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

2022-23 (admitted batch), 2023-24 (sem 3&4), 2024-25 (sem 5&6), 2025-26 (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	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 2022-23 (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 2022-23 (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	21UME214L	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 2023-24 (160 Credits 2022-23 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	21UEE324C	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 2023-24 (160 Credits 2022-23 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	21UHS400C	Bridge Course Mathematics-II***	0	3	0	0	50	50	100
			Total	21	16	0	12	500	500	1000

Semester-5   CAY 2024-25 (160 Credits 2022-23 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	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	50	50	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	500	500	1000

Semester-6   CAY 2024-25 (160 Credits 2022-23 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	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 2025-26 (160 Credits 2022-23 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	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 2025-26 (160 Credits 2022-23 admitted batch)

Sl.	Category	Subject Code	Subject Title	Cr	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**