Basaveshwar Engineering College (Autonomous), Bagalkot
Department of Electrical and Electronics Engineering

2021-22 (admitted batch), 2022-23 (sem 3&4), 2023-24 (sem 5&6), 2024-25 (sem 7&8).

Scheme of Teaching and Evaluation for B.E Electrical and Electronics Engineering.

Total Credits for BE=160 (as per VTU/AICTE); Min Cr/sem=16; Max Cr/sem=26; Ave=22.

Table-1: Breakdown of Credits (NEP 2020) suggested by the VTU Belagavi/AICTE New Delhi

Sl.	Course Category	Proposed by		
		AICTE	VTU	BEC (A)
1.	BSC: Basic Science Courses (Physics, Chemistry and Mathematics)	25	23	23
2.	ESC: Engineering Science Courses (Basic Elect/electronics/computer/mechanics/workshop/drawing/ etc.)	24	20	19
3.	HSMC: HSS, Management courses, Kannada, English, Const., EV (VTU and BEC: 4 English, 1 Kannada, 1 Const., 1 EV, 3 HRM left to dept)	12	10	10
4.	PCC: Professional Core Courses (Fundamental subjects of individual disciplines)	48	43	49
5.	PEC: Professional Elective Courses relevant to the branch with at least one course either fully or partially supported by industry.	18	14	12
6.	OEC: Open Electives Courses/Subjects from other technical/arts/commerce & AEC: (1 Scientific foundations of Health, 2 Innovation and design 2 SS, 2 Biology or RM, 3 MOOCS, 3 Dept. specific)	18	14	9+11 = 20
7.	Mini (2) and Major projects (8)/ seminar (1)/ summer internships (2+3) and Research/Industrial Internships (10)	15	32	26
8.	Mandatory Credit course: UHV :1, Non-credit courses: Yoga, NSS, Bridge course maths 1 and 2 (lateral Entry)	No Credits	04	01
Total		160	160	160

Table-2: Semester wise Breakdown of Credits

Sem	BSC	ESC	HSMC	AEC	OEC	PCC	PEC	Proj.	INT	Seminar	UHV	Total
I	7	10	2	1 (common)								20
II	7	9	2	2 (common)								20
III	3		1	1 (dept.)		14					1	20
IV	3		1			15			2			21
V	3		1	2(SS)	3	11			3			23
VI					6	9	3	2				20
VII			3				9	8				20
VIII				3 (MOOCS) + 2 (RM-dept.)					10	1		16
Tot.	23	19	10	11	09	49	12	10	15	01	01	160*

Semester-I Physics Group AY 2021-22 (Common to branches EE, CS, IS & AI)

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	BSC	21UMA101C	Engineering Mathematics – I	3	3	0	0	50	50	100
2.	BSC	21UPH102C	Engineering Physics	3	3	0	0	50	50	100
3.	ESC	21UCS103C	Principles of Programming with C	3	3	0	0	50	50	100
4.	ESC	21UEC104C	Basic Electronics Engineering	3	2	2	0	50	50	100
5.	ESC	21UEE105C	Basic Electrical Engineering	3	3	0	0	50	50	100
6.	HSMC	21UHS106C	Communicative English	2	2	0	0	50	50	100
7.	AEC	21UHS107C	Scientific Foundation of Health	1	2	0	0	50	50	100
8.	BSC	21UPH108L	Engineering Physics Laboratory	1	0	0	3	50	50	100
9.	ESC	21UCS109L	Programming practice using C Laboratory	1	0	0	2	50	50	100
			Total	20	18	2	5	450	450	900

Semester-II Chemistry Group AY 2021-22 (Common to branches EE, CS, IS & AI)

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1	BSC	21UMA201C	Engineering Mathematics – II	3	3	0	0	50	50	100
2	BSC	21UCH210C	Engineering Chemistry	3	3	0	0	50	50	100
3	ESC	21UCV211C	Engineering Mechanics	3	3	0	0	50	50	100
4	ESC	21UME212C	Elements of Mechanical Engineering	3	2	2	0	50	50	100
5	ESC	21UME213L	Computer Aided Engineering Drawing	3	2	0	2	50	50	100
6	BSC	21UCH214L	Engineering Chemistry Laboratory	1	0	0	2	50	50	100
7	HSMC	21UHS206C	Professional writing skills in English	2	2	0	0	50	50	100
8	AEC	21UHS215C	Innovation and Design Thinking	2	1	0	2	50	50	100
			Total	20	16	2	6	400	400	800

Semester-3 CAY 2022-23 (160 Credits 2021-22 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	BSC	21UMA303C	Mathematics –III*	3	3	0	0	50	50	100
2.	PCC	21UEE305C	Network Analysis	3	2	2	0	50	50	100
3.	PCC	21UEE306C	Electronic Circuits	3	3	0	0	50	50	100
4.	PCC	21UEE307C	Electrical Machines – I	3	3	0	0	50	50	100
5.	PCC	21UEE308C	Electrical & Electronic Measurement	3	2	0	2	50	50	100
6.	PCC	21UEE310L	Electronic Circuits Laboratory	1	0	0	2	50	50	100
7.	PCC	21UEE311L	Electrical Machines – I Laboratory	1	0	0	2	50	50	100
8.	AEC	21UEE315C	Agri-Tech	1	1	0	0	50	50	100
9.	HSMC	21UHS321C	Constitution of India	1	1	0	0	50	50	100
10.	UHV	21UHS324C	Universal Human Values – II	1	1	0	0	50	50	100
11.	BSC	21UMA300C	Bridge Course Mathematics-I**	0	3	0	0	50	50	100
			Total	20	16	2	6	500	500	1000

Semester-4 CAY 2022-23 (160 Credits 2021-22 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	BSC	21UMA403C	Mathematics – IV*	3	3	0	0	50	50	100
2.	PCC	21UEE405C	Power Systems – I	3	3	0	0	50	50	100
3.	PCC	21UEE406C	Logic Design	3	3	0	0	50	50	100
4.	PCC	21UEE407C	Electrical Machines – II	3	3	0	0	50	50	100
5.	PCC	21UEE408C	Control Systems	3	3	0	0	50	50	100
6.	PCC	21UEE410L	Power System – I Laboratory	1	0	0	2	50	50	100
7.	PCC	21UEE411L	Logic Design Laboratory	1	0	0	2	50	50	100
8.	PCC	21UEE412L	Electrical Machines – II Laboratory	1	0	0	2	50	50	100
9	INT	21UEE415I	Summer Internship – I	2	0	0	4	50	50	100
10.	HSMC	21UHS422C	Saamskrutika Kannada **	1	2	0	0	50	50	100
			OR							
10.	HSMC	21UHS423C	Balake Kannada **	1	2	0	0	50	50	100
11.	BSC	21UMA400C	Bridge Course Mathematics-II***	0	3	0	0	50	50	100
			Total	21	16	0	10	500	500	1000

Semester-5 **CAY 2023-24 (160 Credits 2021-22 admitted batch)**

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	BSC	21UMA503C	Mathematics – V*	3	2	2	0	50	50	100
2.	PCC	21UEE505C	Power System – II	3	3	0	0	50	50	100
3.	PCC	21UEE506C	Power Electronics	3	3	0	0	50	50	100
4.	PCC	21UEE507C	Digital Signal Processing	3	3	0	0	50	50	100
5.	PCC	21UEE510L	Power Electronics Laboratory	1	0	0	2	50	50	100
6.	PCC	21UEE511L	Auto CAD Electrical Laboratory	1	0	0	2	50	50	100
7.	INT	21UEE515I	Summer Internship – II	3	0	0	6	70	30	100
8.	OEC	21UEE516N	Open Elective Course – I	3	3	0	0	50	50	100
9.	AEC	21UHS521C	Quantitative Aptitude and Professional Skills	2	2	0	0	50	50	100
10.	HSMC	21UBT521C	Environmental Studies	1	1	0	0	50	50	100
			Total	23	17	2	10	520	480	1000

Semester-6 **CAY 2023-24 (160 Credits 2021-22 admitted batch)**

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	PCC	21UEE605C	Power System – III	3	3	0	0	50	50	100
2.	PCC	21UEE606C	Embedded Systems	3	3	0	0	50	50	100
3.	PCC	21UEE610L	Power System – II Laboratory	1	0	0	2	50	50	100
4.	PCC	21UEE611L	Embedded Systems Laboratory	1	0	0	2	50	50	100
5.	PCC	21UEE612L	Advanced Programming Laboratory	1	0	0	2	50	50	100
6.	PEC	21UEE6xxE	Professional Elective Course – I	3	3	0	0	50	50	100
7,	OEC	21UEE616N	Open Elective Course – II	3	3	0	0	50	50	100
8.	OEC	21UEE617N	Open Elective Course – III	3	3	0	0	50	50	100
9.	Proj	21UEE618P	Mini Project	2	0	0	4	50	50	100
			Total	20	15	0	10	450	450	900

Semester-7[#] **CAY 2024-25 (160 Credits 2021-22 admitted batch)**

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	PEC	21UEE7xxE	Professional Elective Course-II	3	3	0	0	50	50	100
2.	PEC	21UEE7xxE	Professional Elective Course-III	3	3	0	0	50	50	100
3.	PEC	21UEE7xxE	Professional Elective Course-IV	3	3	0	0	50	50	100
4.	Proj	21UEE718P	Project Work	8	0	0	16	50	50	100
5.	HSMC	21UHS721C	Intellectual Property Rights	3	3	0	0	50	50	100
			Total	20	12	0	16	250	250	500

Semester-8[#] **CAY 2024-25 (160 Credits 2021-22 admitted batch)**

Sl.	Category	Subject Code	Subject Title	Cr	Hrs/Week			Exam. Marks		
					L	T	P	CIE	SEE	Total
1.	INT	21UEE815C	Research/Industrial Internship	10	0	0	20	100	--	100
2.	Seminar	21UEE816C	Technical Seminar	1	0	0	2	100	--	100
4.	AEC	21UEE817C	Research Methodology (online)	2	2	0	0	50	50	100
3.	AEC	21UEE8xxC	MOOCs*	3	0	0	0			
			Total	16	2	0	22	250	50	300

[#] Semester 7 & 8 are flippable (swapped)

Subject codes for Professional Elective Courses shall be given at the time of registration.

Criteria for Bachelor Degree: A student has to earn a minimum of 160 credits for award of Bachelor of Engineering (B.E) at the end of fourth year.

Criteria for Bachelor Degree (Honors): A student has to earn a minimum of 178 [160 + 18 (online)] credits for award of Bachelor of Engineering (B.E honors) at the end of fourth year.

Criteria for Bachelor Degree (with minor degree): A student has to earn a minimum of 178 [160 + 18* (blended)] credits for award of Bachelor of Engineering (B.E) with major and minor streams at the end of fourth year.

Additional Information:

Semester-3

*Mathematics –III	:	• Introduction to Signals & Systems • Linear time invariant systems • ZT: Z Transform for Electrical signals • Fourier Analysis of periodic and aperiodic signals
**Bridge Course Mathematics-I	:	is a mandatory subject only for students admitted to Semester-3 through lateral entry scheme (Diploma quota). Passing the subject is compulsory, however marks will not be considered for awarding grade/class. A PP/NP grade will be awarded for passing/not passing the subject.

Semester-4

*Mathematics –III	:	• Fourier series and transform for discrete time signals • Root finding interpolation • Numerical Techniques for Solving Differential Equations. Curve fitting • Probability and Statistics
**Saamskrutika Kannada **Balake Kannada	:	Is for students who speak read and write kannada Is for non-kannada speaking reading and writing
***Bridge Course Mathematics –II	:	is a mandatory subject only for students admitted to Semester-4 through lateral entry scheme (Diploma quota). Passing the subject is compulsory, however marks will not be considered for awarding grade /class. A PP/NP grade will be awarded for passing/not passing the subject.

Semester-5

*Mathematics –V	:	• Gauss Law, Vector operator, Divergence for Rectangular Coordinate systems • Electric Dipole • Biot Savart's Law, Ampere Circuital Law, Curl, Stoke's Theorem • Magnetization and Permeability

List of subjects for Open Elective Course – I			
1.	Renewable Energy Resources	2.	MATLAB for Engineers

Semester-6

List of subjects for Professional Elective Course – I (Sem-VI)			
1.	Electrical Machine Design	4.	Advanced Power Electronics
2.	Electrical Engineering Materials	5.	Reactive Power management
3.	Testing and Commissioning of Electrical Equipment	6.	SPV based Irrigation Systems

List of subjects for Open Elective Course II (Sem-VI)		List of subjects for Open Elective Course III (Sem-VI)	
1.	Electric Vehicle	1.	Energy Storage Systems
2.	Electrical Safety for Engineers	2.	Electric Power Utilization

Semester-7

List of subjects for Professional Elective Course – II (Sem-VII)		List of subjects for Professional Elective Course – III (Sem-VII)	
1.	Standards and Indian Electricity Act	1.	AI Applications to Power Systems
2.	Automotive Electronics	2.	Electric Vehicles
3.	Advances in Instrumentation	3.	Solar Photovoltaic System Design
4.	Power System Operation and Control	4.	Operation Research
5.	Energy Conservation, Audit and DSM	5.	Energy conservation in Industrial Systems
6.	Flexible AC Transmission Systems	6.	HVDC Transmission

List of subjects for Professional Elective Course – IV (Sem-VII)	
1.	Modern Control Theory
2.	Battery Management Systems
3.	Data Base management Systems
4.	Energy Efficient Motors
5.	Fundamentals of Wind Energy Conversion Systems
6.	Smart grids and Microgrids