas Dynamics	10ME756 Management Information System	10ME765 Agile Manufacturing	10ME766 Robotics
10ME757 Automation in Manufacturing	10ME758 Total Quality Management	10ME767 Finance management	10ME768 Micro & Smart System Technology

VISVESWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF TEACHING AND EXAMINATION

VIII SEMESTER B.E. MECHANICAL

S.No.	Sub-Code	Title	Teaching Hours/week		Examination			Total Marks
			Theory	Pract../Drg.	Duration	Max. I.A. Marks	Max. Theory /Pr.	
1	10ME81	Operations Management	04	--	03	25	100	125
2	10ME82	Control Engineering	04	--	03	25	100	125
3	10ME83X	Elective D	04	--	03	25	100	125
4	10ME84X	Elective E	04	--	03	25	100	125
5	10ME85L	Project Work	--	06	03	100	100	200
6	10ME86L	Seminar	--	03	--	50	--	50
				09	15	250	500	750

Elective 'D'			
10ME831 Tribology	10ME832 Fracture Mechanics		
10ME833 Power Plant Engineering	10ME834 Nano Technology		
10ME835 Orgisational Behaviour and Professioanl Communication	10ME836 Computer Graphics		
10ME837 Rapid Prototyping	10ME838 Foundry Technology		

Elective 'E'		
10ME841 Machine Tool Design	10ME842 Industrial Engineering & Ergonomics	
10ME843 Bio Mass Energy Systems	10ME844 Automotive Engineering	
10ME845 Database Management System	10ME846 Artificial Intelligence	
10ME847 Design of Experiments	10ME848 Design for Manufacture & Assembly	

I SEMESTER B.E./B.Tech.

<div align="right">CHEMISTRY GROUP</div>

Sl. No.	Subject Code	Subject	Teaching Department	Board	Theory /Lab/ Drawing (Hrs/ Week)	Examination Marks		
						Th./Pr.	I.A.	Total
1	14MAT11	Engineering Maths-I	Maths	Basic Sc.	4 (T)	100	25	125
2	14CHE12	Engineering Chemistry	Chemistry	Basic Sc.	4 (T)	100	25	125
3	14PCD13	Programming in C & Data Structures	Any Engineering Department	CSE	4 (T)	100	25	125
4	14CED14	Computer Aided Engineering Drawing	Mech./IP/Auto/ Mfg.Engg./ IEM	Mech. Engg.	6 (2T + 4L)	100	25	125
5	14ELN15	Basic Electronics	E & C/ E & E /TC / IT	E & C	4 (T)	100	25	125
6	14CPL16	Computer Programming Lab	Any Engineering Department	CSE	3 (L)	50	25	75
7	14CHEL17	Engg. Chemistry Lab	Chemistry	Basic Sc.	3 (L)	50	25	75
8	14CIV18	*Environmental Studies	Civil / Environmental	Civil	2 (T)	50	25	75
9		Language (Eng.)	Humanities		2 (T)	---	---	---
		Total			32	**600	**175	775

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II SEMESTER B.E./B.Tech.

<div align="right">CHEMISTRY GROUP</div>

Sl. No.	Subject Code	Subject	Teaching Department	Board	Theory /Lab/ Drawing (Hrs/ Week)	Examination Marks		
						Th./Pr.	I.A.	Total
1	14MAT21	Engineering Maths-II	Maths	Basic Sc.	4 (T)	100	25	125
2	14CHE22	Engineering Chemistry	Chemistry	Basic Sc.	4 (T)	100	25	125
3	14PCD23	Programming in C & Data Structures	Any Engineering Department	CSE	4 (T)	100	25	125
4	14CED24	Computer Aided Engineering Drawing	Mech./IP/Auto/ Mfg.Engg./ IEM	Mech. Engg.	6 (2T + 4L)	100	25	125
5	14ELN25	Basic Electronics	E & C/ E & E / TC / IT	E & C	4 (T)	100	25	125
6	14CPL26	Computer Programming Lab	Any Engineering Department	CSE	3 (L)	50	25	75
7	14CHEL27	Engg. Chemistry Lab	Chemistry	Basic Sc.	3 (3)	50	25	75
8	14CIV28	*Environmental Studies	Civil / Environmental	Civil	2 (T)	50	25	75
9		Language (Eng.)	Humanities		2 (T)	---	---	---
		Total			32	**600	**175	775

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* CIP/Env.Engg. ; Question Papers will be of Objective Type. Students have to pass the subject compulsorily, however marks will not be considered for awarding class / rank.

**Excluding Environmental Studies/Constitution of India & Professional Ethics

Language (Kan./Eng.) – Audit Course

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

B.E. CIVIL ENGINEERING

(Common to _____)

III SEMESTER

Sl. No	Subject Code	Title	Teaching Hours / Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15MAT31	Engineering Mathematics – III	04		03	80	20	100	4
2	15CV32	Strength of Materials	04		03	80	20	100	4
3	15CV33	Fluid Mechanics	04		03	80	20	100	4
4	15CV34	Basic Surveying	04		03	80	20	100	4
5	15CV35	Engineering Geology	04		03	80	20	100	4
6	15CV36	Building Materials and Construction	04		03	80	20	100	4
7	15CVL37	Building Materials Testing Laboratory		1I+2P	03	80	20	100	2
8	15CVL38	Basic Surveying Practice		1I+2P	03	80	20	100	2
		TOTAL	24	6	24	640	160	800	28

Note:

Core Subjects:	15CV31, 15CV32, 15CV33, 15CV34, 15CV35, 15CV36
Laboratory & Practice:	15CVL37, 15CVL38

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

B.E. CIVIL ENGINEERING

(Common to _____)

IV SEMESTER

Sl. No	Subject Code	Title	Teaching Hours / Week		Examination				Credits
			Theory	Practical / Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15MAT31	Engineering Mathematics – IV	04		03	80	20	100	4
2	15CV42	Analysis of Determinate Structures	04		03	80	20	100	4
3	15CV43	Applied Hydraulics	04		03	80	20	100	4
4	15CV 44	Concrete Technology	04		03	80	20	100	4
5	15CV45	Basic Geotechnical Engineering	04		03	80	20	100	4
6	15CV46	Advanced Surveying	04		03	80	20	100	4
7	15CVL47	Fluid Mechanics Laboratory		1I+2P	03	80	20	100	2
8	15CVL48	Engineering Geology Laboratory		1I+2P	03	80	20	100	2
		TOTAL	24	06	24	640	160	800	28

Note:

Core Subjects:	15CV 41, 15CV42, 15CV43, 15CV 44, 15CV45, 15CV46
Laboratory & Practice:	15CVL47, 15CVL48

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
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SCHEME OF TEACHING AND EXAMINATION 2015-2016

B.E. CIVIL ENGINEERING

V SEMESTER

Sl. No.	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15CV51	Design of RC Structural Elements	04		03	80	20	100	4
2	15CV52	Analysis of Indeterminate Structures	04		03	80	20	100	4
3	15CV53	Applied Geotechnical Engineering	04		03	80	20	100	4
4	15CV54	Computer Aided Building Planning and Drawing	01	3D	03	80	20	100	4
5	15CV55X	Professional Elective-1	03		03	80	20	100	3
6	15CV56X	Open Elective-1	03		03	80	20	100	3
7	15CVL57	Geotechnical Engineering Laboratory		1I+2P	03	80	20	100	2
8	15CVL58	Concrete and Highway Materials Laboratory		1I+2P	03	80	20	100	2
		TOTAL	19	09	24	640	160	800	26

Professional Elective 1		Open Elective 1	
15CV551	Air pollution and Control	15CV561	Traffic Engineering
15CV552	Railways, Harbours, tunneling and Airports	15CV562	Sustainability Concepts in Engineering
15CV553	Masonry Structures	15CV563	Remote Sensing and GIS
15CV554	Theory of Elasticity	15CV564	Occupational Health and Safety
		15NC565	NCC

1. **Professional Elective:** Elective relevant to chosen specialization/ branch
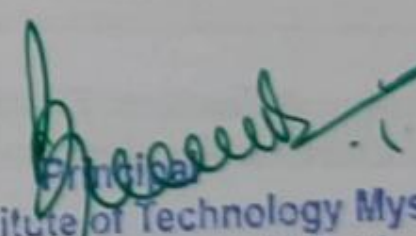2. **Open Elective:** Electives from other technical and/or emerging subject areas

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SCHEME OF TEACHING AND EXAMINATION 2015-2016

B.E. CIVIL ENGINEERING

VI SEMESTER

Sl. No.	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15CV61	Construction Management and Entrepreneurship	04		03	80	20	100	4
2	15CV62	Design of Steel Structural Elements	04		03	80	20	100	4
3	15CV63	Highway Engineering	04		03	80	20	100	4
4	15CV64	Water Supply and Treatment Engineering	04		03	80	20	100	4
5	15CV65X	Professional Elective 2	03		03	80	20	100	3
6	15CV66X	Open Elective 2	03		03	80	20	100	3
7	15CVL67	Software Application Lab		1I+2P	03	80	20	100	2
8	15CVP68	Extensive Survey Project /Camp		1I+2P	03	80	20	100	2
		TOTAL	**22**	**6**	**24**	**640**	**160**	**800**	**26**

Professional Elective-2		Open Elective-2	
15CV651	Solid Waste Management	15CV661	Water Resource Management
15CV652	Matrix Method of Structural Analysis	15CV662	Environmental Protection and Management
15CV653	Alternative Building Materials	15CV663	Numerical Methods and applications
15CV654	Ground Improvement Techniques	15CV664	Finite Element Analysis

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B.E. CIVIL ENGINEERING

VII SEMESTER

Sl. No.	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks	Total Marks	
1	15CV71	Municipal and Industrial Waste Water Engineering	04		03	20	80	100	4
2	15CV72	Design of RCC and Steel Structures	04		03	20	80	100	4
3	15CV73	Hydrology and Irrigation Engineering	04		03	20	80	100	4
4	15CV74X	Professional Elective 3	03		03	20	80	100	3
5	15CV75X	Professional Elective 4	03		03	20	80	100	3
6	15CVL76	Environmental Engineering Laboratory		1I+2P	03	20	80	100	2
7	15CVL77	Computer Aided Detailing of Structures		1I+2D	03	20	80	100	2
8	15CVP78	Project Phase I +Project Seminar		3		100		100	2
		TOTAL	18	9	21	240	560	800	24

Professional Elective 3		Professional Elective 4	
15CV741	Design of Bridges	15CV751	Urban Transportation and Planning
15CV742	Ground Water & Hydraulics	15CV752	Prefabricated Structures
15CV743	Design Concept of Building Services	15CV753	Rehabilitation and Retrofitting of Structures
15CV744	Structural Dynamics	15CV754	Reinforced Earth Structures

1. Project Phase-I + Seminar: Literature Survey, Problem Identification, objectives and Methodology, Submission of synopsis and seminar
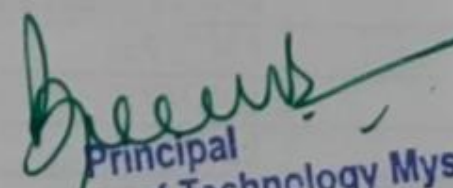
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B.E. CIVIL ENGINEERING

VIII SEMESTER

Sl. No.	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks	Total Marks	
1	15CV81	Quantity Surveying and Contracts Management	4	-	3	20	80	100	4
2	15CV82	Design of Pre Stressed Concrete Elements	4	-	3	20	80	100	4
3	15CV83X	Professional Elective 5	3	-	3	20	80	100	3
4	15CV84	Internship/Professional Practice	Industry Oriented		3	50	50	100	2
5	15CVP85	Project Work	-	6	3	100	100	200	6
6	15CVS86	Seminar on current trends in Engineering and Technology	-	4	-	100	-	100	1
		TOTAL	11	10	15	310	390	700	20

Professional Elective 5	
15CV831	Earthquake Engineering
15CV832	Hydraulic Structures
15CV833	Pavement Design
15CV834	Advanced Foundation Design

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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	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15MAT31	Engineering Mathematics –III*	04		03	80	20	100	4
2	15EC32	Analog Electronics	04		03	80	20	100	4
3	15EC33	Digital Electronics	04		03	80	20	100	4
4	15EC34	Network Analysis	04		03	80	20	100	4
5	15EC35	Electronic Instrumentation	04		03	80	20	100	4
6	15EC36	Engineering Electromagnetics	04		03	80	20	100	4
7	15ECL37	Analog Electronics Lab		1I+2P	03	80	20	100	2
8	15ECL38	Digital Electronics Lab		1I+2P	03	80	20	100	2
		TOTAL	24	6	24	640	160	800	28

*Additional course for Lateral entry students only:

1	15MATDIP31	Additional Mathematics - I	03		03	80	--	80	--

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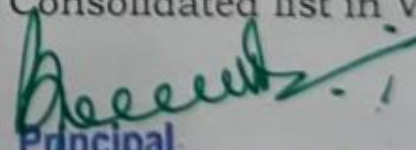## B.E Electronics & Communication Engineering / Telecommunication Engineering
(Common to Electronics & Communication and Telecommunication Engineering)

IV SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week Theory	Practical / Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	Credits
1	15MAT41	Engineering Mathematics –IV*	04		03	80	20	100	4
2	15EC42	Microprocessor	04		03	80	20	100	4
3	15EC43	Control Systems	04		03	80	20	100	4
4	15EC44	Signals and Systems	04		03	80	20	100	4
5	15EC45	Principles of Communication Systems	04		03	80	20	100	4
6	15EC46	Linear Integrated Circuits	04		03	80	20	100	4
7	15ECL47	Microprocessor Lab		1I+2P	03	80	20	100	2
8	15ECL48	Linear ICs and Communication Lab		1I+2P	03	80	20	100	2
		TOTAL	**24**	**06**	**24**	**640**	**160**	**800**	**28**

*Additional course for Lateral entry students only:

1	15MATDIP41	Additional Mathematics - II	03		03	80	--	80	--

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SCHEME OF TEACHING AND EXAMINATION
B.E.: Electronics & Communication Engineering

V SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week Theory	Teaching Hours /Week Practical /Drawing	Examination Duration	Examination Theory/ Practical Marks	Examination I.A. Marks	Examination Total Marks	Credits
1	15ES51	Management and Entrepreneurship Development	04		03	80	20	100	4
2	15EC52	Digital Signal Processing	04		03	80	20	100	4
3	15EC53	Verilog HDL	04		03	80	20	100	4
4	15EC54	Information Theory & Coding	04		03	80	20	100	4
5	15EC55X	Professional Elective-1	03		03	80	20	100	3
6	15EC56X	Open Elective-1	03		03	80	20	100	3
7	15ECL57	DSP Lab		1I+2P	03	80	20	100	2
8	15ECL58	HDL Lab		1I+2P	03	80	20	100	2
	TOTAL		22	06	24	640	160	800	26

Professional Elective-1		Open Elective – 1* (List offered by EC/TC Board only)	
15EC551	Nanoelectronics	15EC561	Automotive Electronics
15EC552	Switching & Finite Automata Theory	15EC562	Object Oriented Programming Using C++
15EC553	Operating System	15EC563	8051 Microcontroller
15EC554	Electrical Engineering Materials		
15EC555	MSP430 Microcontroller		

1. **Professional Elective:** Elective relevant to chosen specialization/ branch.
2. ***Open Elective List**: For other Open Electives offered by other Boards, refer the Scheme of other Boards or Consolidated list in VTU Website.

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SCHEME OF TEACHING AND EXAMINATION
B.E.: Electronics & Communication Engineering

VI SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Examination Duration	Examination Theory/ Practical Marks	Examination I.A. Marks	Examination Total Marks	Credits
1	15EC61	Digital Communication	04		03	80	20	100	4
2	15EC62	ARM Microcontroller & Embedded Systems	04		03	80	20	100	4
3	15EC63	VLSI Design	04		03	80	20	100	4
4	15EC64	Computer Communication Networks	04		03	80	20	100	4
5	15EC65X	Professional Elective-2	03		03	80	20	100	3
6	15EC66X	Open Elective-2	03		03	80	20	100	3
7	15ECL67	Embedded Controller Lab		1I+2P	03	80	20	100	2
8	15ECL68	Computer Networks Lab		1I+2P	03	80	20	100	2
		TOTAL	**22**	**6**	**24**	**640**	**160**	**800**	**26**

Professional Elective-2		Open Elective – 2* (List offered by EC/TC Board only)	
15EC651	Cellular Mobile Communication	15EC661	Data Structures Using C++
15EC652	Adaptive Signal Processing	15EC662	Power Electronics
15EC653	Artificial Neural Networks	15EC663	Digital System Design using Verilog
15EC654	Digital Switching Systems		
15EC655	Microelectronics		

1. **Professional Elective:** Elective relevant to chosen specialization/branch.
2. *** Open Elective List:** For other Open Electives offered by other Boards, refer the Scheme of other Boards or Consolidated list in VTU Website.

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SCHEME OF TEACHING AND EXAMINATION
B.E.: Electronics & Communication Engineering

VII SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				15EC
			Theory	Practical/Drawing	Duration	I.A. Marks	Theory/Practical Marks	Total Marks	
1	15EC71	Microwave and Antennas	04		03	20	80	100	4
2	15EC72	Digital Image Processing	04		03	20	80	100	4
3	15EC73	Power Electronics	04		03	20	80	100	4
4	15XX74X	Professional Elective-3	03		03	20	80	100	3
5	15EC75X	Professional Elective-4	03		03	20	80	100	3
6	15ECL76	Advanced Communication Lab		1I+2P	03	20	80	100	2
7	15ECL77	VLSI Lab		1I+2P	03	20	80	100	2
8	15ECP78	Project Work Phase–I + Project work Seminar		03		100	-	100	2
		TOTAL	18	09	21	240	560	800	24

Professional Elective-3		Professional Elective-4	
15EC741	Multimedia Communication	15EC751	DSP Algorithms and Architecture
15EC742	Biomedical Signal Processing	15EC752	IoT and Wireless Sensor Networks
15EC743	Real Time Systems	15EC753	Pattern Recognition
15EC744	Cryptography	15EC754	Advanced Computer Architecture
15EC745	CAD for VLSI	15EC755	Satellite Communication

1. Project Phase –I + Project Work Seminar: Literature Survey, Problem Identification, Objectives and Methodology. Submission of Synopsis and Seminar.

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SCHEME OF TEACHING AND EXAMINATION
B.E.: Electronics & Communication Engineering

VIII SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks	Total Marks	
1	15EC81	Wireless Cellular and LTE 4G Broadband	4	-	3	20	80	100	4
2	15EC82	Fiber Optics & Networks	4	-	3	20	80	100	4
3	15EC83X	Professional Elective-5	3	-	3	20	80	100	3
4	15EC84	Internship/Professional Practice	Industry Oriented		3	50	50	100	2
5	15ECP85	Project Work	-	6	3	100	100	200	6
6	15ECS86	Seminar	-	4	-	100	-	100	1
		TOTAL	11	10	15	310	390	700	20

Professional Elective -5	
15EC831	Micro Electro Mechanical Systems
15EC832	Speech Processing
15EC833	Radar Engineering
15EC834	Machine learning
15EC835	Network and Cyber Security

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1. **Internship / Professional Practice:** To be carried between the (6th and 7th Semester) or (7th and 8th) Semester Vacation period.
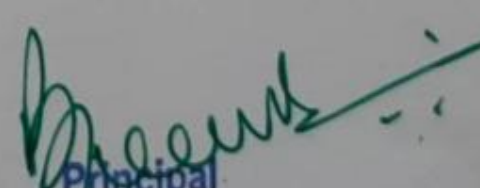
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2015-2016

B.E. Computer Science & Engineering/ B.E. Information Science & Engineering

III SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15MAT31	Engineering Mathematics - III	04	--	03	80	20	100	4
2	15CS32	Analog and Digital Electronics	04	--	03	80	20	100	4
3	15CS33	Data Structures and Applications	04	--	03	80	20	100	4
4	15CS34	Computer Organization	04	--	03	80	20	100	4
5	15CS35	Unix and Shell Programming	04	--	03	80	20	100	4
6	15CS36	Discrete Mathematical Structures	04	--	03	80	20	100	4
7	15CSL37	Analog and Digital Electronics Laboratory	--	1I+2P	03	80	20	100	2
8	15CSL38	Data Structures Laboratory	--	1I+2P	03	80	20	100	2
		TOTAL	24	6	24	640	160	800	28

Note: 'I' Stands for Instruction Hours and 'P' for practical Hours

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SCHEME OF TEACHING AND EXAMINATION 2015-2016

B.E. Computer Science & Engineering/ B.E. Information Science & Engineering

Sl. No	Subject Code	Title	Teaching Hours /Week Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	Credits
1	15MAT41	Engineering Mathematics - IV	04	--	03	80	20	100	4
2	15CS 42	Software Engineering	04	--	03	80	20	100	4
3	15CS43	Design and Analysis of Algorithms	04	--	03	80	20	100	4
4	15CS 44	Microprocessors and Microcontrollers	04	--	03	80	20	100	4
5	15CS45	Object Oriented Concepts	04	--	03	80	20	100	4
6	15CS46	Data Communication	04	--	03	80	20	100	4
7	15CSL47	Design and Analysis of Algorithm Laboratory	--	1I+2P	03	80	20	100	2
8	15CSL48	Microprocessors Laboratory	--	1I+2P	03	80	20	100	2
		TOTAL	24	06	24	640	160	800	28

Note: 'I' Stands for Instruction Hours and 'P' for practical Hours

2

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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SCHEME OF TEACHING AND EXAMINATION 2015-2016
B.E. Information Science & Engineering

V SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15CS51	Management and Entrepreneurship for IT industry	04	--	03	80	20	100	4
2	15CS52	Computer Networks	04	--	03	80	20	100	4
3	15CS53	Database Management System	04	--	03	80	20	100	4
4	15CS54	Automata theory and Computability	04	--	03	80	20	100	4
5	15CS/IS55x	Professional Elective 1	03	--	03	80	20	100	3
6	15CS56x	Open Elective 1	03	--	03	80	20	100	3
7	15CSL57	Computer Network Laboratory	--	1I+2P	03	80	20	100	2
8	15CSL58	DBMS Laboratory with mini project	--	1I+2P	03	80	20	100	2
TOTAL			22	6	24	640	160	800	26

Professional Elective 1	
15CS551	Object Oriented Modeling and Design
15IS552	Social Network Analysis
15CS553	Advanced JAVA and J2EE
15IS554	Programming Languages

1. Professional Elective: Electives relevant to choosen specialization / branch
2. Open Elective: Electives from other technical and/or emerging subject areas (Announced separately)

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B.E. Information Science & Engineering

VI SEMESTER

| Sl. No | Subject Code | Title | Teaching Hours /Week | | Examination | | | | Credits |
			Theory	Practical/ Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15CS61	Cryptography, Network Security and Cyber Law	04	--	03	80	20	100	4
2	15IS62	File Structures	04	--	03	80	20	100	4
3	15IS63	Software Testing	04	--	03	80	20	100	4
4	15CS64	Operating Systems	04	--	03	80	20	100	4
5	15CS/IS65x	Professional Elective 2	03	--	03	80	20	100	3
6	15CS/IS66x	Open Elective 2	03	--	03	80	20	100	3
7	15ISL67	Software Testing Laboratory	--	1I+2P	03	80	20	100	2
8	15ISL68	File Structures Laboratory with mini project	--	1I+2P	03	80	20	100	2
		TOTAL	22	06	24	640	160	800	26

Professional Elective 2	
15CS651	Data Mining and Data Warehousing
15IS652	System Software
15CS653	Operation research
15CS654	Distributed Computing system

1. Professional Elective: Electives relevant to choosen specialization / branch
2. Open Elective: Electives from other technical and/or emerging subject areas (Announced separately)

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2015-2016
B.E. Computer Science & Engineering

VII SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks	Total Marks	
1	15CS71	Web Technology and its applications	04	--	03	20	80	100	4
2	15CS72	Advanced Computer Architectures	04	--	03	20	80	100	4
3	15CS73	Machine Learning	04	--	03	20	80	100	4
4	15CS74x	Professional Elective 3	03	--	03	20	80	100	3
5	15CS75x	Professional Elective 4	03	--	03	20	80	100	3
6	15CSL76	Machine Learning Laboratory	--	1I+2P	03	20	80	100	2
7	15CSL77	Web Technology Laboratory with mini project	--	1I+2P	03	20	80	100	2
8	15CSP78	Project Phase 1 + Seminar	--	--	--	100	--	100	2
		TOTAL	18	6	21	240	560	800	24

Professional Elective 3		Professional Elective 4	
15CS741	Natural Language Processing	15CS751	Soft and Evolutionary Computing
15CS742	Cloud Computing and its Applications	15CS752	Computer Vision and Robotics
15CS743	Information and Network Security	15CS753	Digital Image Processing
15CS744	Unix System Programming	15CS754	Storage Area Networks

1. Professional Elective: Electives relevant to choosen specialization / branch
2. Project Phase 1 + Seminar : Literature Survey, Problem Identification, Objectives and Methodology, Submission of Synopsis and Seminar

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CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2015-2016

B.E. Computer Science & Engineering
VIII SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks	Total Marks	
1	15CS81	Internet of Things and Applications	4	--	3	20	80	100	4
2	15CS82	Big Data Analytics	4	--	3	20	80	100	4
3	15CS83x	Professional Elective 5	3	--	3	20	80	100	3
4	15CS84	Internship / Professional Practice	Industry Oriented		3	50	50	100	2
5	15CSP85	Project work phase II	--	6	3	100	100	200	5
6	15CSS86	Seminar	--	4	--	100	--	100	2
		TOTAL	11	10	15	310	390	700	20
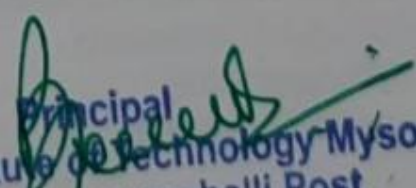
Professional Elective 5	
15CS831	High Performance Computing
15CS832	User Interface Design
15CS833	Network management
15CS834	System Modeling and Simulation

1. Professional Elective: Electives relevant to chosen specialization / branch
2. Internship / Professional Practice: To be carried out between 6th and 7th semester vacation or 7th and 8th semester vacation period

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IV SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15MAT41	Engineering Mathematics – III	04			03	80	20	100	04
2	15ME42	Kinematics of Machinery	03	02		03	80	20	100	04
3	15ME43	Applied Thermodynamics	03	02		03	80	20	100	04
4	15ME44	Fluid mechanics	03	02		03	80	20	100	04
5	15ME45A/	Metal Casting and Welding	04			03	80	20	100	04
	15ME45B	Machine Tools and Operations								
6	15ME46 A/	Computer Aided Machine Drawing	02		4	03	80	20	100	03
	15ME46B	Mechanical Measurements and Metrology	04							
7	15MEL47A /	Materials Testing Lab/	1		2	03	80	20	100	02
	15MEL47B	Mechanical Measurements and Metrology Lab								
8	15MEL48A /	Foundry and Forging Lab	1		2	03	80	20	100	02
	15MEL48B	Machine Shop/								
		TOTAL	19/21	06	08/04		640	160	800	27

B.E. Mechanical Engineering

V SEMESTER

Sl. No	Subject Code	Title	Lecture	Tutorial	Practical	Duration (Hours)	Theory/ Practical Marks	I.A. Marks	Total Marks	Credits
			Teaching Hours /Week			**Examination**				**Credits**
1	15ME51	Management and Engineering Economics	3	2	0	03	80	20	100	4
2	15ME52	Dynamics of Machinery	3	2	0	03	80	20	100	4
3	15ME53	Turbo Machines	3	2	0	03	80	20	100	4
4	15ME54	Design of Machine Elements - I	3	2	0	03	80	20	100	4
5	15ME55X	Professional Elective-I	3	0	0	03	80	20	100	3
6	15ME56X	Open Elective-I	3	0	0	03	80	20	100	3
7	15MEL57	Fluid Mechanics & Machinery Lab	1	0	2	03	80	20	100	2
8	15MEL58	Energy Lab	1	0	2	03	80	20	100	2
		TOTAL	21	06	04		640	160	800	26

Professional Elective-I		Open Elective-I	
15ME551	Refrigeration and Air-conditioning	15ME561	Optimization Techniques
15ME552	Theory of Elasticity	15ME562	Energy and Environment
15ME553	Human Resource Management	15ME563	Automation and Robotics
15ME554	Non Traditional Machining	15ME564	Project Managemet

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. **OpenElective:** Electives from other technical and/or emerging subject areas.

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VI SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15ME61	Finite Element Analysis	3	2	0	03	80	20	100	4
2	15ME62	Computer integrated Manufacturing	4	0	0	03	80	20	100	4
3	15ME63	Heat Transfer	3	2	0	03	80	20	100	4
4	15ME64	Design of Machine Elements -II	3	2	0	03	80	20	100	4
5	15ME65X	Professional Elective-II	3	0	0	03	80	20	100	3
6	15ME66X	Open Elective-II	3	0	0	03	80	20	100	3
7	15MEL67	Heat Transfer Lab	1	0	2	03	80	20	100	2
8	15MEL68	Modeling and Analysis Lab(FEA)	1	0	2	03	80	20	100	2
		TOTAL	21	6	04		640	160	800	26

Professional Elective-II		Open Elective-II	
15ME651	Computational Fluid Dynamics	15ME661	Energy Auditing
15ME652	Mechanics of Composite Materials	15ME662	Industrial Safety
15ME653	Metal Forming	15ME663	Maintenance Engineering
15ME654	Tool Design	15ME664	Total Quality Management
15ME655	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. **OpenElective:** 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

B.E. Mechanical Engineering

VIII SEMESTER

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			Lecture	Tutorial	Practical	Duration (Hours)	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15ME81	Operations Research	3	2	0	03	80	20	100	4
2	15ME82	Additive Manufacturing	4	0	0	03	80	20	100	4
3	15ME83X	Professional Elective - V	3	0	0	03	80	20	100	3
4	15ME84	Internship / Professional Practice	Industry Oriented			03	50	50	100	2
5	15ME85	Project Phase – II	-	6	-	03	100	100	200	6
6	15MES86	Seminar	-	4	-	-	-	100	100	1
		TOTAL	10	12	-		390	310	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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THE DEGREE OF BACHELOR OF ENGINEERING/ TECHNOLOGY (B.E/B.Tech)
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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 Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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	17ELE17	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)

Sl. No	Course Code	Course Title	Teaching Department	Board	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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: 68 hours		21	450	300	750	24

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UNDER CHOICE BASED CREDIT SYSTEM (CBCS)
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Annexure -1

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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 Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	17MAT11	Engineering Mathematics -I	Mathematics	Basic Science	04	--	03	60	40	100	4
2	17CHE12	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	17ELN17	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)

Sl. No	Course Code	Course Title	Teaching Department	Board	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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
Scheme of Teaching and Examination 2017-2018
Choice Based Credit System (CBCS)

B.E./B.Tech_____

III SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
					Teaching Hours /Week		Examination				
1	17MAT31	Core Course	Engineering Mathematics-III		04	--	03	60	40	100	4
2	17XX32	Core Course			04	--	03	60	40	100	4
3	17XX33	Core Course			04	--	03	60	40	100	4
4	17XX34	Core Course			04	--	03	60	40	100	4
5	17XX35	Core Course			04	--	03	60	40	100	4
6	17XX36	Foundation Course			03	--	03	60	40	100	3
7	17XXL37	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17XXL38	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Core Course	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. **Core Course:** 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. **Foundation Course:** The courses based upon the content that leads to Knowledge enhancement.

3. **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.

4. **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 Mathamatics – I | | 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./B.Tech_____

IV SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Teaching Hours /Week — Theory	Teaching Hours /Week — Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	17MAT41	Core Course	Engineering Mathematics-IV		04	--	03	60	40	100	4
2	17XX42	Core Course			04	--	03	60	40	100	4
3	17XX43	Core Course			04	--	03	60	40	100	4
4	17XX44	Core Course			04	--	03	60	40	100	4
5	17XX45	Core Course			04	--	03	60	40	100	4
6	17XX46	Foundation Course			03	--	03	60	40	100	3
7	17XXL47	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17XXL48	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Core Course	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. **Core Course:** 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. **Foundation Course:** The courses based upon the content that leads to Knowledge enhancement.

3. **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.

4. **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	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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Annexure -1 (page -5)

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Scheme of Teaching and Examination 2017-2018
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B.E./B.Tech_____

V SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
						Teaching Hours /Week		Examination			
1	17XX51	Core Course	Management and Entrepreneurship Excluding CSE, ISE and BV Programs. (The course must be related to Management and Entrepreneurship. However, the title and syllabus content can be as per the programme requirement).		04	--	03	60	40	100	4
2	17XX52	Core Course			04	--	03	60	40	100	4
3	17XX53	Core Course			04	--	03	60	40	100	4
4	17XX54	Core Course			04	--	03	60	40	100	4
5	17XX55X	Professional Elective			03	--	03	60	40	100	3
6	17XX56Y	Open Elective			03	--	03	60	40	100	3
7	17XXL57	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17XXL58	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
			TOTAL		Theory:22hours Practical: 06 hours		24	480	320	100	26

Electives

Professional Elective		Open Elective*** Offered by the Department of _____		
Courses under Code 17XX55X	Course Title	Courses under Code 17XX56Y		Course Title
17XX551		17XX561		
17XX552		17XX562		
17XX553		17XX563		
17XX554		17XX564		

*** 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 open elective is similar to that of Departmental core course(s) or to be studied professional elective(s).

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

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: Electives 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
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B.E./B.Tech

VI SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	17XX61	Core Course	Management and Entrepreneurship Excluding CSE, ISE and EV Programs. (The course must be related to Management and Entrepreneurship. However, the title and syllabus content can be as per the programme requirement).		04	--	03	60	40	100	4
2	17XX62	Core Course			04	--	03	60	40	100	4
3	17XX63	Core Course			04	--	03	60	40	100	4
4	17XX64	Core Course			04	--	03	60	40	100	4
5	17XX65X	Professional Elective			03	--	03	60	40	100	3
6	17XX66Y	Open Elective			03	--	03	60	40	100	3
7	17XXL67	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17XXL68	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
				TOTAL	Theory:22hours Practical: 06 hours		24	480	320	800	26

Electives

Professional Elective		Open Elective [III] Offered by the Department of _____	
Courses under Code 17XX65X	Course Title	Courses under Code 17XX66Y	Course Title
17XX651		17XX661	
17XX652		17XX662	
17XX653		17XX663	
17XX654		17XX664	

[III] 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 open elective is similar to that of Departmental core course(s) or to be studied professional elective(s).

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

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

B.E./B.Tech _____

VII SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Teaching Hours /Week		Duration in hours	Examination			Credits
					Theory	Practical/ Drawing		SEE Marks	CIE Marks	Total Marks	
1	17XX71	Core Course			04	--	03	60	40	100	4
2	17XX72	Core Course			04	--	03	60	40	100	4
3	17XX73	Core Course			04	--	03	60	40	100	4
4	17XX74 X	Professional Elective			03	--	03	60	40	100	3
5	17XX75Y	Professional Elective			03	--	03	60	40	100	3
6	17XXL76	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17XXL77	Laboratory			01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17XXP78	Core Course	Project Phase – I and Project seminar			03	--	--	100	100	2
				TOTAL	Theory:18 hours Practical and Project: 09 hours		21	420	380	800	24

Electives

Professional Elective		Professional Elective	
Courses under Code 17XX74X	Course Title	Courses under Code 17XX75Y	Course Title
17XX741		17XX751	
17XX742		17XX752	
17XX743		17XX753	
17XX744		17XX754	

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: Electives relevant to chosen specialization/ branch.

3. 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./B.Tech

VIII SEMESTER

Sl. No	Course Code	Course	Course Title	Teaching Department	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	17XX81	Core Course			04	--	03	60	40	100	4
2	17XX82	Core Course			04	--	03	60	40	100	4
3	17XX83X	Professional Elective			03	--	03	60	40	100	3
4	17XX84	Core Course	Internship/ Professional Practice		Working hours of the place of Internship		03	50	50	100	2
5	17XXP85	Core Course	Project work Phase -II		--	06	03	100	100	200	6
6	17XXS86	Core Course	Technical Seminar		--	04	--	--	100	100	1
			TOTAL		Theory:11 hours Project and Seminar: 10 hours		15	390	310	700	20

Professional Electives

Courses under Code 17XX83X	Course Title
17XX831	
17XX832	
17XX833	
17XX834	

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: Electives relevant to chosen specialization/ branch.

3. Internship/ Professional Practice: To be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period for 4 weeks.

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Mandya District - 571477

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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 Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	17MAT31	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		Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
				Theory	Practical/ Drawing					
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	--

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

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Mandya District - 571477

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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

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

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

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Mandya District - 571477

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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

VI SEMESTER

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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.

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Mandya District - 571477

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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 Structure
17CV744	Structural Dynamics	17CV754	Reinforced Earth Structures

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Mandya District - 571477

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.

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

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

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		Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
				Theory	Practical/ Drawing					
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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Mandya District - 571477

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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 Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	Examination SEE Marks	Examination CIE Marks	Examination Total Marks	Credits
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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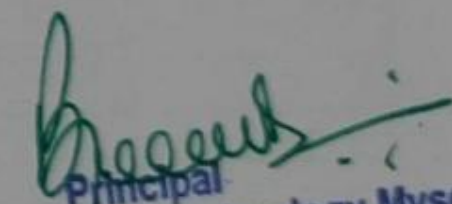Belawadi, Naguvanahalli Post
Srirangapatna Taluk
Mandya District - 571477

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B.E.: Electronics & Communication Engineering

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Examination Duration in hours	Examination SEE Marks	Examination CIE Marks	Examination Total Marks	Credits
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
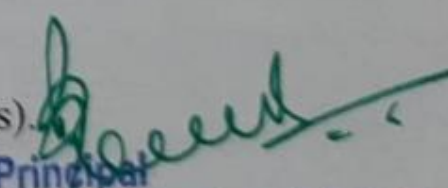
Professional Elective-2		Open Elective – 2*** (List offered by EC/TC Board only)	
17EC651	Cellular Mobile Communication	17EC661	Data Structures Using C++
17EC652	Adaptive Signal Processing	17EC662	Power Electronics *(not for E&C students)*
17EC653	Artificial Neural Networks	17EC663	Digital System Design 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).
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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Mandya District - 571477

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B.E.: Electronics & Communication Engineering

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

⊣. **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 Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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	--

(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

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)*

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***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.

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

B.E: Computer Science and Engineering

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Examination Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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	
17CS651	Data Mining and Data Warehousing
17CS652	Software Architecture and Design Patterns
17CS653	Operations research
17CS654	Distributed Computing system

Open Elective – 2*** (List offered by CSE Board only)	
17CS661	Mobile Application Development
17CS662	Big Data Analytics *(Not for CSE/ISE students)*
17CS663	Wireless Networks and Mobile computing
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
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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

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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B.E: Computer Science and Engineering

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
				Theory	Practical/ Drawing					
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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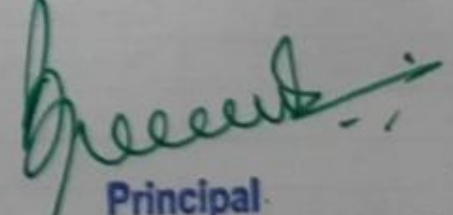**Scheme of Teaching and Examination 2017-2018**
Choice Based Credit System (CBCS)

B.E: Information Science and Engineering

III SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week Theory	Teaching Hours /Week Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
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
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B.E: Information Science and Engineering

IV SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week — Theory	Teaching Hours /Week — Practical/ Drawing	Examination — Duration in hours	Examination — SEE Marks	Examination — CIE Marks	Examination — Total Marks	Credits
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	--

(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
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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).
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

VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week — Theory	Teaching Hours /Week — Practical/ Drawing	Examination — Duration in hours	Examination — SEE Marks	Examination — CIE Marks	Examination — Total Marks	Credits
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
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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. Maharaja Institute of Technology Mysore
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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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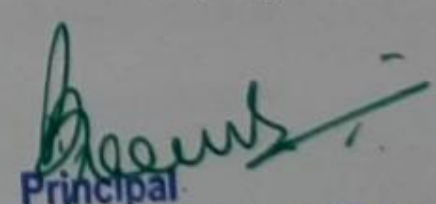
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B.E. Mechanical Engineering
III SEMESTER

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	17ME36A/ 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
				Lecte	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/ 17ME45B	Metal Casting and Welding Machine Tools and Operations	ME ME	04			03	60	40	100	04
6	17ME46 A/ 17ME46B	Computer Aided Machine Drawing Mechanical Measurements and Metrology	ME ME	01 03		4	03	60	40	100	03
7	17MEL47A/ 17MEL47B	Materials Testing Lab/ Mechanical Measurements and Metrology Lab	ME ME	1		2	03	60	40	100	02
8	17MEL48A/ 17MEL48B	Foundry and Forging Lab Machine Shop/	ME ME	1		2	03	60	40	100	02
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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B.E. Mechanical Engineering

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			Duration (Hours)	Examination		Total Marks	Credits
			Lecture	Tutorial	Practical		SEE Marks	CIE 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
B.E. in Mechanical Engineering
2017- Scheme of Teaching and Examination
Choice Based Credit System (CBCS)

VII Semester

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	-	-	-	-		100	100	2
		TOTAL	18	04	04	21	420	380	800	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	Mechatronics
17ME744	Design for Manufacturing	17ME754	Advanced Vibrations
17ME745	Smart Materials & MEMS		
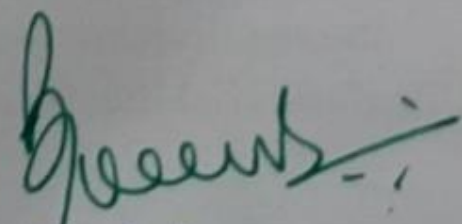
1. **Core subject:** This is the course, which is to be compulsorily studied by a student as a core requirement to complete the requirement of aprogramme in a said discipline of study.

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

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Visvesvaraya Technological University, Belagavi
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Choice Based Credit System (CBCS)

VIII Semester

Sl. No	Subject Code	Title	Teaching Hours /Week			Examination				Credits
			L	T	P	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	50	50	100	2
5	17ME85	Project Phase – II	-		6	03	100	100	200	6
6	17MES86	Seminar	-		4	-		100	100	1
		TOTAL	10	02	10	15	330	370	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 aprogramme 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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Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

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

Sl. No	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination					Credits
						Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks		
						L	T	P						
1	BSC	18MAT11	Calculus and Linear Algebra	Mathematics	Maths	3	2	--	03	40	60	100		4
2	BSC	18PHY12	Engineering Physics	Physics	Physics	3	2	--	03	40	60	100		4
3	ESC	18ELE13	Basic Electrical Engineering	E and E Engineering	E and E Engineering	2	2	--	03	40	60	100		3
4	ESC	18CIV14	Elements of Civil Engineering and Mechanics	Civil Engineering	Civil Engineering	2	2	--	03	40	60	100		3
5	ESC	18EGDL15	Engineering Graphics	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	2	--	2	03	40	60	100		3
6	BSC	18PHYL16	Engineering Physics Laboratory	Physics	Physics	--	--	2	03	40	60	100		1
7	ESC	18ELEL17	Basic Electrical Engineering Laboratory	E and E Engineering	E and E Engineering	--	--	2	03	40	60	100		1
8	HSMC	18EGH18	Technical English–I	Humanities	Humanities	--	2	--	03	40	60	100		1
					TOTAL	12	10	06	24	320	480	800		20

Note: BSC: Basic Science Courses, ESC: Engineering Science Courses, HSMC: Humanity, Social Science and Management Courses.

Definition of Credit:	1 hour Lecture (L) per week per semester =1 Credit
	2 hour Tutorial (T) per week per semester =1 Credit
	2 hour Practical/Laboratory/Drawing (P) per week per semester =1 Credit.

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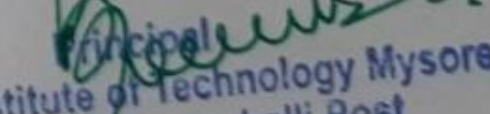Srirangapatna Taluk
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

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

Sl. No	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Theory Lecture (L)	Tutorial (T)	Practical / Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT11	Calculus and Linear Algebra	Mathematics	Mathematics	3	2	--	03	40	60	100	4
2	BSC	18CHE12	Engineering Chemistry	Chemistry	Chemistry	3	2	--	03	40	60	100	4
3	ESC	18CPS13	C Programming for Problem Solving	Computer Science and Engineering	Computer Science and Engineering	2	2	--	03	40	60	100	3
4	ESC	18ELN14	Basic Electronics	ECE/E and I/ TC	E and C Engineering	2	2	--	03	40	60	100	3
5	ESC	18ME15	Elements of Mechanical Engineering	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	2	2	--	03	40	60	100	3
6	BSC	18CHEL16	Engineering Chemistry Laboratory	Chemistry	Chemistry	--	--	2	03	40	60	100	1
7	ESC	18CPL17	C Programming Laboratory	Computer Science and Engineering	Computer Science and Engineering	--	--	2	03	40	60	100	1
8	HSMC	18EGH18	Technical English–1	Humanities	Humanities	--	2	--	03	40	60	100	1
					TOTAL	12	12	04	24	320	480	800	20

Note: BSC: Basic Science Courses, ESC: Engineering Science Courses, HSMC: Humanity, Social Science and Management Courses.

Definition of Credit:	1 hour Lecture (L) per week per semester = 1 Credit
	2 hour Tutorial (T) per week per semester = 1 Credit
	2 hour Practical/Laboratory/Drawing (P) per week per semester = 1 Credit.

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Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
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II SEMESTER B.E./B.Tech (PHYSICS GROUP)

Sl. No	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Theory Lecture L	Tutorial T	Practical/ Drawing P	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT21	Advanced Calculus and Numerical Methods	Mathematics	Mathematics	3	2	--	03	40	60	100	4
2	BSC	18PHY22	Engineering Physics	Physics	Physics	3	2	--	03	40	60	100	4
3	ESC	18ELE23	Basic Electrical Engineering	E and E Engineering	E and E Engineering	2	2	--	03	40	60	100	3
4	ESC	18CIV24	Elements of Civil Engineering and Mechanics	Civil Engineering	Civil Engineering	2	2	--	03	40	60	100	3
5	ESC	18EGDL25	Engineering Graphics	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	2	--	2	03	40	60	100	3
6	BSC	18PHYL26	Engineering Physics Laboratory	Physics	Physics	--	--	2	03	40	60	100	1
7	ESC	18ELEL27	Basic Electrical Engineering Laboratory	E and E Engineering	E and E Engineering	--	--	2	03	40	60	100	1
8	HSMC	18EGH28	Technical English– II	Humanities	Humanities	--	2	--	03	40	60	100	1
					TOTAL	12	10	06	24	320	480	800	20

Note: BSC: Basic Science Courses, ESC: Engineering Science Courses, HSMC: Humanity, Social Science and Management Courses.

Definition of Credit:	1 hour Lecture (L) per week per semester =1 Credit
	2 hour Tutorial (T) per week per semester =1 Credit
	2 hour Practical/Laboratory/Drawing (P) per week per semester =1 Credit.

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

Sl. No	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination				
						Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
						L	T	P					
1	BSC	18MAT21	Advanced Calculus and Numerical Methods	Mathematics	Maths	3	2	--	03	40	60	100	4
2	BSC	18CHE22	Engineering Chemistry	Chemistry	Chemistry	3	2	--	03	40	60	100	4
3	ESC	18CPS23	C Programming for Problem Solving	Computer Science and Engineering	Computer Science and Engineering	2	2	--	03	40	60	100	3
4	ESC	18ELN24	Basic Electronics	ECE/E and I/ TC	E and C Engineering	2	2	--	03	40	60	100	3
5	ESC	18ME25	Elements of Mechanical Engineering	ME, Auto, IP, IEM, Mfg Engineering	Mechanical Engineering	2	2	--	03	40	60	100	3
6	BSC	18CHEL26	Engineering Chemistry Laboratory	Chemistry	Chemistry	--	--	2	03	40	60	100	1
7	ESC	18CPL27	C Programming Laboratory	Computer Science and Engineering	Computer Science and Engineering	--	--	2	03	40	60	100	1
8	HSMC	18EGH28	Technical English– II	Humanities	Humanities	--	2	--	03	40	60	100	1
					TOTAL	12	12	04	24	320	480	800	20

Note: BSC: Basic Science Courses, ESC: Engineering Science Courses, HSMC: Humanity, Social Science and Management Courses.

Definition of Credit:	1 hour Lecture (L) per week per semester =1 Credit 2 hour Tutorial (T) per week per semester =1 Credit 2 hour Practical/Laboratory/Drawing (P) per week per semester =1 Credit.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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(Effective from the academic year 2018 – 19)

Programme: CIVIL ENGINEERING

III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18CV32	Strength of Materials	Civil Engg.	3	2	--	03	40	60	100	4
3	PCC	18CV33	Fluid Mechanics	Civil Engg.	3	0	--	03	40	60	100	3
4	PCC	18CV34	Building Materials and Construction	Civil Engg.	3	0	--	03	40	60	100	3
5	PCC	18CV35	Basic Surveying	Civil Engg.	3	0	--	03	40	60	100	3
6	PCC	18CV36	Engineering Geology	Geology	3	0	--	03	40	60	100	3
7	PCC	18CVL37	Computer Aided Building Planning & Drawing	Civil Engg.	--	2	2	03	40	60	100	2
8	PCC	18CVL38	Building Materials Testing Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
9	HSMC	18KVK39	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
			OR									
		18KAK39	Aadalitha Kannada (Kannada for Administration)									
			OR									
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
					17	08		24	420	480		
				TOTAL	OR	OR	04	OR	OR	OR	900	24
					18	10		26	360	540		

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.
18KVK39Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs											
10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F
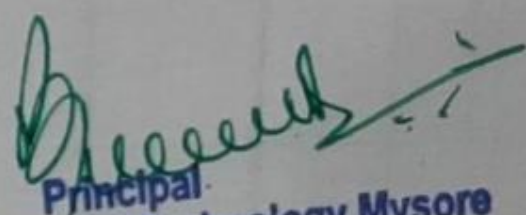
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grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.
(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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 Activity Point Programme. Students transferred from other Universities to 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 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, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression.

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

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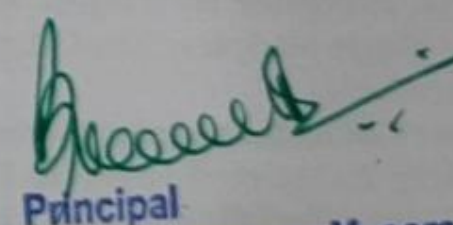# VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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Programme: CIVIL ENGINEERING

IV SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	BSC	18MAT41	Complex Analysis, Probability And Statistical Methods	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18CV42	Analysis of Determinate Structures	Civil Engg.	3	2	--	03	40	60	100	4
3	PCC	18CV43	Applied Hydraulics	Civil Engg.	3	0	--	03	40	60	100	3
4	PCC	18CV44	Concrete Technology	Civil Engg.	3	0	--	03	40	60	100	3
5	PCC	18CV45	Advanced Surveying	Civil Engg.	3	0	--	03	40	60	100	3
6	PCC	18CV46	Water Supply & Treatment Engineering	Civil Engg.	3	0	--	03	40	60	100	3
7	PCC	18CVL47	Engineering Geology Laboratory	Geology	--	2	2	03	40	60	100	2
8	PCC	18CVL48	Fluid Mechanics and Hydraulic Machines Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)/	HSMC	--	2	--	--	100	--	100	1
			OR									
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
			OR									
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17	08		24	420	480		
					OR	OR	04	OR	OR	OR	900	24
					18	10		26	360	540		

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39/49Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39/49Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP41	Additional Mathematics - II	Mathematics	02	01	--	03	40	60	100	0

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

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(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs
Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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

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Programme: CIVIL ENGINEERING

V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	HSMC	18CV51	Construction Management & Entrepreneurship	Civil Engg.	2	2	--	03	40	60	100	3
2	PCC	18CV52	Analysis of Indeterminate Structures	Civil Engg.	3	2	--	03	40	60	100	4
3	PCC	18CV53	Design of RC Structural Elements	Civil Engg.	3	2	--	03	40	60	100	4
4	PCC	18CV54	Basic Geotechnical Engineering	Civil Engg.	3	--	--	03	40	60	100	3
5	PCC	18CV55	Municipal Wastewater Engineering	Civil Engg.	3	--	--	03	40	60	100	3
6	PCC	18CV56	Highway Engineering	Civil Engg.	3	--	--	03	40	60	100	3
7	PCC	18CVL57	Surveying Practice	Civil Engg.	--	2	2	03	40	60	100	2
8	PCC	18CVL58	Concrete and Highway Materials Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/Environmental [Paper setting Board: Civil Engineering]	1	--	--	02	40	60	100	1
				TOTAL	18	10	04	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
CIVIL ENGINEERING
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18CV61	Design of Steel Structural Elements	Civil Engg.	3	2	--	03	40	60	100	4
2	PCC	18CV62	Applied Geotechnical Engineering	Civil Engg.	3	2	--	03	40	60	100	4
3	PCC	18CV63	Hydrology and Irrigation Engineering	Civil Engg.	3	2	--	03	40	60	100	4
4	PEC	18CV64X	Professional Elective -1	Civil Engg.	3	--	--	03	40	60	100	3
5	OEC	18CV65X	Open Elective -A	Civil Engg.	3	--	--	03	40	60	100	3
6	PCC	18CVL66	Software Application Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
7	PCC	18CVL67	Environmental Engineering Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
8	EP	18CVEP68	Extensive Survey project	Civil Engg.	--	2	2	03	40	60	100	2
9	Internship	--	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
			TOTAL		15	12	06	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1

Course code under18CV64X	
18CV641	Matrix Method of Structural Analysis

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18CV642	Solid Waste Management
18CV643	Alternate Building Materials
18CV644	Ground Improvement Techniques
18CV645	Railway, Harbours, Tunnelling & Airports
Open Elective -A	
Course code under18CV65X	
18CV651	Remote Sensing & GIS
18CV652	Traffic Engineering
18CV653	Occupational Health & Safety
18CV654	Sustainability Concepts in Civil Engineering
18CV655	**Intelligent Transportation Systems**
18CV656	**Conservation of Natural Resources**

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (Please refer to the list of open electives under 18XX65X).

Selection of an open elective shall not be allowed if,
- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Internship: All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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

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Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: CIVIL ENGINEERING

VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture L	Tutorial T	Practical/ Drawing P	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18CV71	Quality Surveying and Contract Management	Civil Engg.	3	--	--	03	40	60	100	3
2	PCC	18CV72	Design of RCC and Steel Structures	Civil Engg.	3	--	--	03	40	60	100	3
3	PEC	18CV73X	Professional Elective - 2	Civil Engg.	3	--	--	03	40	60	100	3
4	PEC	18CV74X	Professional Elective - 3	Civil Engg.	3	--	--	03	40	60	100	3
5	OEC	18CV75X	Open Elective -B	Civil Engg.	3	--	--	03	40	60	100	3
6	PCC	18CVL76	Computer Aided Detailing of Structures	Civil Engg.	--	2	2	03	40	60	100	2
7	PCC	18CVL77	Geotechnical Engineering Laboratory	Civil Engg.	--	2	2	03	40	60	100	2
8	Project	18CVP78	Project Work Phase - 1		--	--	2	--	100	--	100	1
9	Internship	--	Internship	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)								
				TOTAL	15	04	06	21	380	420	00	20

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective - 2	
Course code under 18CV73X	**Course Title**
18CV731	Theory of Elasticity
18CV732	Air Pollution and Control
18CV733	Pavement Materials & Construction
18CV734	Ground Water Hydraulics
18CV735	Masonry Structures

Professional Electives - 3	
Course code under 18CV74X	**Course Title**
18CV741	Earthquake Engineering
18CV742	Design Concepts of Building Services
18CV743	Reinforced Earth Structures

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18CV744	Design of Hydraulic Structures
18CV745	Urban Transport Planning

	Open Elective -B	
Course code under 18CV75X	**Course Title**	
18CV751	Finite Element Method	
18CV752	Numerical Methods and Applications	
18CV753	Environmental Protection and Management	

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Project work:
Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

CIE procedure for Project Work Phase - 1:

(i) 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 phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.

(ii) 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 phase -1, shall be based on the evaluation of project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.

Internship: All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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

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Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: CIVIL ENGINEERING

VIII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18CV81	Design of Pre-stressed Concrete	Civil Engg.	3	--	--	03	40	60	100	3
2	PEC	18CV82X	Professional Elective - 4	Civil Engg.	3	--	--	03	40	60	100	3
3	Project	18CVP83	Project Work Phase - 2	Civil Engg.	--	--	16	03	40	60	100	8
4	Seminar	18CVS84	Technical Seminar	Civil Engg.	--	--	2	03	100	--	100	1
5	Internship	18CVI85	Internship	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
				TOTAL	06	--	18	15	260	240	500	18

Note: PCC: Professional Core, PEC: Professional Elective.

Professional Electives - 4

Course code under 18CV82X	Course Title
18CV821	Bridge Engineering
18CV822	Prefabricated Structures
18CV823	Advanced Foundation Engineering
18CV824	Rehabilitation & Retrofitting
18CV825	Pavement Design

Project Work
CIE procedure for Project Work Phase - 2:
(i) 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 phase -2, shall be based on the evaluation of project work phase -2 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.
(ii) 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 phase -2, shall be based on the evaluation of project work phase -2 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 for Project Work Phase - 2:

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(i) Single discipline: Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.

(ii) Interdisciplinary: Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.

Internship: Those, who have not pursued /completed the internship, shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements.

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

Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Choice Based Credit System (CBCS) AND Outcome Based Education (OBE)
(Effective from the academic year 2018 – 19)

III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT31	Transform Calculus, Fourier Series And Numerical Techniques	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18CS32	Data Structures and Applications	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS33	Analog and Digital Electronics	CS / IS	3	0	--	03	40	60	100	3
4	PCC	18CS34	Computer Organization	CS / IS	3	0	--	03	40	60	100	3
5	PCC	18CS35	Software Engineering	CS / IS	3	0	--	03	40	60	100	3
6	PCC	18CS36	Discrete Mathematical Structures	CS / IS	3	0	--	03	40	60	100	3
7	PCC	18CSL37	Analog and Digital Electronics Laboratory	CS / IS	--	2	2	03	40	60	100	2
8	PCC	18CSL38	Data Structures Laboratory	CS / IS	--	2	2	03	40	60	100	2
9	HSMC	18KVK39	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39	Aadalitha Kannada (Kannada for Administration)									
		OR	OR									
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17 OR 18	08 OR 10	04	24 OR 26	420 OR 360	480 OR 540	900	24

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course
18KVK39 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and **18KAK39** Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.
(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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 Activity Point Programme. Students transferred from other Universities to 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 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, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

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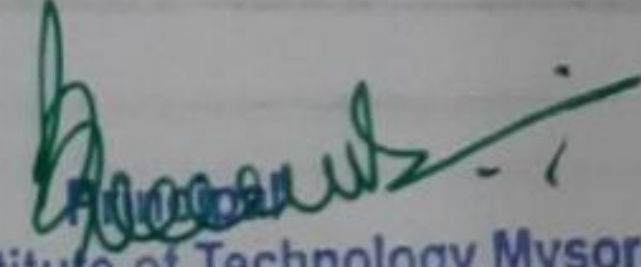### (Effective from the academic year 2018 – 19)

IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination					Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks		
					L	T	P						
1	BSC	18MAT41	Complex Analysis, Probability and Statistical Methods	Mathematics	2	2	--	03	40	60	100		3
2	PCC	18CS42	Design and Analysis of Algorithms	CS / IS	3	2	--	03	40	60	100		4
3	PCC	18CS43	Operating Systems	CS / IS	3	0	--	03	40	60	100		3
4	PCC	18SC44	Microcontroller and Embedded Systems	CS / IS	3	0	--	03	40	60	100		3
5	PCC	18CS45	Object Oriented Concepts	CS / IS	3	0	--	03	40	60	100		3
6	PCC	18CS46	Data Communication	CS / IS	3	0	--	03	40	60	100		3
7	PCC	18CSL47	Design and Analysis of Algorithm Laboratory	CS / IS	--	2	2	03	40	60	100		2
8	PCC	18CSL48	Microcontroller and Embedded Systems Laboratory	CS / IS	--	2	2	03	40	60	100		2
9	HSMC	18KVK49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100		1
		18KAK49	Aadalitha Kannada (Kannada for Administration)										
		OR	OR										
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60			
			Examination is by objective type questions										
			TOTAL		17 OR 18	08 OR 10	04	24 OR 26	420 OR 360	480 OR 540	900		24

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course
18KVK49 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and **18KAK49** Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP41	Additional Mathematics - II	Mathematics	02	01	--	03	40	60	100	0

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.
(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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

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V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	HSMC	18CS51	Management, Entrepreneurship for IT idustry	HSMC	2	2	--	03	40	60	100	3
2	PCC	18CS52	Computer Networks and Security	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS53	Database Management System	CS / IS	3	2	--	03	40	60	100	4
4	PCC	18CS54	Automata theory and Computability	CS / IS	3	--	--	03	40	60	100	3
5	PCC	18CS55	Application Development using Python	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18CS56	Unix Programming	CS / IS	3	--	--	03	40	60	100	3
7	PCC	18CSL57	Computer Network Laboratory	CS / IS	--	2	2	03	40	60	100	2
8	PCC	18CSL58	DBMS Laboratory with mini project	CS / IS	--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/ Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
				TOTAL	18	10	04	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

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

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VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	18CS61	System Software and Compilers	CS / IS	3	2	--	03	40	60	100	4
2	PCC	18CS62	Computer Graphics and Visualization	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS63	Web Technology and its applications	CS / IS	3	2	--	03	40	60	100	4
4	PEC	18CS64X	Professional Elective -1	CS / IS	3	--	--	03	40	60	100	3
5	OEC	18CS65X	Open Elective –A	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18CSL66	System Software Laboratory	CS / IS	--	2	2	03	40	60	100	2
7	PCC	18CSL67	Computer Graphics Laboratory with mini project	CS / IS	--	2	2	03	40	60	100	2
8	MP	18CSMP68	Mobile Application Development	CS / IS	--	--	2	03	40	60	100	2
9	INT	--	Internship	(To be carried out during the intervening vacations of VI and VII semesters)				--	--	--	--	--
				TOTAL	15	10	06	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project, INT: Internship.

Professional Elective -1	
Course code under18XX64X	**Course Title**
18CS641	Data Mining and Data Warehousing
18CS642	Object Oriented Modelling and Design
18CS643	Cloud Computing and its Applications
18CS644	Advanced JAVA and J2EE
18CS645	System Modelling and Simulation
Open Elective –A (Not for CSE / ISE Programs)	
18CS651	Mobile Application Development
18CS652	Introduction to Data Structures and Algorithms
18CS653	Programming in JAVA
18CS654	Introduction to Operating System

Students can select any one of the open electives offered by any Department (Please refer to the list of open electives under 18CS65X).
Selection of an open elective is not allowed provided,
- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.
Registration to electives shall be documented under the guidance of Programme Coordinator/ Adviser/Mentor.

Mini-project work: 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 senior faculty members of the Department, one of whom shall be 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 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 college. 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.
SEE for Mini-project:
(i) **Single discipline:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.
(ii) **Interdisciplinary:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.
Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not takeup/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Choice Based Credit System (CBCS) AND Outcome Based Education (OBE)
(Effective from the academic year 2018 – 19)

VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	18CS71	Artificial Intelligence and Machine Learning	CS / IS	4	--	--	03	40	60	100	4
2	PCC	18CS72	Big Data Analytics	CS / IS	4	--	--	03	40	60	100	4
3	PEC	18CS73X	Professional Elective – 2	CS / IS	3	--	--	03	40	60	100	3
4	PEC	18CS74X	Professional Elective – 3	CS / IS	3	--	--	03	40	60	100	3
5	OEC	18CS75X	Open Elective –B	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18CSL76	Artificial Intelligence and Machine Learning Laboratory	CS / IS	--	--	2	03	40	60	100	2
7	Project	18CSP77	Project Work Phase – 1	CS / IS	--	--	2	--	100	--	100	1
8	INT	--	Internship	(If not completed during the vacation of VI and VII semesters, it has to be carried out during the intervening vacations of VII and VIII semesters								
			TOTAL		17	--	04	18	340	360	700	20

Note: PCC: Professional core, PEC: Professional Elective, OEC: Open Elective, INT: Internship.

Professional Elective - 2

Course code under 18CS73X	Course Title
18CS731	Software Architecture and Design Patterns
18CS732	High Performance Computing
18CS733	Advanced Computer Architecture
18CS734	User Interface Design

Professional Electives – 3

Course code under 18CS74X	Course Title
18CS741	Digital Image Processing
18CS742	Network management
18CS743	Natural Language Processing
18CS744	Cryptography
18CS745	Robotic Process Automation Design & Development

Open Elective –B (Not for CSE / ISE Programs)

18CS751	Introduction to Big Data Analytics
18CS752	Python Application Programming
18CS753	Introduction to Artificial Intelligence
18CS754	Introduction to Dot Net framework for Application Development

Students can select any one of the open electives offered by any Department (Please refer to the list of open electives under 18CS75X).
Selection of an open elective is not allowed provided,
- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.
Registration to electives shall be documented under the guidance of Programme Coordinator/ Adviser/Mentor.

Project work: Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.
CIE procedure for Project Work Phase - 1:
(i) **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 phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.
(ii) **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 phase -1, shall be based on the evaluation of project work phase -1 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.
Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not takeup/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Choice Based Credit System (CBCS) AND Outcome Based Education (OBE)
(Effective from the academic year 2018 – 19)

VIII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination					Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	18CS81	Internet of Things	CS / IS	3	--	--	03	40	60	100	3
2	PEC	18CS82X	Professional Elective – 4	CS / IS	3	--	--	03	40	60	100	3
3	Project	18CSP83	Project Work Phase – 2	CS / IS	--	--	2	03	40	60	100	8
4	Seminar	18CSS84	Technical Seminar	CS / IS	--	--	2	03	100	--	100	1
5	INT	18CSI85	Internship	(Completed during the intervening vacations of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
				TOTAL	06	--	04	15	260	240	500	18

Note: PCC: Professional Core, PEC: Professional Elective, OEC: Open Elective, INT: Internship.

Professional Electives – 4

Course code under 18CS82X	Course Title
18CS821	Mobile Computing
18CS822	Storage Area Networks
18CS823	NoSQL Database
18CS824	Multicore Architecture and Programming

Project Work CIE procedure for Project Work Phase - 2:
(i) **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 phase -2, shall be based on the evaluation of project work phase -2 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.
(ii) **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 phase -2, shall be based on the evaluation of project work phase -2 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 for Project Work Phase - 2:
 (i) **Single discipline:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.
(ii) **Interdisciplinary:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.
Internship: Those, who have not pursued /completed the internship shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card. Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

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Scheme of Teaching and Examination 2018 – 19
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: B.E: Electronics & Communication Engineering

VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18EC61	Digital Communication		3	2	--	03	40	60	100	4
2	PCC	18EC62	Embedded Systems		3	2	--	03	40	60	100	4
3	PCC	18EC63	Microwave and Antennas		3	2	--	03	40	60	100	4
4	PEC	18XX64X	Professional Elective -1		3	--	--	03	40	60	100	3
5	OEC	18XX65X	Open Elective -A		3	--	--	03	40	60	100	3
6	PCC	18ECL66	Embedded Systems Laboratory		--	2	2	03	40	60	100	2
7	PCC	18ECL67	Communication Laboratory		--	2	2	03	40	60	100	2
8	MP	18ECMP68	Mini-project		--	--	2	03	40	60	100	2
9	Internship	--	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
			TOTAL		15	10	6	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1

Course code under 18XX64X	Course Title
18EC641	Operating System
18EC642	Artificial Neural Networks
18EC643	Data Structures using C++
18EC644	Digital System Design Using Verilog
18EC645	Nanoelectronics
18EC646	Python Application Programming

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: B.E: Electronics & Communication Engineering

III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours/Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18EC32	Network Theory		3	2	--	03	40	60	100	4
3	PCC	18EC33	Electronic Devices		3	0	--	03	40	60	100	3
4	PCC	18EC34	Digital System Design		3	0	--	03	40	60	100	3
5	PCC	18EC35	Computer Organization & Architecture		3	0	--	03	40	60	100	3
6	PCC	18EC36	Power Electronics & Instrumentation		3	0	--	03	40	60	100	3
7	PCC	18ECL37	Electronic Devices & Instrumentation Laboratory		--	2	2	03	40	60	100	2
8	PCC	18ECL38	Digital System Design Laboratory		--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
		OR										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17 OR 18	10 OR 08	04	24 OR 26	420 OR 360	480 OR 540	900	24

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Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.
18KVK39 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs												
10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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 Activity Point Programme. Students transferred from other Universities to 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 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, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression.

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
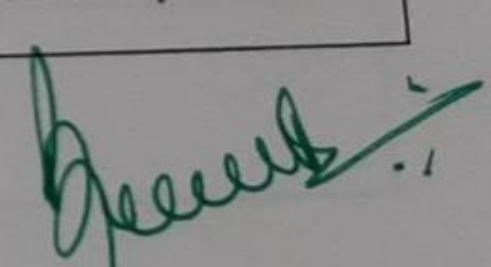(Effective from the academic year 2018 – 19)

Programme: B.E: Electronics & Communication Engineering

IV SEMESTER

Sl. N o	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	BSC	18MAT41	Complex Analysis, Probability and Statistical Methods	Mathe matics	2	2	--	03	40	60	100	3
2	PCC	18EC42	Analog Circuits		3	2	--	03	40	60	100	4
3	PCC	18EC43	Control Systems		3	0	--	03	40	60	100	3
4	PCC	18EC44	Engineering Statistics & Linear Algebra		3	0	--	03	40	60	100	3
5	PCC	18EC45	Signals & Systems		3	0	--	03	40	60	100	3
6	PCC	18EC46	Microcontroller		3	0	--	03	40	60	100	3
7	PCC	18ECL47	Microcontroller Laboratory		--	2	2	03	40	60	100	2
8	PCC	18ECL48	Analog Circuits Laboratory		--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)	HSM C	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
		OR										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17	10	04	24	420	480	900	24
					OR	OR		OR	OR	OR		
					18	08		26	360	540		

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Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.
18KVK39/49 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and
18KAK39/49 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

		Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs									
10	NCMC	18MATDIP41	Additional Mathematics – II	Mathematics	02	01	--	03	40	60	100	0

(a) The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
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Programme: B.E: Electronics & Communication Engineering

V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	HSMC	18ES51	Technological Innovation Management and Entrepreneurship		3	0	--	03	40	60	100	3
2	PCC	18EC52	Digital Signal Processing		3	2	--	03	40	60	100	4
3	PCC	18EC53	Principles of Communication Systems		3	2	--	03	40	60	100	4
4	PCC	18EC54	Information Theory & Coding		3	--	--	03	40	60	100	3
5	PCC	18EC55	Electromagnetic Waves		3	--	--	03	40	60	100	3
6	PCC	18EC56	Verilog HDL		3	--	--	03	40	60	100	3
7	PCC	18ECL57	Digital Signal Processing Laboratory		--	2	2	03	40	60	100	2
8	PCC	18ECL58	HDL Laboratory		--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
				TOTAL	19	8	4	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

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

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Programme: B.E: Electronics & Communication Engineering

VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18EC61	Digital Communication		3	2	--	03	40	60	100	4
2	PCC	18EC62	Embedded Systems		3	2	--	03	40	60	100	4
3	PCC	18EC63	Microwave and Antennas		3	2	--	03	40	60	100	4
4	PEC	18XX64X	Professional Elective -1		3	--	--	03	40	60	100	3
5	OEC	18XX65X	Open Elective -A		3	--	--	03	40	60	100	3
6	PCC	18ECL66	Embedded Systems Laboratory		--	2	2	03	40	60	100	2
7	PCC	18ECL67	Communication Laboratory		--	2	2	03	40	60	100	2
8	MP	18ECMP68	Mini-project		--	--	2	03	40	60	100	2
9	Internship	--	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
			TOTAL		15	10	6	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1

Course code under 18XX64X	Course Title
18EC641	Operating System
18EC642	Artificial Neural Networks
18EC643	Data Structures using C++
18EC644	Digital System Design Using Verilog
18EC645	Nanoelectronics
18EC646	Python Application Programming

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OPEN ELECTIVE group-B	
18EC651	Signal Processing
18EC652	Sensors &Signal Conditioning
18EC653	Virtual Instrumentation
18EC654	Microcontrollers
18EC655	Basic VLSI Design

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX65X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Mini-project work:

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 senior faculty members of the Department, one of whom shall be 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 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 college.

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.

SEE for Mini-project:

(i) Single discipline: Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.

(ii) Interdisciplinary: Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.

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Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: B.E.: Electronics & Communication Engineering

VII SEMESTER

SL No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					Theory Lecture	Tutorial	Practical/ Drawing					
					L	T	P					
1	PCC	18EC71	Computer Networks		3	--	--	03	40	60	100	3
2	PCC	18EC72	VLSI Design		3	--	--	03	40	60	100	3
3	PEC	18XX73X	Professional Elective - 2		3	--	--	03	40	60	100	3
4.	PEC	18XX74X	Professional Elective - 3		3	--	--	03	40	60	100	3
5	OEC	18XX75X	Open Elective -B		3	--	--	03	40	60	100	3
6	PCC	18ECL76	Computer Networks Lab		--	2	2	03	40	60	100	2
7	PCC	18ECL77	VLSI Laboratory		--	2	2	03	40	60	100	2
8	Project	18ECP78	Project Work Phase - 1		--	--	2	--	100	--	100	1
9	Internship	--	Internship	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)	--	--	--	--	100	--	100	1
				TOTAL	15	04	06	21	38	420	800	20

Note: PCC: Professional core, PEC: Professional Elective.

Course code under 18XX73X

	Professional Elective - 2
Course code	**Course Title**
18EC731	Real Time Systems
18EC732	Satellite Communication
18EC733	Digital Image Processing
18EC734	DSP Algorithms & Architecture

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Course code under 18XX74X	Course Title
18EC741	IOT & Wireless Sensor Networks
18EC742	Automotive Electronics
18EC743	Multimedia Communication
18EC744	Cryptography
18EC745	Machine Learning with Python

	Open Elective – B
18EC751	Communication Theory
18EC752	Neural Networks
18EC753	ARM Embedded Systems
18EC754	Digital Systems Design using VHDL

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator / Advisor/Mentor.

Project work:

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

CIE procedure for Project Work Phase - 1:

(i) 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 phase - 1, shall be based on the evaluation of the project work phase - 1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.

(ii) 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 phase -1, shall be based on the evaluation of project work phase -1 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.

Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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

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Programme: B.E: Electronics & Communication Engineering

VIII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week				Examination			
					Theory Lecture L	Tutorial T	Practical/ Drawing P	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18EC81	Wireless and Cellular Communication		3	--	--	03	40	60	100	3
2	PEC	18XX82X	Professional Elective - 4		3	--	--	03	40	60	100	3
3	Project	18ECP83	Project Work Phase - 2		--	--	2	03	40	60	100	8
4	Seminar	18ECS84	Technical Seminar		--	--	2	03	100	-	100	1
5	Internship	18EC185	Internship	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
				TOTAL	06	--	04	15	260	240	500	18

Note: PCC: Professional Core, PEC: Professional Elective.

Course code under 18XX82X	Course Title
	Professional Elective - 4
18EC821	Network Security
18EC822	Micro Electro Mechanical Systems
18EC823	Radar Engineering
18EC824	Optical Communication Networks
18EC825	Biomedical Signal Processing

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Project Work

CIE procedure for Project Work Phase - 2:

(i) **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 phase -2, shall be based on the evaluation of project work phase -2 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.

(ii) **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 phase -2, shall be based on the evaluation of project work phase -2 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 for Project Work Phase - 2:

(i) **Single discipline:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.

(ii) **Interdisciplinary:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.

Internship: Those, who have not pursued /completed the internship, shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements.

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

Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

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III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT31	Transform Calculus, Fourier Series And Numerical Techniques	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18CS32	Data Structures and Applications	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS33	Analog and Digital Electronics	CS / IS	3	0	--	03	40	60	100	3
4	PCC	18CS34	Computer Organization	CS / IS	3	0	--	03	40	60	100	3
5	PCC	18CS35	Software Engineering	CS / IS	3	0	--	03	40	60	100	3
6	PCC	18CS36	Discrete Mathematical Structures	CS / IS	3	0	--	03	40	60	100	3
7	PCC	18CSL37	Analog and Digital Electronics Laboratory	CS / IS	--	2	2	03	40	60	100	2
8	PCC	18CSL38	Data Structures Laboratory	CS / IS	--	2	2	03	40	60	100	2
9	HSMC	18KVK39	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39	Aadalitha Kannada (Kannada for Administration)									
		OR	OR									
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
				Examination is by objective type questions								
			TOTAL		17 OR 18	08 OR 10	04	24 OR 26	420 OR 360	480 OR 540	900	24

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course
18KVK39 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and **18KAK39** Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

(a) The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech. programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.
(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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 Activity Point Programme. Students transferred from other Universities to 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, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT41	Complex Analysis, Probability And Statistical Methods	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18CS42	Design and Analysis of Algorithms	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS43	Operating Systems	CS / IS	3	0	--	03	40	60	100	3
4	PCC	18SC44	Microcontroller and Embedded Systems	CS / IS	3	0	--	03	40	60	100	3
5	PCC	18CS45	Object Oriented Concepts	CS / IS	3	0	--	03	40	60	100	3
6	PCC	18CS46	Data Communication	CS / IS	3	0	--	03	40	60	100	3
7	PCC	18CSL47	Design and Analysis of Algorithm Laboratory	CS / IS	--	2	2	03	40	60	100	2
8	PCC	18CSL48	Microcontroller and Embedded Systems Laboratory	CS / IS	--	2	2	03	40	60	100	2
9	HSMC	18KVK49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK49	Aadalitha Kannada (Kannada for Administration)									
		OR	OR									
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17 OR 18	08 OR 10	04	24 OR 26	420 OR 360	480 OR 540	900	24

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course
18KVK49 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and **18KAK49** Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP41	Additional Mathematics - II	Mathematics	02	01	--	03	40	60	100	0

(a) The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B.Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the student have to fulfil the requirements during subsequent semester/s to appear for SEE.

(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

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

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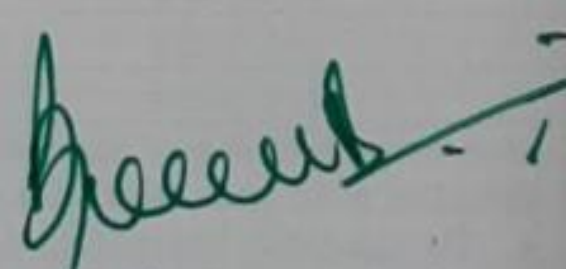Srirangapatna Taluk
Mandya District - 571477

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V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week L	T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	HSMC	18CS51	Management, Entrepreneurship for IT Industry	HSMC	2	2	--	03	40	60	100	3
2	PCC	18CS52	Computer Networks and Security	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS53	Database Management System	CS / IS	3	2	--	03	40	60	100	4
4	PCC	18CS54	Automata theory and Computability	CS / IS	3	--	--	03	40	60	100	3
5	PCC	18CS55	Application Development using Python	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18CS56	Unix Programming	CS / IS	3	--	--	03	40	60	100	3
7	PCC	18CSL57	Computer Network Laboratory	CS / IS	--	2	2	03	40	60	100	2
8	PCC	18CSL58	DBMS Laboratory with mini project	CS / IS	--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/ Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
			TOTAL		18	10	04	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

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

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VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18IS61	File Structures	CS / IS	3	2	--	03	40	60	100	4
2	PCC	18IS62	Software Testing	CS / IS	3	2	--	03	40	60	100	4
3	PCC	18CS63	Web Technology and its applications	CS / IS	3	2	--	03	40	60	100	4
4	PEC	18CS64X	Professional Elective -1	CS / IS	3	--	--	03	40	60	100	3
5	OEC	18CS65X	Open Elective –A	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18ISL66	Software Testing Laboratory	CS / IS	--	2	2	03	40	60	100	2
7	PCC	18ISL67	File Structures Laboratory with mini project	CS / IS	--	2	2	03	40	60	100	2
8	MP	18CSMP68	Mobile Application Development	CS / IS	--	--	2	03	40	60	100	2
9	INT	--	Internship	(To be carried out during the intervening vacations of VI and VII semesters)	--	--	--	--	--	--	--	--
			TOTAL		15	10	06	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project, INT: Internship.

Professional Elective -1

Course code under18XX64X	Course Title
18CS641	Data Mining and Data Warehousing
18CS642	Object Oriented Modelling and Design
18CS643	Cloud Computing and its Applications
18CS644	Advanced JAVA and J2EE
18IS645	Information Management System

Open Elective –A (Not for CSE / ISE Programs)

18CS651	Mobile Application Development
18CS652	Introduction to Data Structures and Algorithms
18CS653	Programming in JAVA
18CS654	Introduction to Operating System

Students can select any one of the open electives offered by any Department(Please refer to the list of open electives under 18CS65X).
Selection of an open elective is not allowed provided,
* The candidate has studied the same course during the previous semesters of the programme.
* The syllabus content of open elective is similar to that of Departmental core courses or professional electives.
* A similar course, under any category, is prescribed in the higher semesters of the programme.
Registration to electives shall be documented under the guidance of Programme Coordinator/ Adviser/Mentor.

Mini-project work: 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.
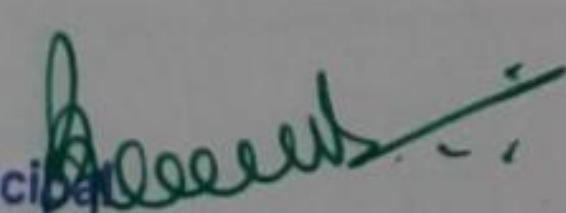**CIE procedure for Mini-project:**
(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the Mini-project work, shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 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 college. 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.
SEE for Mini-project:
(i) Single discipline: Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.
(ii) Interdisciplinary: Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.
Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not takeup/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements

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

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VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18CS71	Artificial Intelligence and Machine Learning	CS / IS	4	--	--	03	40	60	100	4
2	PCC	18CS72	Big Data Analytics	CS / IS	4	--	--	03	40	60	100	4
3	PEC	18CS73X	Professional Elective – 2	CS / IS	3	--	--	03	40	60	100	3
4	PEC	18CS74X	Professional Elective – 3	CS / IS	3	--	--	03	40	60	100	3
5	OEC	18CS75X	Open Elective –B	CS / IS	3	--	--	03	40	60	100	3
6	PCC	18CSL76	Artificial Intelligence and Machine Learning Laboratory	CS / IS	--	--	2	03	40	60	100	2
7	Project	18CSP77	Project Work Phase – 1	CS / IS	--	--	2	--	100	--	100	1
8	INT	--	Internship	(If not completed during the vacation of VI and VII semesters, it has to be carried out during the intervening vacations of VII and VIII semesters								
				TOTAL	17	--	04	18	340	360	700	20

Note: PCC: Professional core, PEC: Professional Elective, OEC: Open Elective, INT: Internship.

Professional Elective - 2

Course code under 18CS73X	Course Title
18CS731	Software Architecture and Design Patterns
18CS732	High Performance Computing
18CS733	Advanced Computer Architectures
18CS734	User Interface Design

Professional Electives – 3

Course code under 18CS74X	Course Title
18CS741	Digital Image Processing
18CS742	Network management
18CS743	Natural Language Processing
18CS744	Cryptography
18CS745	Robotic Process Automation Design & Development

Open Elective –B (Not for CSE / ISE Programs)

18CS751	Introduction to Big Data Analytics
18CS752	Python Application Programming
18CS753	Introduction to Artificial Intelligence
18CS754	Introduction to Dot Net framework for Application Development

Students can select any one of the open electives offered by any Department (Please refer to the list of open electives under 18CS75X).
Selection of an open elective is not allowed provided,
- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.
Registration to electives shall be documented under the guidance of Programme Coordinator/ Adviser/Mentor.

Project work: Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.
CIE procedure for Project Work Phase - 1:
(i) **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 phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.
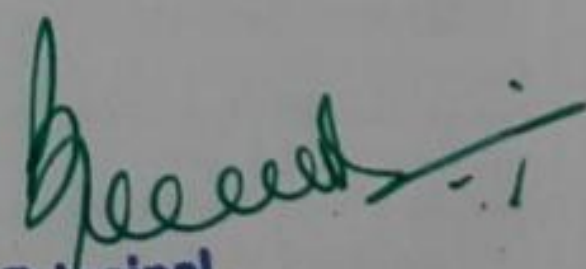(ii) **Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work phase -1, shall be based on the evaluation of project work phase -1 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.
Internship: All the students admitted to III year of BE/B.Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not takeup/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements

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

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(Effective from the academic year 2018 – 19)

VIII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18CS81	Internet of Things	CS / IS	3	--	--	03	40	60	100	3
2	PEC	18CS82X	Professional Elective – 4	CS / IS	3	--	--	03	40	60	100	3
3	Project	18CSP83	Project Work Phase – 2	CS / IS	--	--	2	03	40	60	100	8
4	Seminar	18CSS84	Technical Seminar	CS / IS	--	--	2	03	100	--	100	1
5	INT	18CSI85	Internship	(Completed during the intervening vacations of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
				TOTAL	06	--	04	15	260	240	500	18

Note: PCC: Professional Core, PEC: Professional Elective, OEC: Open Elective, INT: Internship.

Professional Electives – 4

Course code under 18CS82X	Course Title
18CS821	Mobile Computing
18CS822	Storage Area Networks
18CS823	NoSQL Database
18CS824	Multicore Architecture and Programming

Project Work CIE procedure for Project Work Phase - 2:
(i) 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 phase -2, shall be based on the evaluation of project work phase -2 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.
(ii) 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 phase -2, shall be based on the evaluation of project work phase -2 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 for Project Work Phase - 2:
(i) Single discipline: Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.
(ii) Interdisciplinary: Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.
Internship: Those, who have not pursued /completed the internship shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card. Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Theory Lecture L	Tutorial T	Practical/ Drawing P	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT31	Transform calculus, fourier series and Numerical techniques	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18ME32	Mechanics of Materials		3	2	--	03	40	60	100	4
3	PCC	18ME33	Basic Thermodynamics		3	0	--	03	40	60	100	3
4	PCC	18ME34	Material Science		3	0	--	03	40	60	100	3
5	PCC	18ME35A or 18ME35B	Metal cutting and forming / Metal Casting and Welding		3	0	--	03	40	60	100	3
6	PCC	18ME36A or 18ME36B	Computer Aided Machine Drawing/ Mechanical Measurements and Metrology		1 / 3	4 / 0	--	03	40	60	100	3
7	PCC	18MEL37A or 18MEL37B	Material Testing lab / Mechanical Measurements and Metrology lab		--	2	2	03	40	60	100	2
8	PCC	18MEL38A / 18MEL38B	Workshop and Machine Shop Practice (Consists of Fitting, and Machining) / Foundry,Forging and Welding lab		--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
			OR									
		18CPC39	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
					Examination is by objective type questions							
			TOTAL		17 OR 19	10 OR 14	04	24 OR 26	420 OR 360	480 OR 540	900	24

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

a) The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

IV SEMESTER

Sl. No		Course and Course Code	Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	BSC	18MAT41	Mathematics	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18ME42	Applied Thermodynamics		3	2	--	03	40	60	100	4
3	PCC	18ME43	Fluid Mechanics		3	0	--	03	40	60	100	3
4	PCC	18ME44	Kinematics of Machines		3	0	--	03	40	60	100	3
5	PCC	18ME45A	Metal cutting and forming		3	0	--	03	40	60	100	3
		18ME45B	Metal Casting and Welding									
6	PCC	18ME46A or	Computer Aided Machine Drawing/		1	4		03	40	60	100	3
		18ME46B	Mechanical Measurements and Metrology		3	0	--					
7	PCC	18MEL47A or	Material Testing lab		--	2	2	03	40	60	100	2
		18MEL47B	Mechanical Measurements and Metrology lab									
8	PCC	18MEL48A	Workshop and Machine Shop Practice (Consists of Fitting, and Machining)		--	2	2	03	40	60	100	2
		18MEL48B	Foundry, Forging and Welding lab									
9	HSMC	18KVK49/49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK49/49	Aadalitha Kannada (Kannada for Administration)									
			OR									
		18CPH49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
			Examination is by objective type questions									
			TOTAL		17 OR 19	10 OR 14	04	24 OR 26	420 OR 360	480 OR 540	900	24

18KVK39 Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

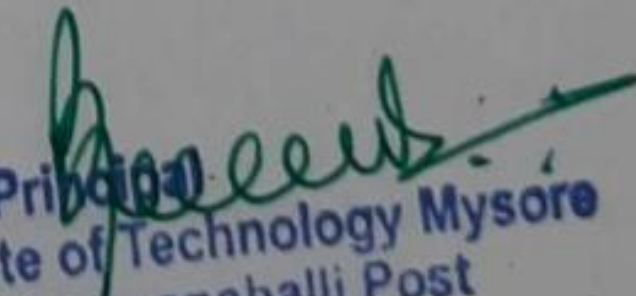### Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0

(a) The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. 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 F grade. In such a case, the student have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b) These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18ME51	Management and Economics		2	2	--	03	40	60	100	3
2	PCC	18ME52	Design of Machine Elements I		3	2	--	03	40	60	100	4
3	PCC	18ME53	Dynamics of Machines		3	2	--	03	40	60	100	4
4	PCC	18ME54	Turbo Machines		3	--	--	03	40	60	100	3
5	PCC	18ME55	Fluid Power Engineering		3	--	--	03	40	60	100	3
6	PCC	18ME56	Operations Management		3	--	--	03	40	60	100	3
7	PCC	18MEL57	Fluid Mechanics/Machines lab		--	2	2	03	40	60	100	2
8	PCC	18MEL58	Energy Conversion Lab		--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/ Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
			TOTAL		18	10	04	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

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

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VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18ME61	Finite Element Methods		3	2	--	03	40	60	100	4
2	PCC	18ME62	Design of Machine Elements II		3	2	--	03	40	60	100	4
3	PCC	18ME63	Heat Transfer		3	2	--	03	40	60	100	4
4	PEC	18ME64X	Professional Elective -1		3	--	--	03	40	60	100	3
5	OEC	18ME65X	Open Elective -A		3	--	--	03	40	60	100	3
6	PCC	18MEL66	Computer Aided Modelling and Analysis Lab		--	2	2	03	40	60	100	2
7	PCC	18MEL67	Heat Transfer Lab		--	2	2	03	40	60	100	2
8	MP	18MEMP68	Mini-project		--	--	2	03	40	60	100	2
9	Internship	–	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
			TOTAL		15	10	06	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1

Course code under 18XX64X	Course Title	Course code under 18XX64X	Course Title
18ME641	**Non-Traditional Machining**	18ME644	**Vibrations and Noise Engineering**
18ME642	**Refrigeration and Air conditioning**	18ME645	**Composite Materials Technology**
18ME643	**Theory of Elasticity**	18ME646	**Entrepreneurship Development**

Open Elective -A

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (Please refer to the list of open electives under 18XX65X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Mini-project work:
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 senior faculty members of the Department, one of whom shall be 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 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 college. 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.

SEE for Mini-project:
(i) **Single discipline:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.
(ii) **Interdisciplinary:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.

Internship: All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1	PCC	18ME71	Control Engineering		3	--	--	03	40	60	100	3
2	PCC	18ME72	Computer Aided Design and Manufacturing		3	--	--	03	40	60	100	3
3	PEC	18ME73X	Professional Elective - 2		3	--	--	03	40	60	100	3
4	PEC	18ME74X	Professional Elective - 3		3	--	--	03	40	60	100	3
5	OEC	18ME75X	Open Elective -B		3	--	--	03	40	60	100	3
6	PCC	18MEL76	Computer Integrated Manufacturing Lab		--	2	2	03	40	60	100	2
	PCC	18MEL77	Design Lab		--	2	2	03	40	60	100	2
7	Project	18MEP78	Project Work Phase - 1		--	--	2	--	100	--	100	1
8	Internship	--	Internship	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)								
				TOTAL	15	04	06	18	340	360	700	20

Professional Elective - 2

Course code under 18XX73X	Course Title	Course code under 18XX73X	Course Title
18ME731	Design for Manufacture	18ME734	Total Quality Management
18ME732	Automation and Robotics	18ME735	Operations Research
18ME733	Computational Fluid Dynamics		

Professional Electives - 3

Course code under 18XX74X	Course Title	Course code under 18XX74X	Course Title
18ME741	Additive Manufacturing	18ME744	Mechatronics
18ME742	Emerging Sustainable Building Cooling Technologies	18ME745	Project Management
18ME743	Theory of Plasticity		

Open Elective -B

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

Selection of an open elective shall not be allowed if,
- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Project work:
Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or6.

CIE procedure for Project Work Phase - 1:
(i) 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 phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.
(ii) 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 phase -1, shall be based on the evaluation of project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.
Internship: All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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.

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VIII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Theory Lecture (L)	Tutorial (T)	Practical/ Drawing (P)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18ME81	Energy Engineering		3	--	--	03	40	60	100	3
2	PEC	18ME82X	Professional Elective - 4		3	--	--	03	40	60	100	3
3	Project	18MEP83	Project Work Phase - 2		--	--	2	03	40	60	100	8
4	Seminar	18MES84	Technical Seminar		--	--	2	03	100	--	100	1
5	Internship	18XXI85	Internship	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
			TOTAL		**06**	**--**	**04**	**15**	**260**	**240**	**500**	**18**

Note: PCC: Professional Core, PEC: Professional Elective.

Professional Electives - 4

Course code under 18XX82X	Course Title	Course code under 18XX82X	Course Title
18ME821	CNC Machine Tools	18ME824	Automobile Engineering
18ME822	Tribology	18ME825	Tool Design
18ME823	Non-Destructive Testing and Evaluation	18ME826	Fracture Mechanics

Project Work

CIE procedure for Project Work Phase - 2:

(i) **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 phase -2, shall be based on the evaluation of project work phase -2 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.

(ii) **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 phase -2, shall be based on the evaluation of project work phase -2 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 for Project Work Phase - 2:

(i) **Single discipline:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.

(ii) **Interdisciplinary:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.

Internship: Those, who have not pursued /completed the internship, shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements.

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

Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

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B.E. Mechanical Engineering
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
SEMESTER - VI
OPEN ELECTIVE - A

Course Code	18ME65X	CIE Marks	40
Teaching Hours/Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (For syllabus, please refer to the concerned programme syllabus book or VTU website vtu.ac.in may be visited.).

Selection of an open elective shall not be allowed if,

* The candidate has studied the same course during the previous semesters of the programme.
* The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
* A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

Sl. No.	Board and the Department offering the Electives		Sl. No.	Course code under 18XX65X	Course Title
1	ME	Mechanical Engineering	1	18ME651	Non-Conventional Energy Sources
			2	18ME652	World Class Manufacturing
			3	18ME653	Supply Chain Management
			4	18ME654	Advanced Materials Technology

B.E Mechanical Engineering
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
SEMESTER - VII
OPEN ELECTIVE - B

Course Code	18ME75X	CIE Marks	40
Teaching Hours/Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (For syllabus, please refer to the concerned programme syllabus book or VTU website vtu.ac.in may be visited.).

Selection of an open elective shall not be allowed if,

* The candidate has studied the same course during the previous semesters of the programme.
* The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
* A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

SI NO	Board and the Department offering the Electives		SI No	Course code under 18XX75X	Course Title
2	ME	Mechanical Engineering	1	18ME751	Energy and Environment
			2	18ME752	Automotive Engineering
			3	18ME753	Industrial Safety
			4	18ME754	Optimization Techniques

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SCHEME OF TEACHING AND EXAMINATION
MASTER OF BUSINESS ADMINISTRATION

I SEMESTER

Subject Code	Title of the Subject	Category	Teaching hours / week			Duration of Exam (Hours)	Marks for			Credits
			Lecture	Practical / Field Work / Assignment *	Total		IA	Exam	Total Marks	
16MBA11	Management & Organizational Behaviour	Core Course	3	2	5	3	20	80	100	4
16MBA12	Managerial Economics	Core Course	3	2	5	3	20	80	100	4
16MBA13	Accounting for Managers	Core Course	3	2	5	3	20	80	100	4
16MBA14	Quantitative Methods	Core Course	3	2	5	3	20	80	100	4
16MBA15	Marketing Management	Core Course	3	2	5	3	20	80	100	4
16MBA16	Managerial Communications	Core Course	3	2	5	3	20	80	100	4
	Total		18	12	30		120	480	600	24

* Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.

II SEMESTER

Subject Code	Title of the Subject	Category	Teaching hours / week			Duration of Exam (Hours)	Marks for			Credits
			Lecture	Practical / Field Work / Assignment *	Total		IA	Exam	Total Marks	
16MBA21	Human Resource Management	Core Course	3	2	5	3	20	80	100	4
16MBA22	Financial Management	Core Course	3	2	5	3	20	80	100	4
16MBA23	Research Methods	Core Course	3	2	5	3	20	80	100	4
16MBA24	Business Law and Policy	Core Course	3	2	5	3	20	80	100	4
16MBA25	Strategic Management	Core Course	3	2	5	3	20	80	100	4
16MBA26	Entrepreneurship Development	Core Course	3	2	5	3	20	80	100	4
	Total		18	12	30		120	480	600	24

* Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.
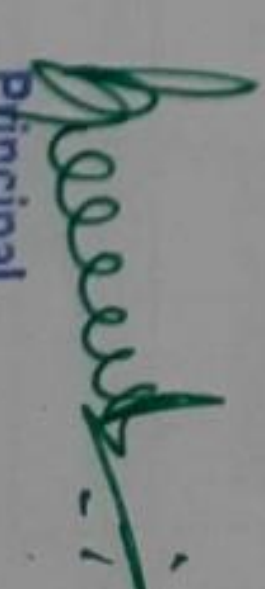
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III SEMESTER
(Core Specialisation)

Subject Code			Category	Teaching hours / week			Duration of Exam (Hours)	Marks for			Credits
Marketing	Finance	Human Resource		Lecture	Practical / Field Work / Assignment **	Total		IA	Exam	Total Marks	
16MBAMM301	16MBAFM301	16MBAHR301	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM302	16MBAFM302	16MBAHR302	Foundation Elective	3	2	5	3	20	80	100	3
16MBAMM303	16MBAFM303	16MBAHR303	Elective	3	2	5	3	20	80	100	3
16MBAMM304	16MBAFM304	16MBAHR304	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM305	16MBAFM305	16MBAHR305	Foundation Elective	3	2	5	3	20	80	100	3
16MBAMM306	16MBAFM306	16MBAHR306	Elective	3	2	5	3	20	80	100	3
16MBAIN307			Internship *	0	8	8	-	50	50	100	4
			Industrial Visit	0	0	0	0	0	00	00	0
				18	12	30		120	480	700	22

* Internship will be carried out by students after second semester during vacation and the report submitted by the students will be assessed internally during the third semester.   Total number of teaching hours per week is excluding internship workload.

** Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.
Industrial visit is a mandatory activity with zero credits

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III SEMESTER
(Core Specialisation Subjects)

Marketing Specialisation

Subject Code	Title of the Subject
16MBAMM301	Consumer Behavior
16MBAMM302	Retail Management
16MBAMM303	Services Marketing
16MBAMM304	Marketing Research
16MBAMM305	Business Marketing
16MBAMM306	Supply Chain Management

Finance Specialisation

Subject Code	Title of the Subject
16MBAFM301	Principles & Practices of Banking
16MBAFM302	Investment Banking & Financial Services
16MBAFM303	Investment Management
16MBAFM304	Advanced Financial Management
16MBAFM305	Cost Management
16MBAFM306	Strategic Credit Management

Human Resource Specialisation

Subject Code	Title of the Subject
16MBAHR301	Industrial Relations & Legislations
16MBAHR302	Recruitment & Selection
16MBAHR303	Compensation & Benefits
16MBAHR304	Learning & Development
16MBAHR305	Knowledge Management
16MBAHR306	Conflict & Negotiation Management

III SEMESTER   (Dual Specialisation)

Subject Code		Category	Teaching hours / week			Duration of Exam (Hours)	Marks for			Credits
Marketing &Finance	Finance &HR		Lecture	Practical / Field Work / Assignment **	Total		IA	Exam	Total Marks	
Finance & Marketing	HR & Marketing									
16MBAFM301	16MBAHR301	Foundation Course	3	2	5	3	20	80	100	3
16MBAFM302	16MBAHR302	Foundation Course	3	2	5	3	20	80	100	3
16MBAFM303	16MBAHR303	Elective	3	2	5	3	20	80	100	3
16MBAMM303	16MBAMM303	Elective	3	2	5	3	20	80	100	3
16MBAMM301	16MBAMM301	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM302	16MBAMM302	Elective	3	2	5	3	20	80	100	3
	16MBAIN307	Internship *	0	8	8	---	50	50	100	4
		Industrial Visit	0	0	0	0	00	00	00	0
			18	12	30		120	480	700	22

* Internship will be carried out by students after second semester during vacation and the report submitted by the students will be assessed internally during the third semester. Total number of teaching hours per week is excluding internship workload.

** Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.

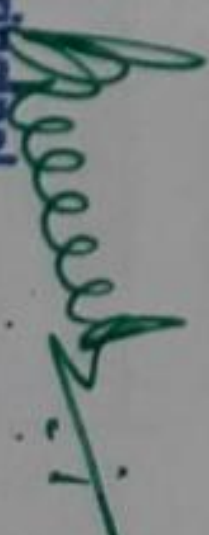* Industrial visit is a mandatory activity with zero credits

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IV SEMESTER
(Core Specialisation)

Subject Code Marketing	Finance	Human Resource	Category	Teaching hours / week Lecture	Practical / Field Work / Assignment **	Total	Duration of Exam (Hours)	IA	Exam	Total Marks	Credits
16MBAMM401	16MBAFM401	16MBAHR401	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM402	16MBAFM402	16MBAHR402	Foundation Elective	3	2	5	3	20	80	100	3
16MBAMM403	16MBAFM403	16MBAHR403	Elective	3	2	5	3	20	80	100	3
16MBAMM404	16MBAFM404	16MBAHR404	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM405	16MBAFM405	16MBAHR405	Foundation Elective	3	2	5	3	20	80	100	3
16MBAMM406	16MBAFM406	16MBAHR406	Elective	3	2	5	3	20	80	100	3
16MBAPR407			Project Work *	0	8	8	---	50	150	200	12
										800	30

* Project work will be carried out after third semester and shall be evaluated during fourth semester. The internal assessment will be made for 50 marks. In the examination, the total marks of 150 shall be allotted as follows: 50 marks each for report evaluation by internal and external examiners respectively and remaining 50 marks for the viva voce examination, jointly assessed by internal and external examiners.

** Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.

IV SEMESTER
(Core Specialisation Subjects)

Marketing Specialisation

Subject Code	Title of the Subject
16MBAMM401	Sales Management
16MBAMM402	Integrated Marketing Communication
16MBAMM403	E-Marketing
16MBAMM404	Strategic Brand Management
16MBAMM405	Rural Marketing
16MBAMM406	International Marketing Management

Financial Specialisation

Subject Code	Title of the Subject
16MBAFM401	Mergers, Acquisitions & Corporate Restructuring
16MBAFM402	Risk Management and Insurance
16MBAFM403	Tax Management
16MBAFM404	International Financial Management
16MBAFM405	Financial Derivatives
16MBAFM406	Corporate Valuation

Human Resource Specialisation

Subject Code	Title of the Subject
16MBAHR401	Public relations
16MBAHR402	Workplace Ethics & Value Systems
16MBAHR403	International Human Resource Management
16MBAHR404	Organisation Change and Development
16MBAHR405	Strategic Talent Management
16MBAHR406	Personal Growth & Interpersonal Effectiveness

IV SEMESTER
(Dual Specialisation)

Subject Code		Category	Teaching hours / week			Duration of Exam (Hours)	Marks for			Credits
Finance & Marketing	HR & Marketing		Lecture	Practical / Field Work / Assignment **	Total		IA	Exam	Total Marks	
16MBAFM401	16MBAHR401	Foundation Course	3	2	5	3	20	80	100	3
16MBAFM402	16MBAHR402	Foundation Elective	3	2	5	3	20	80	100	3
16MBAFM403	16MBAHR403	Elective	3	2	5	3	20	80	100	3
16MBAMM401	16MBAMM401	Foundation Course	3	2	5	3	20	80	100	3
16MBAMM402	16MBAMM402	Foundation Elective	3	2	5	3	20	80	100	3
16MBAMM403	16MBAMM403	Elective	3	2	5	3	20	80	100	3
16MBAPR407		Project Work*	0	8	8	----	50	150	200	12
									800	30

- Project work will be carried out after third semester and shall be evaluated during fourth semester. The internal assessment will be made for 50 marks. In the examination, the total marks of 150 shall be allotted as follows: 50 marks each for report evaluation by internal and external examiners and 50 marks for the viva voce examination, jointly assessed by internal and external examiners.

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** Practical /Field Work / Assignment is a part of contact hours for the faculty and must be considered in the workload.

IV SEMESTER
(Dual Specialisation Subjects)

Marketing & Finance Specialisation	
Subject Code	Title of the Subject
16MBAMM401	Sales Management
16MBAMM402	Integrated Marketing Communication
16MBAMM403	E-Marketing
16MBAFM401	Mergers, Acquisitions & Corporate Restructuring
16MBAFM402	Risk Management and Insurance
16MBAFM403	Tax Management

Marketing & Human Resources Specialisation	
Subject Code	Title of the Subject
16MBAMM401	Sales Management
16MBAMM402	Integrated Marketing Communication
16MBAMM403	E-Marketing
16MBAHR401	Public relations
16MBAHR402	Workplace Ethics & Value Systems
16MBAHR403	International Human Resource Management

Finance & Human Resource Specialisation	
Subject Code	Title of the Subject
16MBAFM401	Mergers, Acquisitions & Corporate Restructuring
16MBAFM402	Risk Management and Insurance
16MBAFM403	Tax Management
16MBAHR401	Public relations
16MBAHR402	Workplace Ethics & Value Systems
16MBAHR403	International Human Resource Management

Plan of action (proposed)

1. Implementation of CBCS for MBA Programme will be effective from next academic year, i.e., 2016-17
2. Review of Scheme of Teaching and Examinations being finalized
3. Award of Credits for various components of MBA Programme
4. Allotment of marks for the subjects/papers, seminar and summer project.
80:20 patterns of marks for external examination and internal (IA) marks respectively is to be adopted for all the subjects, except Internship, for which the pattern will be 50:50 basis for internal and external assessments respectively.

Question paper for theory examination shall consist of Part A and B as under:

- Part A shall consist of 5 questions subdivided into a, b, c in 3+7+10 mixed pattern
- Part B shall be a *compulsory* question on Case study/ Practical problem for 20 marks (may contain a maximum of 4 sub-questions).

IA Pattern: 20 marks in each subject, comprising of 10 marks for tests and 10 marks for assignments/seminars/practical exercises/quiz/oral exams

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SCHEME OF TEACHING AND EXAMINATION

MBA Program Structure and Credits

Year	Particulars	Credits	Total Credits
I	I Semester	24	48
	II Semester	24	
II	III Semester	24	52
	Internship (III Semester)	4	
	IV Semester	18	
	Project Work(IV Semester)	6	
Total		100	100

PROGRAMME OUTCOMES STUDENT WILL BE ABLE CO (POS)

PO1. Acquire Sufficient theoretical knowledge and are enabled to apply them to solve practical problems in business and other organizations / institutions of importance.

PO2. Apply Effective communication skills with a high degree of lateral and critical thinking that enhances learn ability, developed for being continuously employable.

PO3. Demonstrate leadership qualities, ethically sound, enabled with decision making skills that reflect a high degree of social consciousness

PO4. Recognise the need for sustained research orientation to comprehend a growingly complex, economic, legal and ethical environment

PO5. Possess self-sustaining entrepreneurship qualities that encourages calculated risk taking.

I Semester

Subject Code	Title of the Subject	Course Category	Teaching hours per week			Duration of Exam hours	Marks for			Credits
			Lecture	Practical Component	Total		CIE	SEE	Total Marks	
18MBA11	Management & Organizational Behavior	Core	4	-	4	3	40	60	100	4
18MBA12	Managerial Economics	Core	4	-	4	3	40	60	100	4
18MBA13	Accounting for Managers	Core	4	-	4	3	40	60	100	4
18MBA14	Business Statistics & Analytics	Core	4	-	4	3	40	60	100	4
18MBA15	Marketing Management	Core	4	-	4	3	40	60	100	4
18MBA16	Managerial Communications	Core	4	-	4	3	40	60	100	4
Total			24	-	24	-	240	360	600	24

Note:
1. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra casefrom Harvard/Case Centre. The student cannot assume the same cases will be part of the question paper.
2.One Industrial Visit per Semester is Mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
3. Course instructors are free to set the Course outcome and map with the Programme Outcome, subsequently attainment level may be calculated.

II Semester

Subject Code	Title of the Subject	Course Category	Teaching hours per week			Duration of Examination Hours	Marks for			Credits
			Lecture	Practical Component	Total		CIE	SEE	Total Marks	
18MBA21	Human Resource Management	Core	4	-	4	3	40	60	100	4
18MBA22	Financial Management	Core	4	-	4	3	40	60	100	4
18MBA23	Research Methodology	Core	4	-	4	3	40	60	100	4
18MBA24	Legal and Business Environment	Core	4	-	4	3	40	60	100	4
18MBA25	Strategic Management	Core	4	-	4	3	40	60	100	4
18MBA26	Entrepreneurship Development	Core	4	-	4	3	40	60	100	4
Total			24	-	24	-	240	360	600	24

Note:
1. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra casefrom Harvard/Case Centre. The student cannot assume the same cases will be part of the question paper.
2.One Industrial Visit per Semester is Mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
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IV Semester (Core Specialization)

| Subject Code | | | Course Category | Teaching hours per week | | | Duration of Examination hours | Marks for | | | Credits |
Marketing	Finance	Human Resource		Lecture	Practical Component	Total		CIE	SEE	Total Marks	
IRMBANM401 Sales Management	IRMBAFM401 Mergers, Acquisitions & Corporate Restructuring	IRMBAHR401 Public Relations	Elective	3	-	3	3	40	60	100	3
IRMBANM402 Integrated Marketing Communication	IRMBAFM402 Risk Management and Insurance	IRMBAHR402 Organizational Leadership	Elective	3	1	3	3	40	60	100	3
IRMBANM403 Digital and Social Media Marketing	IRMBAFM403 Indirect Taxation	IRMBAHR403 International Human Resource Management	Elective	3	1	3	3	40	60	100	3
IRMBANM404 Strategic Brand Management	IRMBAFM404 International Financial Management	IRMBAHR404 Organization Change and Development	Elective	3	1	3	3	40	60	100	3
IRMBANM405 Rural Marketing	IRMBAFM405 Financial Derivatives	IRMBAHR405 Strategic Talent Management	Elective	3	1	3	3	40	60	100	3
IRMBANM406 International Marketing	IRMBAFM406 Corporate Valuation	IRMBAHR406 Personal Growth & Interpersonal Effectiveness	Elective	3	1	3	3	40	60	100	3
IRMBAPR407 Project Work			Core	0	12	12	1	40	60	100	6
Industrial Visit			Core	1	1	1	1	-	-	-	-
			Total	18	12	30	-	280	420	700	24

Note:
1. Course instructors are free to set the Course outcome and map with the Programme Outcome, subsequently attainment level may be calculated.
2. Project work(Six Weeks) will be carried out after third semester and shall be evaluated during fourth semester.

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IV Semester (Dual Specialization)

| Subject Code | | | Course Category | Teaching hours per week | | | Duration of Examination hours | Marks for | | | Credits |
Marketing & Finance	Finance & HR	HR & Marketing		Lecture	Practical Component	Total		CIE	SEE	Total Marks	
IRMBANM401 Sales Management	IRMBAFM401 Mergers, Acquisitions & Corporate Restructuring	IRMBAHR401 Public Relations	Elective	3	-	3	3	40	60	100	3
IRMBANM403 Digital and Social Media Marketing	IRMBAFM402 Risk Management and Insurance	IRMBAHR402 Organizational Leadership	Elective	3	1	3	3	40	60	100	3
IRMBANM402 Integrated Marketing Communication	IRMBAFM403 Indirect Taxation	IRMBAHR403 International Human Resource Management	Elective	3	-	3	3	40	60	100	3
IRMBAFM401 Mergers, Acquisitions & Corporate Restructuring	IRMBAHR402 Organizational Leadership	IRMBANM401 Sales Management	Elective	3	-	3	3	40	60	100	3
IRMBAFM403 Indirect Taxation	IRMBAHR403 International Human Resource Management	IRMBANM403 Digital and Social Media Marketing	Elective	3	-	3	3	40	60	100	3
IRMBAPR407 Project Work			Core	0	12	12	1	40	60	100	6
Industrial Visit			Core	1	1	1	1	-	-	-	-
			Total	18	12	30	-	280	420	700	24

Note:
1. Course instructors are free to set the Course outcome and map with the Programme Outcome, subsequently attainment level may be calculated.
2. Project work(Six Weeks) will be carried out after third semester and shall be evaluated during fourth semester.

III Semester (Core Specialization)

Subject Code			Course Category	Teaching hours per week			Duration of Examination hours	Marks for			Credits
Marketing	Finance	Human Resource		Lecture	Practical Component	Total		CIE	SEE	Total Marks	
18MBAMM301 Consumer Behaviour	18MBAFM301 Banking and Financial Services	18MBAHR301 Recruitment & Selection	Elective	3	2	5	3	40	60	100	4
18MBAMM302 Retail Management	18MBAFM302 Investment Management	18MBAHR302 HR Analytics	Elective	3	2	5	3	40	60	100	4
18MBAMM303 Services Marketing	18MBAFM303 Direct Taxation	18MBAHR303 Compensation & Reward System	Elective	3	2	5	3	40	60	100	4
18MBAMM304 Marketing Research & Analytics	18MBAFM304 Advanced Financial Management	18MBAHR304 Learning & Development	Elective	3	2	5	3	40	60	100	4
18MBAMM305 Business Marketing	18MBAFM305 Cost Management	18MBAHR305 Industrial Relations & Legislations	Elective	3	2	5	3	40	60	100	4
18MBAMM306 Supply Chain Management	18MBAFM306 Project Appraisal Planning & Control	18MBAHR306 Conflict & Negotiation Management	Elective	3	2	5	3	40	60	100	4
18MBAOS307 OrganizationStudy			Core	0	8	8	-	40	60	100	4
Industrial Visit			Core	-	-	-	-	-	-	-	-
Total				18	20	38	-	280	420	700	28

Note:
1. Each Course has a theory component of 3hrs (3credits) and a Practical component of 2hrs (1credit). The Time-Table allotment for each course should be (3+2) = 5hours.
2. For the practical component, it is mandatory to maintain a practical record.
3. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.
4. Organization Study (Four Weeks) will be carried out by students after second semester during vacation and the report submitted by the students will be assessed internally during the third semester.
5. One Industrial Visit per Semester is Mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
6. Course instructors are free to set the Course outcome and map with the Programme Outcome, subsequently attainment level may be calculated.

Rubrics for Organization Study

	Particulars	Marks
CIE	Assessment by the Guide- Interaction with the student	20
	Report Evaluation by the Guide	20
SEE	Viva-Voce Examination to be conducted by the Guide and an External examiner from the Industry/Institute	60
	Total	**100**

Rubrics for Viva voce Examination

Aspects	Marks
Communication skill	5
Understanding the Industry	5
Understanding the Corporate Functions/Company profile	10
Mckensy's 7S framework and Porter's Five Force Model	10
SWOT analysis	10
Financial statement analysis	10
Learning experience	5
Overall presentation	5
Total	**60**

III Semester (Dual Specialization)

Subject Code			Course Category	Teaching hours per week			Duration of Examinationhours	Marks for			Credits
Marketing & Finance	Finance & HR	HR & Marketing		Lecture	Practical Component	Total		CIE	SEE	Total Marks	
18MBAMM301 Consumer Behaviour	18MBAFM301 Banking and FinancialServices	18MBAHR301 Recruitment & Selection	Elective	3	2	5	3	40	60	100	4
18MBAMM302 Retail Management	18MBAFM302 Investment Management	18MBAHR302 HR Analytics	Elective	3	2	5	3	40	60	100	4
18MBAMM303 Services Marketing	18MBAFM303 Direct Taxation	18MBAHR303 Compensation & Reward System	Elective	3	2	5	3	40	60	100	4
18MBAFM301 Banking and FinancialServices	18MBAHR301 Recruitment & Selection	18MBAMM301 Consumer Behaviour	Elective	3	2	5	3	40	60	100	4
18MBAFM302 Investment Management	18MBAHR302 Retail Management	18MBAMM302 Retail Management	Elective	3	2	5	3	40	60	100	4
18MBAFM303 Direct Taxation	18MBAHR303 Compensation & Reward System	18MBAMM303 Services Marketing	Elective	3	2	5	3	40	60	100	4
18MBAOS307 Organization study			Core	0	8	8	-	40	60	100	4
Industrial Visit			Core	-	-	-	-	-	-	-	-
Total				18	20	38	-	280	420	700	28

Note:
1. Each Course has a theory component of 3hrs (3credits) and a Practical component of 2hrs (1credit). The Time-Table allotment for each course should be (3+2) = 5hours.
2. For the practical component, it is mandatory to maintain a practical record.
3. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.
4. Organization Study (Four Weeks) will be carried out by students after second semester during vacation and the report submitted by the students will be assessed internally during the third semester.
5. One Industrial Visit per Semester is Mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
6. Course instructors are free to set the Course outcome and map with the Programme Outcome, subsequently attainment level may be calculated.

Rubrics for Organization Study

	Particulars	Marks
CIE	Assessment by the Guide- Interaction with the student	20
	Report Evaluation by the Guide	20
SEE	Viva-Voce Examination to be conducted by the Guide and an External examiner from the Industry/Institute	60
	Total	**100**

Rubrics for Viva voce Examination

Aspects	Marks
Communication skill	5
Understanding the Industry	5
Understanding the Corporate Functions/Company profile	10
Mckensy's 7S framework and Porter's Five Force Model	10
SWOT analysis	10
Financial statement analysis	10
Learning experience	5
Overall presentation	5
Total	**60**

SCHEME OF TEACHING AND EXAMINATION

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
MASTER OF BUSINESS ADMINISTRATION
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination					Credits
				Theory	Practical component	Duration in hours	CIE Marks	SEE Marks	Total Marks		
1	PCC	20MBA11	Management & Organizational Behavior	03	02	03	40	60	100		4
2	PCC	20MBA12	Managerial Economics	03	02	03	40	60	100		4
3	PCC	20MBA13	Accounting for Managers	03	02	03	40	60	100		4
4	PCC	20MBA14	Business Statistics	03	02	03	40	60	100		4
5	PCC	20MBA15	Marketing Management	03	02	03	40	60	100		4
6	PCC	20MBA16	Managerial Communication	03	02	03	40	60	100		4
			TOTAL	**18**	**12**	**18**	**240**	**360**	**600**		**24**

Note:
PCC: Professional Core Course
Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.
Four credit courses are designed for 50 hours Teaching – Learning process.

Note:
1. Each course has a theory component of 3hrs (3credits) and a practical component of 2hrs (1credit). The time-table allotment for each course should be 5hrs (3+2). For the practical component it is mandatory to maintain a record.
2. 20% of marks should be allocated for application oriented questions in the **Semester End Examination (SEE)** question paper based on practical component.
3. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra case from Harvard/Case Centre. The student cannot assume the same cases will be part of the SEE question paper.
4. One industrial visit per semester is mandatory. The department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
5. Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills.
6. **Practical component:**
Students should interact with industry (small, medium and large) to understand their problems or foresee what can be undertaken for study in the form of research/ testing / projects and for creative and innovative methods for guidance and to solve the identified problem.
7. **The students shall**
   (a) Gain confidence in modeling of management systems.
   (b) Work on different software/s (tools) to simulate, analyse and authenticate the output to interpret and conclude.
   (c) Involve in case studies and field visits/ field work.
   (d) Accustom with the use of standards to narrow the gap between academia and industry.

All activities should enhance student's abilities to employment and/or self-employment opportunity, management skills, statistical analysis, fiscal expertise etc.

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Scheme of Teaching and Examinations – 2020 - 21
MASTER OF BUSINESS ADMINISTRATION
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				Credits
				Theory	Practical Component	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	20MBA21	Human Resource Management	03	02	03	40	60	100	4
2	PCC	20MBA22	Financial Management	03	02	03	40	60	100	4
3	PCC	20MBA23	Research Methodology	03	02	03	40	60	100	4
4	PCC	20MBA24	Operations Research	03	02	03	40	60	100	4
5	PCC	20MBA25	Strategic Management	03	02	03	40	60	100	4
6	PCC	20MBA26	Entrepreneurship & Legal Aspects	03	02	03	40	60	100	4
		TOTAL		18	12	18	240	360	600	24

Note:
PCC: Professional Core Course
Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.
Four credit courses are designed for 50 hours Teaching – Learning process.

Note:
1. Each course has a theory component of 3hrs (3credits) and a practical component of 2hrs (1credit). The time-table allotment for each course should be 5hrs (3+2). For the practical component it is mandatory to maintain a practical record.
2. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.
3. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra case from Harvard/Case Centre. The student cannot assume the same cases will be part of the question paper.
4. One industrial visit per semester is mandatory. The department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
5. Internship (four weeks) to be carried out by students after second semester during vacation and the report submitted by the students be assessed internally during the third semester.

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Scheme of Teaching and Examinations – 2020 - 21
MASTER OF BUSINESS ADMINISTRATION
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)
III SEMESTER(Core Courses and Specialisation Courses)

Sl. No	Course	Course Code			Teaching Hours /Week		Examination				
		Marketing	Finance	Human Resource	Theory	Practical Component	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20MBA301*	20MBA301*	20MBA301*	03	02	03	40	60	100	4
2	PCC	20MBA302*	20MBA302*	20MBA302*	03	02	03	40	60	100	4
3	PEC	20MBAMM303	20MBAFM303	20MBAHR303	03	02	03	40	60	100	4
4	PEC	20MBAMM304	20MBAFM304	20MBAHR304	03	02	03	40	60	100	4
5	PEC	20MBAMM305	20MBAFM305	20MBAHR305	03	02	03	40	60	100	4
6	PEC	20MBAMM306	20MBAFM306	20MBAHR306	03	02	03	40	60	100	4
7	PCC	20MBA IN 307	20MBA IN 307	20MBA IN 307	-	08	-	40	60	100	4
	TOTAL				18	20	18	280	420	700	28

Note:

PCC: Professional Core Course, PEC: Professional Elective Course.

Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.

Four credit courses are designed for 50 hours Teaching – Learning process.

* Interdisciplinary Core Courses may be taught by engineering faculty/subject expert.

Note:

1. Each course has a theory component of 3hrs (3credits) and a Practical component of 2hrs (1credit). The time-table allotment for each course should be 5hrs (3+2). For the practical component it is mandatory to maintain a practical record.
2. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.
3. One industrial visit per Semester is mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
4. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra case from Harvard/Case Centre. The student cannot assume the same cases will be part of the question paper.
5. Project (six weeks) to be carried out by students after third semester and the report submitted by the students during the fourth semester.

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MASTER OF BUSINESS ADMINISTRATION
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

III SEMESTER (Core Courses and Dual Specialisation)

Sl. No	Course	Course Code Marketing & Finance	Course Code Finance& Human Resource	Course Code Human Resource & Marketing	Teaching Hours /Week Theory	Teaching Hours /Week Practical Component	Examination Duration in hours	Examination CIE Marks	Examination SEE Marks	Examination Total Marks	Credits
1	PCC	20MBA301*	20MBA301*	20MBA301*	03	02	03	40	60	100	4
2	PCC	20MBA302*	20MBA302*	20MBA302*	03	02	03	40	60	100	4
3	PEC	20MBAMM303	20MBAFM303	20MBAHR303	03	02	03	40	60	100	4
4	PEC	20MBAMM304	20MBAFM304	20MBAHR304	03	02	03	40	60	100	4
5	PEC	20MBAFM303	20MBAHR303	20MBAMM303	03	02	03	40	60	100	4
6	PEC	20MBAFM304	20MBAHR304	20MBAMM304	03	02	03	40	60	100	4
7	PCC	20MBA IN 307	20MBA IN 307	20MBA IN 307	--	08	--	40	60	100	4
		TOTAL			18	20	18	280	420	700	28

Note:
PCC: Professional Core Course, PEC: Professional Elective Course.
Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.
Four credit courses are designed for 50 hours Teaching – Learning process.
* Interdisciplinary Core Courses may be taught by engineering faculty/subject expert.

Note:
1. Each course has a theory component of 3hrs (3credits) and a practical component of 2hrs (1credit). The time-table allotment for each course should be 5hrs (3+2). For the practical component it is mandatory to maintain a practical record.
2. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.
3. One industrial visit per semester is mandatory. The Department shall insist on report submission by each student and shall maintain this as a documentary proof. The format of the report shall be prescribed by the department.
4. Each course content has indicative case studies which can be dealt in the class by the course instructor. In addition to this the course instructor may use an extra case from Harvard/Case Centre. The student cannot assume the same cases be part of the question paper.
6. Project (six weeks) to be carried out by students after third semester and the report submitted by the students during the fourth semester.

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III SEMESTER
Core Courses

Subject Code	Title of the Subject	Subject Code	Title of the Subject	Subject Code	Title of the Subject
20MBA301	Emerging Exponential Technologies	20MBA301	Emerging Exponential Technologies	20MBA301	Emerging Exponential Technologies
20MBA302	Technology & Operational Strategy	20MBA302	Technology & Operational Strategy	20MBA302	Technology & Operational Strategy

Specialisation Courses

Marketing Professional Elective Courses		Finance Professional Elective Courses		Human Professional Elective Courses	
Subject Code	Title of the Subject	Subject Code	Title of the Subject	Subject Code	Title of the Subject
20MBAMM303	Services Marketing	20MBAFM 303	Investment Management	20MBAHR303 .	Recruitment & Selection
20MBAMM304	Marketing Research & Analytics	20MBAFM304	Direct Taxation	20MBAHR304	Human Resource Analytics
20MBAMM305	Consumer Behaviour	20MBAFM305	Banking and Financial Services	20MBAHR305	Industrial Relations and Labour Laws
20MBAMM306	Retail Management	20MBAFM306	Advanced Financial Management	20MBAHR306	Compensation & Reward System
20MBAIN307	Internship	20MBAIN307	Internship	20MBAIN307	Internship

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IV SEMESTER (Specialisation Courses)

Sl. No	Course	Specialisation Courses			Teaching Hours /Week		Examination				Credits
		Marketing	Finance	Human Resource	Theory	Practical Component	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PEC	20MBAMM401	20MBAFM401	20MBAHR401	03	-	03	40	60	100	3
2	PEC	20MBAMM402	20MBAFM402	20MBAHR402	03	-	03	40	60	100	3
3	PEC	20MBAMM403	20MBAFM403	20MBAHR403	03	-	03	40	60	100	3
4	PEC	20MBAMM404	20MBAFM404	20MBAHR404	03	-	03	40	60	100	3
5	PEC	20MBAMM405	20MBAFM405	20MBAHR405	03	-	.03	40	60	100	3
6	PEC	20MBAMM406	20MBAFM406	20MBAHR406	03	-	03	40	60	100	3
7	PCC	20MBAPR407	20MBAPR407	20MBAPR407	-	12	-	40	60	100	6
	TOTAL				18	12	18	280	420	700	24

Note:
PEC: Professional Elective Course.
Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.
Three credit courses are designed for 40 hours Teaching – Learning process.

Note:
1. Each Course has a theory component of 3hrs (3credits). The Time-Table allotment for each course should be 3hrs.
2. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.

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MASTER OF BUSINESS ADMINISTRATION
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)
IV SEMESTER(Dual Specialisation)

Sl. No	Course	Subject Code — Marketing & Finance	Finance & Human Resource	Human Resource & Marketing	Teaching Hours /Week — Theory	Practical Component	Examination — Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PEC	20MBAMM401	20MBAFM401	20MBAHR401	03	-	03	40	60	100	3
2	PEC	20MBAMM402	20MBAFM402	20MBAHR402	03	-	03	40	60	100	3
3	PEC	20MBAMM403	20MBAFM403	20MBAHR403	03	-	03	40	60	100	3
4	PEC	20MBAFM401	20MBAHR401	20MBAMM401	03	-	03	40	60	100	3
5	PEC	20MBAFM402	20MBAHR402	20MBAMM402	03	-	03	40	60	100	3
6	PEC	20MBAFM403	20MBAHR403	20MBAMM403	03	-	03	40	60	100	3
7	PCC	20MBAPR407	20MBAPR407	20MBAPR407	-	12	-	40	60	100	6
		TOTAL			18	12	18	280	420	700	24

Note:

PEC: Professional Elective Course.

Practical /Field Work / Assignment are part of contact hours for the faculty and must be considered in the workload.

Three credit courses are designed for 40 hours Teaching – Learning process.

Note:

1. Each Course has a theory component of 3hrs (3credits). The Time-Table allotment for each course should be 3hrs.
2. 20% of marks should be allocated for application oriented questions in the SEE Question Paper, based on practical component.

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IV SEMESTER (Specialisation Courses)

Marketing Specialization		Financial Specialization		Human Resource Specialization	
Subject Code	Title of the Subject	Subject Code	Title of the Subject	Subject Code	Title of the Subject
20MBAMM401	B2B Marketing Management	20MBAFM401	Risk Management and Insurance	20MBAHR401	Organizational Leadership
20MBAMM402	Logistics and Supply Chain Management	20MBAFM402	Financial Derivatives	20MBAHR402	Personal Growth & Interpersonal Effectiveness
20MBAMM403	Digital Marketing Management	20MBAFM403	Indirect Taxation	20MBAHR403	International Human Resource Management
20MBAMM404	Strategic Brand Management	20MBAFM404	Mergers, Acquisitions & Corporate Restructuring	20MBAHR404	Organization Change and Development
20MBAMM405	Agri Business Marketing	20MBAFM405	Corporate Valuation	20MBAHR405	Human Recourse Audit
20MBAMM406	International Marketing Management	20MBAFM406	International Financial Management	20MBAHR406	Management Consulting for Business Excellence
20MBAPR407	Project Report	20MBAPR407	Project Report	20MBAPR407	Project Report

Programme Outcomes (POs)

1. Students are given sufficient theoretical knowledge and are enabled to apply them to solve practical problems in business and other organizations/institutions of importance
2. Students are provided effective communication skills with a high degree of lateral and critical thinking that enhances learn ability, developed for being continuously employable.
3. Students are instilled with leadership qualities, ethically sound, enabled with decision making skills that reflect a high degree of social consciousness
4. Students are trained for sustained research orientation to comprehend a growingly complex, economic, legal and ethical environment
5. Students are equipped with self sustaining entrepreneurship qualities that encourages calculated risk taking.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION 2016 – 17 Onwards
Master of Computer Applications (MCA)

I Semester								CREDIT BASED
Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Assignment		CIE	SEE		
16MCA11	Data structures using C	4	--	3	20	80	100	4
16MCA12	Unix Programming	4	--	3	20	80	100	4
16MCA13	Web Technologies	4	--	3	20	80	100	4
16MCA14	Computer Organization	4	--	3	20	80	100	4
16MCA15	Discrete Mathematical Structures	4	--	3	20	80	100	4
16MCA16	Data structures using C Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA17	UnixProgramming Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA18	Web ProgrammingLaboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
	Total	20	09	24	160	640	800	26

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
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SCHEME OF TEACHING AND EXAMINATION 2016 – 17 Onwards
Master of Computer Applications (MCA)

II Semester						CREDIT BASED			
Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Assignment		CIE	SEE		
16MCA21	Python Programming	4	--	3	20	80	100	4
16MCA22	Object oriented programming using C++	4	--	3	20	80	100	4
16MCA23	Database Management Systems	4	--	3	20	80	100	4
16MCA24	OperatingSystems	4	--	3	20	80	100	4
16MCA25	System Software	4	--	3	20	80	100	4
16MCA26	Python Programming Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA27	Object oriented programming using C++ laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA28	DBMSLaboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
	Total	20	09	24	160	640	800	26

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Master of Computer Applications (MCA)

III Semester   CREDIT BASED

Subject Code	Name of the Subject	Teaching hours/week Lecture	Teaching hours/week Practical / Assignment	Duration of Exam in Hours	Marks for CIE	Marks for SEE	Total Marks	CREDITS
16MCA31	Computer Networks	4	--	3	20	80	100	4
16MCA32	Java Programming	4	--	3	20	80	100	4
16MCA33	Analysis and Design of Algorithms	4	--	3	20	80	100	4
16MCA34	Software Engineering	4	--	3	20	80	100	4
16MCA35	Elective 1	3	--	3	20	80	100	3
16MCA36	Computer Networks Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA37	Java Programming Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA38	Analysis and Design of Algorithms Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
	Total	19	09	24	160	640	800	25

Elective- 1

16MCA351	Intellectual Property Rights
16MCA352	Enterprise Resource Planning(ERP)
16MCA353	MIS & E-Commerce
16MCA354	Cyber Security

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SCHEME OF TEACHING AND EXAMINATION 2016 – 17 Onwards
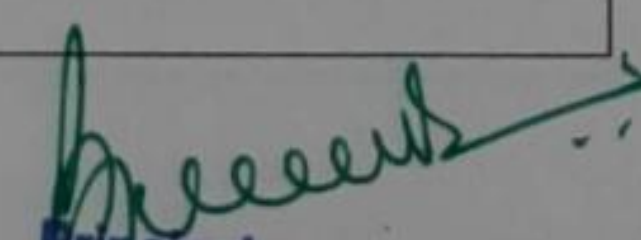#### Master of Computer Applications (MCA)

IV Semester **CREDIT BASED**

Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Assignment		CIE	SEE		
16MCA41	Advanced Java Programming	4	--	3	20	80	100	4
16MCA42	Advanced Web Programming	4	--	3	20	80	100	4
16MCA43	Software Testing and Practices	4	--	3	20	80	100	4
16MCA44	Elective-2	3	--	3	20	80	100	3
16MCA45	Elective-3	3	--	3	20	80	100	3
16MCA46	Advanced Java Programming Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA47	Advanced Web ProgrammingLaboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA48	Software Testing Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA49	Seminar	--	2	--	50	--	50	1
	Total	18	11	24	210	640	850	25

Elective -2		Elective-3	
16MCA441	Advanced Computer Networks	16MCA451	Wireless Communication and Mobile Technologies
16MCA442	Data Warehousing and Data Mining	16MCA452	Big Data Analytics
16MCA443	Software Architecture	16MCA453	Software Quality

16MCA444	Cryptography and Network security	16MCA454	Management Principles of User Interface Design

V Semester   CREDIT BASED

Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Assignment		CIE	SEE		
16MCA51	Object-Oriented Modeling and Design Patterns	4	--	3	20	80	100	4
16MCA52	Programming Using C# & .NET	4	--	3	20	80	100	4
16MCA53	Mobile Applications	4	--	3	20	80	100	4
16MCA54	Elective-4	3	--	3	20	80	100	3
16MCA55	Elective-5	3	--	3	20	80	100	3
16MCA56	Software Design Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA57	.Net Laboratory	--	3(2 hrs lab+ 1 hr instruction)	3	20	80	100	2
16MCA58	Mini Project : Mobile Applications Development using Android/iOS/Windows etc.	--	4(2 hrs lab+ 1 hr instruction+ 1 hr contact)	3	20	80	100	3
16MCA59	Seminar	--	2	--	50	--	50	1
	Total	**18**	**12**	**24**	**210**	**640**	**850**	**26**

Elective-4		Elective-5	
16MCA541	Web2.0 and Rich Internet Applications	16MCA551	Software Defined Networks
16MCA542	Cloud Computing	16MCA552	Internet of Things(IoT)
16MCA543	Artificial Intelligence	16MCA553	Service Oriented Architecture
16MCA544	Storage Area Networks	16MCA554	Software Project Management

16MCA49 and 16MCA59: Seminar

• Students should present the seminar on cutting edge/emerging/state of the art technologies in the field of Computer Science and Applications.

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- Duration of the seminar should be approximately 45 minutes.
- Student should submit the write up on seminar topic containing at least 10 pages.

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VI Semester **CREDIT BASED**

Subject Code	Name of the Subject	Evaluation Internal Presentation	Evaluation Internal Report Evaluation	Evaluation External Dissertation Evaluation	Evaluation External Viva	Total	Credits
16MCA61	Internship	50	50	-	-	100	02
16MCA62	Project Work	75		125	100	300	20
Total		175		125	100	400	22

Grand Total (I to VI Semesters): 4500 Marks : 150 Credits

Guidelines:
16MCA61: Internship
- The students shall undergo internship for 6 weeks during the vacation immediately after the 5th semester examination.
- The internship shall be carried out in industry/R&D labs or institutions.
- Internship should be presented along with the report by the end of 6 weeks and shall be evaluated by the internal panel for 50 marks each.

16MCA62: Project Work
Synopsis
- Synopsis of the project must be submitted before the end of the first month of 6th semester
- The synopsis of the project must include:
  - a) Problem formulation and literature survey.
  - b) Details of the required tools and technologies for the development of project.
  - c) Write up shall not exceed 15 pages.
- Internal assessment for synopsis presentation and evaluation of the synopsis by the internal examiner/guide is for 20 marks.

Dissertation
- The project shall be carried out in the same institution or in industry/R&D labs based on software tools and technologies learnt in MCA course/internship for minimum period of 16 weeks.
- Internal assessment shall be evaluated by the internal panel/guide for 55 marks.
  - a) For continuous evaluation of project work by the internal examiner/guide with progress reports is for 10 marks each. (3 progress reports x 10 marks= 30)
  - b) Final presentation for the entire project is evaluated for 25 marks.
- The internal examiners (Project Guide with at least 2 years experience) and the external examiners shall be appointed by the University for the final evaluation of the project.
- Internal and external examiners shall carry out the evaluation of Dissertation report for 125 marks individually. The average of the marks allotted by the internal and external examiners shall be the final marks for the project Dissertation report evaluation.
- The project presentation and Viva-voce shall be evaluated jointly by both the internal and external examiners for 100 marks.
- The student should be encouraged to present/publish the part/outcome of the project as an article in the conferences/journals.

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I SEMESTER

Sl. No	Course Code	Title	Teaching Department	Theory (L)	Tutorial (T)	Practical (P)	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA11	Object Oriented Programming with C++	MCA	03	-	-	03	60	40	100	03
2	18MCA12	Unix and Shell Programming	MCA	03	-	-	03	60	40	100	03
3	18MCA13	Web Technologies	MCA	03	-	-	03	60	40	100	03
4	18MCA14	Software Engineering	MCA	03	-	-	03	60	40	100	03
5	18MCA15	Computer Organization	MCA	03	-	-	03	60	40	100	03
6	18MCA16	C++ Programming Lab	MCA	-	01	03	03	60	40	100	02
7	18MCA17	Unix and Shell Programming Lab	MCA	-	01	03	03	60	40	100	02
8	18MCA18	Web Technologies Lab	MCA	-	01	03	03	60	40	100	02
		TOTAL		Theory: 15hours Practical: 09 hours Tutorial/Instruction: 03hours				480	320	800	21

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II SEMESTER

Sl No	Course Code	Title	Teaching Department	Theory (L)	Tutorial (T)	Practical (P)	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA21	Programming using Java	MCA	03	-	-	03	60	40	100	03
2	18MCA22	Data Structures using C++	MCA	03	-	-	03	60	40	100	03
3	18MCA23	Discrete Mathematical Structures and Statistics	MCA/ Mathematics	03	-	-	03	60	40	100	03
4	18MCA24	Computer Networks	MCA	03	-	-	03	60	40	100	03
5	18MCA25	Operating Systems	MCA	03	-	-	03	60	40	100	03
6	18MCA26	Java Programming Lab	MCA	-	01	03	03	60	40	100	02
7	18MCA27	Data Structures Lab	MCA	-	01	03	03	60	40	100	02
8	18MCA28	Computer Networks Lab	MCA	-	01	03	03	60	40	100	02
9	18MCA29	Mini Project	MCA	-	02	02	03	60	40	100	02
		TOTAL		Theory: 15hours Practical: 11 hours Tutorial/Instruction: 05 hours				540	360	900	23

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III SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week Theory (L)	Tutorial (T)	Practical (P)	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA31	Database Management System	MCA	03	-	-	03	60	40	100	03
2	18MCA32	Programming using Python	MCA	03	-	-	03	60	40	100	03
3	18MCA33	Design and Analysis of Algorithms	MCA	03	-	-	03	60	40	100	03
4	18MCA34	System Software	MCA	03	-	-	03	60	40	100	03
5	18MCA35X	Elective 1	MCA	03	-	-	03	60	40	100	03
6	18MCA36	DBMS Lab	MCA	-	01	03	03	60	40	100	02
7	18MCA37	Python Programming Lab	MCA	-	01	03	03	60	40	100	02
8	18MCA38	Algorithms Lab	MCA	-	01	03	03	60	40	100	02
		TOTAL		Theory: 15hours Practical: 09 hours Tutorial/Instruction: 03hours				480	320	800	21

Elective I	
18MCA351	Software Testing
18MCA352	Optimization Techniques
18MCA353	Advance Computer Networks
18MCA354	Management Information Systems

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IV SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week Theory (L)	Tutorial (T)	Practical (P)	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA41	Advanced Java Programming	MCA	03	-	-	03	60	40	100	03
2	18MCA42	Advanced Web Programming	MCA	03	-	-	03	60	40	100	03
3	18MCA43	Object Oriented Modeling and Design	MCA	03	-	-	03	60	40	100	03
4	18MCA44X	Elective II	MCA	03	-	-	03	60	40	100	03
5	18MCA45X	Elective III	MCA	03	-	-	03	60	40	100	03
6	18MCA46	Professional Communication & Report Writing	MCA	02	-	-	03	60	40	100	02
7	18MCA47	Advanced Java Programming Lab	MCA	-	01	03	03	60	40	100	02
8	18MCA48	Advanced Web Programming Lab	MCA	-	01	03	03	60	40	100	02
9	18MCA49	Object Oriented Modeling and Design Lab	MCA	-	01	03	03	60	40	100	02
		TOTAL		Theory: 17hours Practical: 09 hours Tutorial/Instruction: 03hours				540	360	900	23

Elective II		Elective III	
18MCA441	Wireless Communication and Mobile Technologies	18MCA451	Enterprise Resource Planning (ERP)
18MCA442	Cyber Security	18MCA452	Data Warehousing and Data Mining
18MCA443	Computer Graphics	18MCA453	Advanced Database Management Systems
18MCA444	Cloud Computing	18MCA454	Big Data Analytics

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V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Theory (L)	Tutorial (T)	Practical (P)	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA51	Programming using C#.net	MCA	03		-	03	60	40	100	03
2	18MCA52	Mobile Applications	MCA	03		-	03	60	40	100	03
3	18MCA53	Machine Learning	MCA	03	-	-	03	60	40	100	03
4	18MCA54X	Elective IV	MCA	03	-	-	03	60	40	100	03
5	18MCA55X	Elective V	MCA	03	-	-	03	60	40	100	03
6	18MCA56	C#.net Lab	MCA	-	01	03	03	60	40	100	02
7	18MCA57	Mobile Applications Lab	MCA	-	01	03	03	60	40	100	02
8	18MCA58	Mini Project	MCA	-	02	04	03	60	40	100	03
		TOTAL		Theory: 15hours Practical: 10 hours Tutorial/Instruction: 04 hours				480	320	800	22

Elective IV		Elective V	
18MCA541	Multimedia Systems	18MCA551	System Simulation and Modeling
18MCA542	Internet of Things (IoT)	18MCA552	Principles of User Interface Design
18MCA543	Image Processing	18MCA553	Software Architecture
18MCA544	Parallel Computing	18MCA554	Storage Area Networks

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VI SEMESTER

Sl. No	Course Code	Title	Teaching Department	Theory	Practical	Tutorial	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	18MCA61	Internship	MCA	-	-	-	-	-	100	100	4
2	18MCA62	Seminar	MCA	-	-	-	-	-	100	100	2
3	18MCA63	Major Project	MCA	-	-	-	03	60	40	100	16
		TOTAL						60	240	300	22

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SEMESTER-I

S.No	Course Type	Course Code	Title	Teaching Hours / Week				Examination			
				L	P	T/S DA	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	PCC	20MCA11	Data Structures with Algorithms	04	-	-	03	60	40	100	04
2	PCC	20MCA12	Operating System with Unix	04	-	-	03	60	40	100	04
3	PCC	20MCA13	Computer Networks	04	-	-	03	60	40	100	04
4	PCC	20MCA14	Mathematical Foundation for Computer Applications	03	-	02	03	60	40	100	04
5	PCC	20MCA15	Research Methodology & IPR	02	-	02	03	60	40	100	02
6	PCC	20MCA16	Data Structures with Algorithms Lab	-	04	02	03	60	40	100	02
7	PCC	20MCA17	Unix Programming Lab	-	04	02	03	60	40	100	02
8	PCC	20MCA18	Computer Networks Lab	-	04	02	03	60	40	100	02
9	BC	20MCA19-BC*	Basics of Programming & CO	02	-	02	03	60	40	100	-
			Total	17	12	06	27	540	360	900	24

*Only for non-computer science students

Note: PCC- Professional Core Course; PCE- Professional Elective Course

Each Course (PCC/PCE) shall have case study discussion and may be considered as a part of assignment.

Theory courses internal assessment (CIE) shall be based on internal test (50% weightage), 50% weightage may be given to other continues assessment carried out during the teaching learning processes. Course coordinator may select suitable assessment techniques/tools for continues assessment such as weekly Multiple Choice Questions (MCQ) quiz, higher order cognitive level questions as assignment, and case study questions/evaluation

any other assignment useful for learning with a minimum cognitive level at the application level. Average marks of three internal tests have to be considered for CIE along with other continues evaluations.

Laboratory courses internal assessment shall be based on internal test (**50**% weightage), remaining 50% weightage shall be given to continues evaluation of practical execution during regular laboratory hours. During regular laboratory hours students may be asked to solve the extended versions of the laboratory program/problem, and demonstrate higher order cognitive level such as analysis and design programming assignment. During the laboratory hours after the program execution, technical quiz may be conducted. Wherever laboratory is also having project work students may be asked to solve novel problems in their projects work.

Skill development activities (SDA):

Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills. The students should interact with industry (small, medium and large), understand their problems or foresee what can be undertaken for study in the form of research/ testing / projects, and for creative and innovative methods to solve the identified problem.

The students shall

1) Gain confidence in modelling of systems and algorithms.
2) Work on different software/s (tools) to Simulate, analyse and authenticate the output to interpret and conclude. Operate the simulated system under changed parameter conditions to study the system with respect to thermal study, transient and steady state operations, etc.
3) Handle advanced instruments to enhance technical talent.
4) Involve in case studies and field visits/ field work.
5) Accustom with the use of standards/codes etc, to narrow the gap between academia and industry.

All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.

Tutorial:

Tutorial sessions may be conducted using cooperative Learning techniques. Tutorial sheets maintained should indicate date, problem (statement) addressed, and cooperative learning technique employed, solution to the problem. Course coordinator shall maintain document in specific format for tutorial / SDA.

In order to promote reinforcement of TLP, course coordinator to analyze the performance of the student after the execution of particular test and conduct remedial/ tutorial classes. It is recommended to make changes in delivery methods wherever required and give appropriate assignments/ study materials to fast/slow learners.

Note:

1) Four credit courses are designed for 50 hours of teaching and learning process

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2) Three credit courses are designed for 40hours Teaching – Learning process.

3) Two credit courses are designed for 30hours Teaching – Learning process.

Research/Technical Seminar:

As a part of the course Research Methodology & IPR, presenting the seminar is mandatory. The CIE marks awarded for Research/Technical Seminar shall be based on the evaluation of Seminar Report, Presentation skills and performance in Question and Answer session in the ratio 50:25:25. Seminar is to be considered for **20 marks. Remaining 20 marks is for internal tests.** Students shall do the literature survey of existing work on contemporary topics and present. Student shall highlight on the research gap and propose solution. Seminar presentation and report have to be evaluated using rubrics.

Bridge course: 20MCA19-BC

20MCA19-BC: Bridge course is a non-credit course introduced to the students who admits into MCA program from non-computer science background. Students have to secure eligibility by scoring 50% marks in aggregate (CIE and SEE).

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SEMESTER-II

S.No.	Course Type	Course Code	Title	Teaching Hours/Week			Examination				
				L	P	T/SDA	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	PCC	20MCA21	Database Management System	03	-	-	03	60	40	100	03
2	PCC	20MCA22	Object Oriented Programming with Java	03	-	-	03	60	40	100	03
3	PCC	20MCA23	Web Technologies	04	-	-	03	60	40	100	04
4	PCC	20MCA24	Software Engineering	03	-	02	03	60	40	100	04
5	PEC	20MCA25X	Elective-1	03	-	-	03	60	40	100	03
6	PEC	20MCA26X	Elective-2	03	-	-	03	60	40	100	03
7	PCC	20MCA27	DBMS Lab	-	04	-	03	60	40	100	02
8	PCC	20MCA28	Java Programming Lab.	-	04	-	03	60	40	100	02
9	PCC	20MCA29	Web Technologies Lab with Mini-project	-	04	-	03	60	40	100	02
			Total	19	12	02	27	540	360	900	26

Elective-I	
20MCA251	Cybersecurity
20MCA252	Data Mining and Business Intelligence
20MCA253	Enterprise Resource Planning
20MCA254	User Interface Design
20MCA255	Optimization Techniques

Elective-II	
20MCA261	Cryptography and Network Security
20MCA262	Artificial Intelligence
20MCA263	Mobile Application Development
20MCA264	Distributed operating System
20MCA265	Natural Language Processing

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SEMESTER-III

S.No	Course Type	Course Code	Title	Teaching Hours/Week			Examination				
				L	P	T/SDA	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	PCC	20MCA31	Data Analytics using Python	04	-	-	03	60	40	100	04
2	PCC	20MCA32	IoT	04	-	-	03	60	40	100	04
3	PCC	20MCA33	Advances in Java	04	-	-	03	60	40	100	04
4	PEC	20MCA34X	Elective-II	03	-	-	03	60	40	100	03
5	PEC	20MCA35X	Elective-III	03	-	-	03	60	40	100	03
6	PCC	20MCA36	Data Analytics Lab with Mini-project	-	04	-	03	60	40	100	02
7	PCC	20MCA37	IoT Lab with Mini Project	-	04	-	03	60	40	100	02
8	PCC	20MCA38	Advances in Java Lab	-	04	-	03	60	40	100	02
			Total	18	12	-	24	480	320	800	24

Elective-III

20MCA341	Block chain Technology
20MCA342	Cloud Computing
20MCA343	Digital Marketing
20MCA344	Software Testing
20MCA345	NOSQL

Elective-IV

20MCA351	Deep Learning
20MCA352	Big data Analytics
20MCA353	Wireless Ad Hoc Networks
20MCA354	Software Project Management
20MCA355	Software Defined Networks

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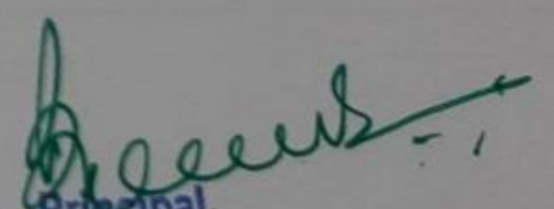Scheme of Teaching and Examination

Master of Computer Applications

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SEMESTER-IV

S.No	Course Type	Course Code	Title	Teaching Hours/Week				Examination				
				Lecture(L)	Tutorial(T)	Practical(P)\Seminar	Duration in hours	SEE Marks	CIE Marks	Total Marks	Credits
1	PCC	20MCA41	Advances in Web Technologies	02	02	3	60	40	100	02
2	PCC	20MCA42	Programming using C#	02	02	-	03	60	40	100	02
3	PCC	20MCA43	Industry Internship (4 weeks in vacation of 3rd sem.)	-	-	-	-	-	100	100	02
4	PCC	20MCA44	Project work Phase 2 (During 4th Semester- min. of 4 Months)			02	03	60	40	100	20
			Total	4	4	02	09	180	220	400	26

Internship:
All the students have to undergo mandatory internship of 4 weeks during the vacation of III semester. 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 as fail in internship course and have to complete the same during the subsequent semester. After satisfying the internship requirements the degree will be awarded. However, student can carry out 4th semester project without completing the internship.
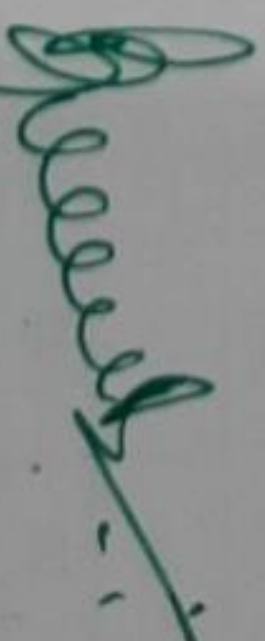
Project:
The candidate should carry out the project in any industry or R&D institution or educational institution under a guide/co-guide. The candidate has to present the work carried out before the examiners during the University examination. The work out carried out should be free from plagiarism. The

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literature study may be clearly written which may be summary of existing project and highlight of what are the functionalities that are proposed to this project. Student shall indicate the different research papers, documents refereed as a part of the literature study. It is recommended to do prior art search as part of literature survey before submitting the synopsis for the projects.

This is an individual project for a duration of minimum of 4 months or duration of the semester. Rubrics have to be used for evaluation of projects which makes the evaluation transparent and valid. Paper publication in an indexed journal/conference is compulsory as part of the project work.

Project work evaluation

There shall be three project presentations each to be considered for 5 marks (5X3= 15 marks) and a final presentation for 15 marks. Presentation may be given using Power point presentation/demonstrations of the work. Synopsis submitted in a proper format is to be evaluated for 10 marks. Student has to publish a research paper in indexed journal / conference. Publications follow the Thesis. 10% weightage is given in SEE. Project report organization/contents can be similar to project report contents of 2018 scheme/syllabus .

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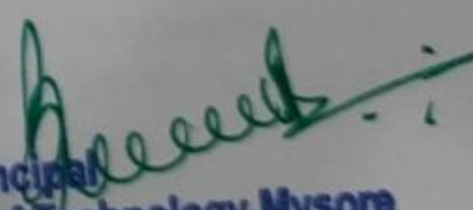
M.Tech in Signal Processing

I SEMESTER

Subject Code	Title	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Field Work / Assignment/ Tutorials		I.A.	Exam		
16ELD11	Advanced Engineering Mathematics	4	--	3	20	80	100	4
16ESP12	Statistical Signal Processing	4	--	3	20	80	100	4
16EVE13	Advanced Embedded Systems	4	--	3	20	80	100	4
16ESP14	Modern DSP	4	--	3	20	80	100	4
16EXX15X	Elective – 1	3	--	3	20	80	100	3
16ESPL16	Signal Processing lab	--	3	3	20	80	100	2
16ESPL17	Seminar on advanced topics from refereed journals	--	3	--	100	--	100	1
	Total	19	6	18	220	480	700	22

Elective-1:

16ECS151	Advanced Computers Networks	16ESP153	Modern Spectral Analysis & Estimation
16ESP152	Multirate Systems and Filter Banks	16ECS154	Simulation, Modeling and Analysis

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II SEMESTER

Subject Code	Title	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Field Work / Assignment/ Tutorials		I.A.	Exam		
16ESP21	Image Processing and Machine Vision	4	--	3	20	80	100	4
16ESP22	DSP System Design	4	--	3	20	80	100	4
16ESP23	Digital Signal Compression	4	--	3	20	80	100	4
16ESP24	Biomedical Signal Processing	4	--	3	20	80	100	4
16EXX25X	Elective-2	3	--	3	20	80	100	3
16ESPL26	Image Processing Lab	--	3	3	20	80	100	2
16ESP27	Seminar on Advanced topics from refereed Journals	--	3	--	100	--	100	1
	Total	19	6	18	220	480	700	22

Elective - 2:

16ESP251	Detection & Estimation	16ESP253	Pattern Recognition
16EVE252	VLSI Design for Signal Processing	16ESP254	Channel Coding

M.Tech in Signal Processing

III SEMESTER: Internship

Subject Code	Title	Teaching hours/week		Duration of the Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Field Work		I.A.	Exam		
16ESP31	Seminar / Presentation on Internship (After 8 weeks from the date of commencement)	--	--	--	25	--	25	
16ESP32	Report on Internship	--	--	--	25		25	
16ESP33	Evaluation and Viva-voce on Internship	--	--	--	—	50	50	20
16ESP34	Evaluation of Project Phase-I	--	--	--	50	--	50	1
	Total	--	--	--	100	50	150	21

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IV SEMESTER

Subject Code	Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Field Work / Assignment/ Tutorials		I.A.	Exam		
16ESP41	Adaptive Signal processing	4	--	3	20	80	100	4
16EXX42X	Elective-3	3	--	3	20	80	100	3
16ESP43	Evaluation of Project Phase-II	--	--	--	50	-	50	3
16ESP44	Evaluation of Project Work and Viva-Voce	--	--	--	--	100+100	200	10
	Total	7	--	06	90	360	450	20

Elective-3:

16ESP421	Array Signal Processing	16ECS423	Communication System Design using DSP Algorithms
16ESP422	Speech and Audio processing	16ELD424	Reconfigurable Computing

Note:

1. **Project Phase-1:** 6-week duration shall be carried out between 2nd and 3rd Semester vacation. Candidates in consultation with the guide shall carry out literature survey/ visit industries to finalize the topic of Project.

2. **Project Phase-2:** 16-week duration during 4th semester. Evaluation shall be done by the committee constituted comprising of HoD as Chairman, Guide and Senior faculty of the department.

3. **Project Evaluation:** Evaluation shall be taken up at the end of 4th semester. Project work evaluation and Viva-Voce examination shall be conducted
    a. Internal Examiner shall carry out the evaluation for 100 marks.
    b. External Examiner shall carry out the evaluation for 100 marks.
    c .The average of marks allotted by the internal and external examiner shall be the final marks of the project evaluation.
    d. Viva-Voce examination of Project work shall be conducted jointly by Internal and External examiner for 100 marks.

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M.Tech in Signal Processing (ESP)
Choice Based Credit System (CBCS)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination					Credits
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks		
1	PCC	18ELD11	Advanced Engineering Mathematics	04	--	03	40	60	100		4
2	PCC	18ECS12	Advanced Digital Signal Processing	04	--	03	40	60	100		4
3	PCC	18EVE13	Advanced Embedded Systems	04	--	03	40	60	100		4
4	PCC	18ESP14	Multirate Systems and Filter Banks	04	--	03	40	60	100		4
5	PEC	18ESP15	Digital Compression	04	--	03	40	60	100		4
6	PCC	18ESPL16	Advanced Digital Signal Processing Lab	-	04	03	40	60	100		2
7	PCC	18RMI17	Research Methodology and IPR	02	--	03	40	60	100		2
			TOTAL	22	04	21	280	420	700		24

Note: PCC: Professional core, PEC: Professional Elective.

Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination will be conducted during III semester and prescribed credit shall be included in the III semester. 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 as failed and have to complete during subsequent University examination after satisfying the internship requirements.

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M.Tech in Signal Processing (ESP)
Choice Based Credit System (CBCS)

II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				
---	---	---	---	Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18ESP21	Image Processing and Machine Vision	04	--	03	40	60	100	4
2	PCC	18ESP22	DSP System Design	04	--	03	40	60	100	4
3	PCC	18ESP23	Biomedical Signal Processing	04	--	03	40	60	100	4
4	PEC	18XXX24X	Professional elective 1	04	--	03	40	60	100	4
5	PEC	18XXX25X	Professional elective 2	04	--	03	40	60	100	4
6	PCC	18ESPL26	Image Processing Lab	--	04	03	40	60	100	2
7	PCC	18ESP27	Technical Seminar	--	02	--	100	--	100	2
			TOTAL	20	06	18	340	360	700	24
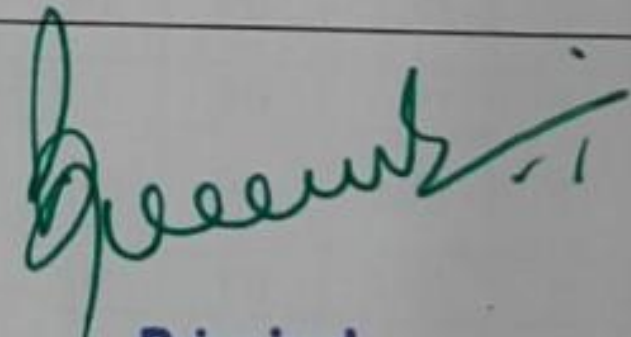
Note: PCC: Professional core, PEC: Professional Elective

Professional Elective 1		Professional Elective 2	
Course Code Under : 18xxx24x	Course Title	Course Code Under : 18xxx25x	Course Title
18ECS241	Wireless Sensor Networks	18ESP251	Channel Coding
18ELD242	Reconfigurable Computing	18ESP252	Statistical Signal Processing
18ESP243	Detection and Estimation	18ELD253	Micro Electro Mechanical Systems

Note:

1.Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide in any and a senior faculty of the department. Participation in seminar by all postgraduate students of the same and other semesters of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.

2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination will be conducted during III semester and prescribed credit shall be included in the III semester. 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 as failed and have to complete during subsequent University examination after satisfying the internship requirements.
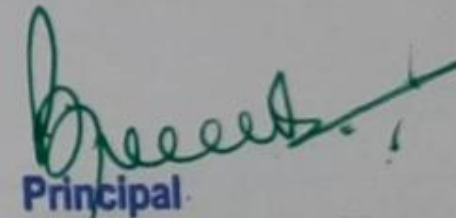
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination – 2018-19
M.Tech in Signal Processing (ESP)
Choice Based Credit System (CBCS)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18ESP31	Adaptive Signal Processing	04	--	03	40	60	100	4
2	PEC	18XXX32X	Professional elective -3	04	--	03	40	60	100	4
3	PEC	18XXX33X	Professional elective -4	04	--	03	40	60	100	4
4	Proj	18ESP34	Evaluation of Project phase -1	--	02	--	100	--	100	2
5	INT	18ESP35	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)		03	40	60	100	6
			TOTAL	12	02	12	260	240	500	20
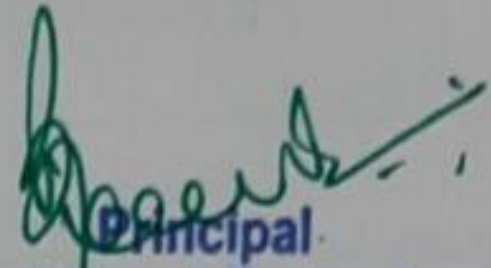
Note: PCC: Professional core, PEC: Professional Elective, Proj: Project, INT: Internship,

Professional Elective 3		Professional Elective 4	
Course Code Under : 18xxx32x	Course Title	Course Code Under : 18xxx33x	Course Title
18ESP321	Speech and Audio Processing	18ESP331	VLSI Design for Signal Processing
18ESP322	Array Signal Processing	18ESP332	Pattern Recognition & Machine Learning
18ESP323	Communication System Design using DSP Algorithm	18ECS333	IoT
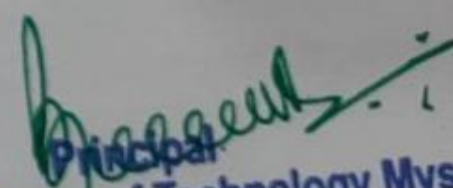
Note:

1. Project Phase-1: Students in consultation with the guide/co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project document, and present a seminar.
CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25.
SEE (University examination) shall be as per the University norms.

2. Internship: Those, who have not pursued /completed the internship shall be declared as failed and have to complete during subsequent University examinations after satisfying the internship requirements.
Internship SEE (University examination) shall be as per the University norms.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination – 2018-19
M.Tech in Signal Processing (ESP)
Choice Based Credit System (CBCS)

IV SEMESTER

| SL. No | Course | Course Code | Course Title | Teaching Hours /Week | | Examination | | | | | |
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks Viva voce	Total Marks	Credits
1	Proj	18ESP41	Project work phase -2	--	04	03	40	60	100	18
			TOTAL	--	04	03	40	60	100	18

Note: Proj: Project.

Note:

1. Project Phase-2:

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.

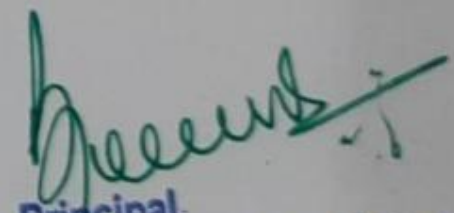Principal
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

Programme: M.TECH IN SIGNAL PROCESSING (ESP)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20ELD11	Advanced Engineering Mathematics	04	--	03	40	60	100	4
2	PCC	20ECS12	Advanced Digital Signal Processing	04	--	03	40	60	100	4
3	PCC	20EVE13	Advanced Embedded System	04	--	03	40	60	100	4
4	PCC	20ESP14	Multirate Systems and Filter Banks	04	--	03	40	60	100	4
5	PCC	20ESP15	Digital Compression	04	--	03	40	60	100	4
6	PCC	20ESPL16	Advanced Digital Signal Processing Lab	-	04	03	40	60	100	2
7	PCC	20RMI17	Research Methodology and IPR	02	--	03	40	60	100	2
			TOTAL	22	04	21	280	420	700	24

Note: PCC: Professional core.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II

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semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted for the same semester. 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 as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

Note: (i) Four credit courses are designed for 50 hours Teaching – Learning process.

(ii) Three credit courses are designed for 40 hours Teaching – Learning process.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

Programme: M.TECH IN SIGNAL PROCESSING (ESP)

II SEMESTER

Sl. No	Course	Course Code	Course Title	Theory	Practical/ Field work/ Assignment/ Project	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
				Teaching Hours /Week		Examination				
1	PCC	20ESP21	Image Processing and Machine Vision	04	--	03	40	60	100	4
2	PCC	20ESP22	DSP System Design	04	--	03	40	60	100	4
3	PCC	20ECS23	Error Control Coding	04	--	03	40	60	100	4
4	PEC	20XXX24X	Professional elective 1	04	--	03	40	60	100	4
5	PEC	20XXX25X	Professional elective 2	04	--	03	40	60	100	4
6	PCC	20ESPL26	Image Processing Lab	--	04	03	40	60	100	2
7	PCC	20ESP27	Technical Seminar	--	02	--	100	--	100	2
			TOTAL	20	06	20	340	360	700	24

Note: PCC: Professional core, PEC: Professional Elective.

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Professional Elective 1		Professional Elective 2	
Course Code under 20XXX24X	Course title	Course Code under 20XXX25X	Course title
20ECS241	Wireless Sensor Networks	20ESP251	Biomedical Signal Processing
20EVE242	Nanoelectronics	20ECS252	Statistical Signal Processing
20ECS243	Cryptography and Network Security (20EVE334)	20ELD253	Micro Electro Mechanical Systems
20ELD244	Reconfigurable Computing	20ESP254	Detection and Estimation

Note:

1. Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the same and other semesters of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.

2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted in the same semester. 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 as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)
Programme: M.TECH IN SIGNAL PROCESSING (ESP)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20ESP31	Adaptive Signal Processing	04	--	03	40	60	100	4
2	PEC	20XXX32X	Professional elective 3	03	--	03	40	60	100	3
3	PEC	20XXX33X	Professional elective 4	03	--	03	40	60	100	3
4	PROJ	20ESP34	Project Work phase -1	--	02	--	100	--	100	2
5	PROJ	20ESP35	Mini-Project	--	02	--	100	--	100	2
6	INT	20ESPI36	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)		03	40	60	100	6
		TOTAL		10	04	12	360	240	600	20

Note: PCC: Professional core, PEC: Professional Elective. PROJ-Project, INT-Internship

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Professional elective 3		Professional elective 4	
Course Code under 20XXX32X	Course title	Course Code under 20XXX33X	Course title
20ESP321	Array Signal Processing	20EVE331	VLSI Design for Signal Processing
20EIE322	Medical Imaging	20ESP332	Pattern Recognition & Machine Learning
20ELD323	Business Intelligence and its Applications	20ECS333	Internet of Things
20ESP324	Speech and Audio Processing	20ESP334	Communication System Design using DSP Algorithms

Note:

1. **Project Work Phase-1:** Students in consultation with the guide & co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project phase-I report, and make a project presentation.

   CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25.

   SEE (University examination) shall be as per the University norms.

2. **Mini-Project:** Each student shall involve in carrying out the Mini-project work in constant consultation with internal guide, prepare the project report as per the norms avoiding plagiarism. A mini project is an assignment that you try to complete at the end of semester to strengthen the understanding of his/her fundamentals through effective application of theoretical concepts.

3. **Internship:** Those, who have not pursued /completed the internship shall be declared as fail in internship

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course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

SCHEME OF TEACHING AND EXAMINATION FOR M.TECH. in Thermal Engineering/Thermal Power Engineering

CHOICE BASED CREDIT SYSYTEM (CBSC)

I SEMESTER

Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Marks	CREDITS
		Lecture	Practical / Field Work / Assignmen		I.A.	Exam		
16MTP11	Applied Mathematics	4	-	3	20	80	100	4
16MTP12	Finite Element Method	4	-	3	20	80	100	4
16MTP13	Advanced Fluid Mechanics	4	-	3	20	80	100	4
16MTP14	Thermodynamics &Combustion Engineering	4	-	3	20	80	100	4
16MTP15X	Elective – I	4	-	3	20	80	100	4
16MTP16	Thermal Engineering measurement - Lab 1	--	3	3	20	80	100	2
16MTP/MTH 17	SEMINAR	--	-	--	100	--	100	1
	Total	20	3	18	220	480	700	23

Elective – I

16MTP 151	Non Conventional Energy System	14 MTP 153	Energy Conservation and Management
16MTP 152	Nuclear Energy Conversion	14MTP 154	Refrigeration and Air Conditioning

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

SCHEME OF TEACHING AND EXAMINATION FOR M.TECH. in Thermal Engineering/Thermal Power Engineering

CHOICE BASED CREDIT SYSYTEM (CBSC)

II SEMESTER

Subject Code	Name of the Subject	Teaching hours/week		Duration of Exam in Hours	Marks for		Total Mar	CREDITS
		Lecture	Practical / Field Work / Assignment		I.A.	Exam		
16MTP21	Advanced Heat Transfer	4	-	3	20	80	100	4
16MTP22	Steam &Gas Turbines	4	-	3	20	80	100	4
16MTP23	Advanced Power Plant Cycles	4	-	3	20	80	100	4
16MTP24	Theory of 1C Engines	4	-	3	20	80	100	4
16MTP25X	Elective – II	4	-	3	20	80	100	4
16MTP26	Simulation Laboratory Projects on Thermal Engineering - Lab 2	--	3	3	20	80	100	2
16MTP/M TH27	SEMINAR	--	-	--	100	--	100	1
	**PROJECT WORK PHASE-I COMMENCEMENT(6 WEEKS DURATION)	--	--	--	--	--	--	--
	Total	20	3	18	220	480	700	23

Elective – II

16MTP251	Thermal Power Station – 1	16MTP253	Modeling and Simulation of Thermal Systems
16MTP252	Alternate Fuels for 1C Engines	16MTP254	Computational Methods in Heat Transfer &Fluid Flow

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

SCHEME OF TEACHING AND EXAMINATION FOR **M.TECH. in Thermal Engineering/Thermal Power Engineering**

CHOICE BASED CREDIT SYSYTEM (CBSC)

III SEMESTER

| Subject Code | Title | Teaching hours/week | | Examination | | | | |
		Theory	Practical / Field Work / Assignment	Duration	I.A. Marks	Theory / Practical Marks	Total Marks	CREDITS
16MTP31	Seminar/ Presentation on Internship (After 8 weeks from the date of commencement)	-	-	-	25	-	25	
16 MTP32	Report on Internship	-	-	-	25	-	25	
16 MTP 33	Evaluation and Viva-Voce of Internship	-	-	-	-	50	50	20
16 MTP34	Project Work Phase-1	-	-	-	50	-	50	1
	Total	-	-	-	100	50	150	21

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
SCHEME OF TEACHING AND EXAMINATION FOR M.TECH. in Thermal Engineering/Thermal Power Engineering
CHOICE BASED CREDIT SYSYTEM (CBSC)

VI SEMESTER

Subject Code	Title	Teaching hours/week		Examination Duration			Total Marks	CREDITS
		Theory	Practical / Field Work /	Duration in Hrs	I.A. Marks	Theory / Practical Marks		
16MTP41	Design of heat Transfer Equipments for thermal power plant	4	2	3	20	80	100	4
	ELECTIVE-III	4	2	3	20	80	100	3
16 MTP 43	Evaluation of Project Work Phase-II	-	-	-	50	-	50	3
16 MTP 44	Evaluation of Project Work and Viva-Voce	-	-	3	-	100+100	200	10
	Total	-	4	9	90	360	450	20

ELECTIVE-III

16MTP421	Convective Heat and Mass Transfer	16MTP423	Design & Analysis of Thermal Systems
16MTP422	Engine Flow & Combustion	16MTP424	Experimental Methods in Thermal Power Engineering

Note:

1. **Project Phase-2:** 16-week duration during 4th semester. Evaluation shall be done by the committee constituted comprising of HoD as Chairman, Guide and Senior faculty of the department.

2. **Project Evaluation:** Evaluation shall be taken up at the end of 4th semester. Project work evaluation and Viva-Voce examination shall conducted

3. **Project evaluation:**

    a. Internal Examiner shall carry out the evaluation for 100 marks.
    b. External Examiner shall carry out the evaluation for 100 marks.
    c .The average of marks allotted by the internal and external examiner shall be the final marks of the project evaluation.

    c.   Viva-Voce examination of Project work shall be conducted jointly by Internal and External examiner for 100 marks.

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Scheme of Teaching and Examination – 2018-19
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

I SEMESTER

Sl. No	Course	Course Code	Title	Teaching Hours /Week Theory	Field work/ Assignment	Duration in hours	CIE Marks	Marks	Total Marks	Credits
1	PCC	18MTP11	Mathematics	04	--	03	40	60	100	4
2	PCC	18MTP12	Finite Element Method	04	--	03	40	60	100	4
3	PCC	18MTP13	Advanced Fluid Mechanics	04	--	03	40	60	100	4
4	PCC	18MTP14	Thermodynamics &Combustion Engineering	04	--	03	40	60	100	4
5	PEC	18MTP15	Energy Conservation and Management	04	--	03	40	60	100	4
6	PCC	18MTPL16	Thermal Engineering measurement - Lab 1	-	04	03	40	60	100	2
7	PCC	18RMI17	Research Methodology and IPR	02	--	03	40	60	100	2
			TOTAL	22	04	21	280	420	700	24

Note: PCC: Professional core, PEC: Professional Elective.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted forthe same semester. 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 as failed and have to complete during the subsequent University examination after satisfying the internship requirements.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination – 2018-19
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

II SEMESTER

Sl. No	Course	Course Code	Title	Teaching Hours /Week Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	18MTP21	Advanced Heat Transfer	04	--	03	40	60	100	4
2	PCC	18MTP22	Steam &Gas Turbines	04	--	03	40	60	100	4
3	PCC	18MTP23	Refrigeration and Air Conditioning	04	--	03	40	60	100	4
4	PEC	18MTP24X	Professional elective 1	04	--	03	40	60	100	4
5	PEC	18MTP25X	Professional elective 2	04	--	03	40	60	100	4
6	PCC	18MTPL26	Simulation Laboratory Projects on Thermal Engineering - Lab 2	--	04	03	40	60	100	2
7	PCC	18MTP27	Technical Seminar	--	02	-	100	-	100	2
			TOTAL	20	06	18	340	360	700	24

Note: PCC: Professional core, PEC: Professional Elective, OEC: Open Elective, Aud: Audit Course
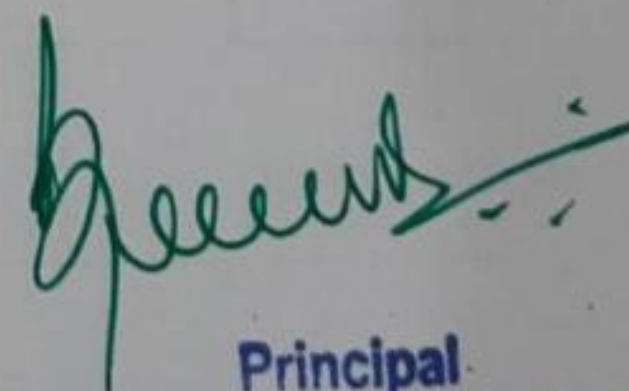
Professional Elective 1		Professional Elective 2	
Course Code under 18MTP24X	Course title	Course Code under 18MTP25X	Course title
18MTP241	Advanced Power Plant Cycles	18MTP251	Theory of 1C Engines
18MTP242	Thermal Power Station – 1	18MTP252	Modeling and Simulation of Thermal Systems
18MTP243	Alternate Fuels for 1C Engines	18MTP253	Computational Methods in Heat Transfer &Fluid Flow

Note:

1. **Technical Seminar:** CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the same and other semesters of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.

2. **Internship:** All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted in the same semester. 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 as failed and have to complete during the subsequent University examination after satisfying the internship requirements.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination – 2018-19
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	work / Assignmen	ion in hours	Marks	s	Total Marks		
1	PCC	18MTP31	Design of heat Transfer Equipments for thermal power plant	04	--	03	40	60	100		4
2	PEC	18MTP32X	Professional elective-3	04	--	03	40	60	100		4
3	PEC	18MTP33X	Professional elective- 4	04	--	03	40	60	100		4
4	Proj	18MTP34	Evaluation of Project phase -1	--	02	--	100	--	100		2
5	INT	18MTPI35	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)		03	40	60	100		6
			TOTAL	12	02	12	260	240	500		20

Note: PCC: Professional core, PEC: Professional Elective.

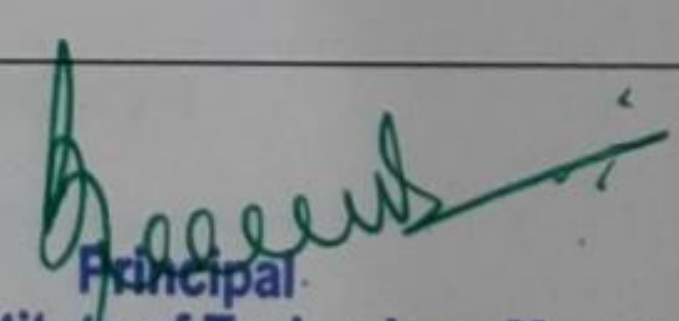| Professional elective 3		Professional elective 4	
Course Code under 18XXX32X	Course title	Course Code under 18XXX33X	Course title
18MTP321	Convective Heat and Mass Transfer	18MTP331	Experimental Methods in Thermal Power Engineering
18MTP322	Engine Flow & Combustion	18MTP332	Biomass Conversion and Technologies
18MTP323	Design & Analysis of Thermal Systems	18MTP333	CAD for thermal engineering

Note:

1. Project Phase-1:Students in consultation with the guide/co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project document, and present a seminar.
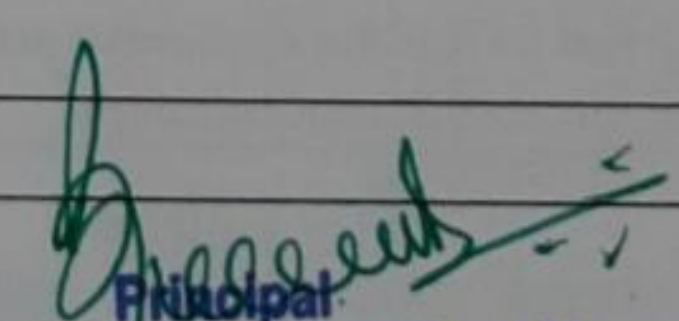CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department.
The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25.
SEE (University examination) shall be as per the University norms.

2. Internship: Those, who have not pursued /completed the internship shall be declared as failed and have to complete during subsequent University examinations after satisfying the internship requirements.
Internship SEE (University examination) shall be as per the University norms.

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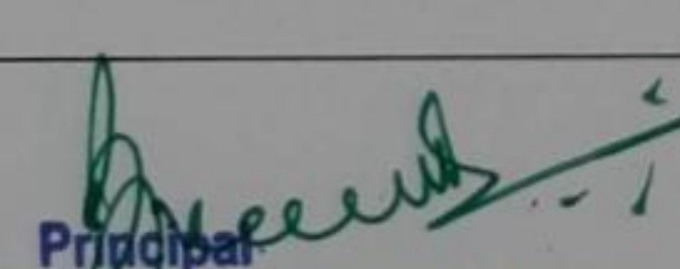Srirangapatna Taluk
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Scheme of Teaching and Examination – 2018-19
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

IV SEMESTER

Sl. No	Course	Course Code	Title	Theory	Field work/ Assignmen	Duration in hours	CIE Marks	SEE Marks	Viva voce	Total Marks	Credits
				Teaching Hours /Week		Examination					
1	Proj	18MTP41	Project work phase -2	--	04	03	40	60		100	20
			TOTAL	--	04	03	40	60		100	20

Note: PC: Proj: Project.

Note:

1. Project Phase-2:

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a Senior faculty of the department.
The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.

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Scheme of Teaching and Examinations – 2020 - 21
M.Tech in Thermal Engineering/Thermal Power Engineering (MTP)
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Theory (L)	Practical (P)	Skill Development Activities (SDA)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20MTP11	Applied Mathematics	03	--	02	03	40	60	100	4
2	PCC	20MTP12	Finite Element Method in Heat Transfer	03	--	02	03	40	60	100	4
3	PCC	20 MTP13	Advanced Fluid Mechanics	03	--	02	03	40	60	100	4
4	PCC	20MTP14	Combustion Thermodynamics	03	--	02	03	40	60	100	4
5	PCC	20 MTP15	Advanced Power Plant Cycles	03	--	02	03	40	60	100	4
6	PCC	20 MTPL16	Thermal Engineering Measurement Laboratory	--	04	--	03	40	60	100	2
7	PCC	20RMI17	Research Methodology and IPR	01	--	02	03	40	60	100	2
			TOTAL	17	04	12	21	280	420	700	24

Note: PCC: Professional core.

Skill development activities:
Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills.
The students should interact with industry (small, medium and large), understand their problems or foresee what can be undertaken for study in the form of research/ testing / projects, and for creative and innovative methods to solve the identified problem.
The students shall
(1) Gain confidence in modelling of systems and algorithms.
(2) Work on different software/s (tools) to Simulate, analyse and authenticate the output to interpret and conclude. Operate the simulated system under changed parameter conditions to study the system with respect to thermal study, transient and steady state operations, etc.
(3) Handle advanced instruments to enhance technical talent.
(4) Involve in case studies and field visits/ field work.
(5) Accustom with the use of standards/codes etc., to narrow the gap between academia and industry.
All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted for the same semester. 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 as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

Note: (i) Four credit courses are designed for 50 hours Teaching – Learning process.
(ii) Three credit courses are designed for 40 hours Teaching – Learning process.
(iii) Two credit courses are designed for 25 hours Teaching – Learning process.

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II SEMESTER

Sl. No	Course	Course Code	Course Title	Theory (L)	Practical/ Seminar (P)	Skill Development Activities (SDA)	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20 MTP21	Advanced Heat Transfer	03	--	02	03	40	60	100	4
2	PCC	20 MTP22	Steam and Gas Turbines	03	--	02	03	40	60	100	4
3	PCC	20MTP23	Refrigeration and Air Conditioning	03	--	02	03	40	60	100	4
4	PEC	20MTP24X	Professional Elective- 1	04	--	--	03	40	60	100	4
5	PEC	20MTP25X	Professional Elective- 2	04	--	--	03	40	60	100	4
6	PCC	20 MTPL26	Simulation Laboratory	--	04	--	03	40	60	100	2
7	PCC	20MTP27	Technical Seminar	--	02	--	--	100	--	100	2
			TOTAL	17	06	06	18	340	360	700	24

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective 1		Professional Elective 2	
Course Code under 20XXX24X	**Course title**	**Course Code under 20XXX25X**	**Course title**
20MTP241	Energy Conservation and Management	20MTP251	Solar Thermal Technologies and applications
20MTP242	Thermal Power Station	20MTP252	Modelling and Simulation of Thermal Systems
20 MTP243	Nuclear Engineering in Power Generation	20MTP253	Computational Methods in Heat Transfer and Fluid Flow
20MTP244	Cryogenics	20MTP254	Jet Propulsion and Rocketry

Note:
1. Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the programme shall be mandatory.
The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25.
2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. 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 as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week Theory (L)	Teaching Hours /Week Practical/ Mini–Project/ Internship (P)	Teaching Hours /Week Skill Development activities (SDA)	Examination Duration in hours	Examination CIE Marks	Examination SEE Marks	Examination Total Marks	Credits
1	PCC	20MTP31	Design of Heat Transfer Equipment for Thermal Power Plant	03	--	02	03	40	60	100	4
2	PEC	20MTP32X	Professional elective -3	03	--	--	03	40	60	100	3
3	PEC	20MTP33X	Professional elective -4	03	--	--	03	40	60	100	3
4	Project	20MTP34	Project Work phase -1	--	02	--	--	100	--	100	2
5	PCC	20MTP35	Mini-Project	--	02	--	--	100	--	100	2
6	Internship	20MTPI36	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)			03	40	60	100	6
		TOTAL		09	04	02	12	360	240	600	20

Note: PCC: Professional core, PEC: Professional Elective.

Professional elective 3		Professional elective 4	
Course Code under	Course title	Course Code under	Course title
20MTP321	Convective Heat and Mass Transfer	20MTP331	Experimental Methods in Thermal Power Engineering
20MTP322	Theory of IC Engines	20MTP332	Non-conventional Energy Resources
20MTP323	Design and Analysis of Thermal Systems	20MTP333	Gas Dynamics
20MTP324	Phase Change Phenomena in Fluids	20MTP334	Thermal Storage System

Note:
1. **Project Work Phase-1:**Students in consultation with the guide/co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project document, and present a seminar.
CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and performance in Question and Answer session in the ratio 50:25:25.
SEE (University examination) shall be as per the University norms.
2. **Internship:** Those, who have not pursued /completed the internship shall be declared as fail in internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms.

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IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week Theory L	Teaching Hours /Week Practical/ Field work P	Duration in hours	CIE Marks	SEE Marks Viva voce	Total Marks	Credits
1	Project	20MTP41	Project work phase -2	--	04	03	40	60	100	20
			TOTAL	--	04	03	40	60	100	20

Note:

1. Project Work Phase-2:

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and performance in Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.

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