

**SHARNBASVA UNIVERSITY, KALABURAGI**  
**Faculty of Engineering & Technology (Co-Edu.)**  
**Scheme of Teaching and Examination 2021-22**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2021-22)**

**Programme: B. Tech.: Energy Engineering**

**III SEMESTER**

Sl. No.	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	BSC/ASC	21MAT31	Engineering Mathematics-III	TD:Maths PSB:Maths	3	0	0	03	50	50	100	03
2	PCC	21EG32	Thermodynamics and Energy Conversion	TD:EG/ME PSB:EG/ME	3	1	0	03	50	50	100	04
3	PCC	21EG33	Mechanics of Materials	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
4	PCC	21EG34	Materials Science for Energy Engineering	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
5	PCC	21EG35	Fluid Mechanics	TD:EG/ME PSB:EG/ME	2	0	0	03	50	50	100	02
6	PCC LAB	21EGL36	Fluid Mechanics Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
7	PCC LAB	21EGL37	Energy Conversion Lab -1	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
8	PCC LAB	21EGL38	Material Science & Testing Lab-1	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
9	PROJ	21PROJ39	Project-III	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
10	HSS	21KANKK310 /21KANAK310	Kannada kali-3 Aaidakategalu	TD: Humanities PSB: Humanities	1	0	0	02	50	50	100	01
11	AEC	21AEC301	Ability Enhancement Course-III	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
Total					15	1	10	32	550	550	1100	21

ASC: Applied Science Course, PCC: Professional Core Course. PCC Lab: Professional Core Course laboratory ,ESC: Engineering Science Course, ETC: Emerging Technology Course , PLC: Programming Language Course. AEC: Ability Enhancement Course, HSS: Humanities and Social Science, PW: Project work

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

12	NCMC	21MATDIP31	Additional Mathematics - I	Mathematics	3	1		3	50	50	100	00
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### 3<sup>rd</sup> SEMESTER

#### Ability Enhancement Course-III

Sl No	21AEC310	Course Name
1	21AEC310	Workshop Practice on Refrigeration & Air Conditioning

- **22KANKK310: Kannada Kali-III** is for non-Kannada speaking, reading and writing students.
- **22KANAK310 :Ayda Kategalu** is for the students who speak, read and write Kannada.
- **Project (PW):** Based on the ability /abilities of the student/s and recommendations of the mentor, a single discipline or multidisciplinary mini project can be assigned to a group having not more than 4 students.

**AICTE Activity Points** to be earned by students admitted to B.Tech. programme ( For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every 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 Sharnbasva University. The Activity Points earned shall be reflected on the students eighth semester Grade card. The activities can be spread over the years, anytime during the semester weekends 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. Student shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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Faculty of Engineering & Technology (Co-Edu.)Scheme												
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Programme: B. Tech.: Energy Engineering												
IV SEMESTER												
Sl. No.	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	ASC/BSC	21MAT41	Engineering Mathematics-IV	TD:Maths PSB:Maths	3	0	0	03	50	50	100	03
2	PCC	21EG42	Electrical Machines	TD:EEE PSB:EEE	3	0	0	03	50	50	100	03
3	PCC	21EG43	Renewable EnergyTechnologies	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
4	PCC	21EG44	Power Electronics	TD:EEE/EC PSB:EEE/EC	3	0	0	03	50	50	100	03
5	PCC	21EG45	Introduction to Heat Transfer	TD:EG/ME PSB:EG/ME	2	1	0	03	50	50	100	03
6	PCC LAB	21EGL46	Heat Transfer Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
7	PCC LAB	21EGL47	Electrical Machines Lab -1	TD:EEE PSB:EEE	0	0	2	03	50	50	100	01
8	PCC LAB	21EGL48	Power Electronics Lab	TD:EEE/EC PSB:EEE/EC	0	0	2	03	50	50	100	01
9	PROJ	21PROJ49	Project-IV	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
10	HSS	21KANKK410/ 21KANMD410	Kannada Kali-IV/ Mahadasohigalu	TD: Humanities PSB: Humanities	1	0	0	03	50	50	100	01
11	AEC	21AEC401	Ability Enhancement Course-IV	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
Total					15	1	10	33	550	550	1100	21

**ASC:** Applied Science Course, **PCC:** Professional Core Course. **PCC Lab:** Professional Core Course laboratory, **ESC:** Engineering Science Course, **ETC:** Emerging Technology Course, **PLC:** Programming Language Course. **AEC:** Ability Enhancement Course, **HSS:** Humanities and Social Science, **PW:** Project work

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

12	NMC	21MATDIP41	Additional Mathematics - II	Mathematics	3	1		3	50	50	100	00
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\*EVERY STUDENT SHOULD UNDERGO MOOC SUBJECT ATLEAST ONCE, DURING THE ENTIRE COUSRE WITH CREDIT 4

## 4<sup>TH</sup> SEMESTER

### Ability Enhancement Course-IV

Sl No	21AEC401	Course Name
1	21AEC401	Computational Lab

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Faculty of Engineering & Technology (Co-Edu.)

Scheme of Teaching and Examination 2021-22

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

(Effective from the academic year 2021-22)

## Programme: B. Tech.: Energy Engineering

### V SEMESTER

Sl. No .	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	HSS	21HSM51	Engineering Economics	TD: Humanities PSB: Humanities	3	0	0	03	50	50	100	03
2	PCC	21EG52	Fluid Machinery	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
3	PCC	21EG53	Reaction Engineering & Combustion	TD:EG/ME PSB:EG/CHE	3	0	0	03	50	50	100	03
4	PEC	21EG54X	Professional Elective-1	TD:EG/ME PSB:EEG/ME	3	0	0	03	50	50	100	03
5	OEC	21EG55X	Open Elective -1	TD:EG/ME PSB:EG/ME	3	1	0	03	50	50	100	04
6	PCC	21EGL56	Energy Conversion Lab-2	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
7	PCC	21EGL57	Electrical Machines Lab -2	TD:EEG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
8	PEC	21EGL58	Fluid Machinery Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
9	PRJ	21PROJ59	Project-V	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
10	AEC	21AEC510	Ability Enhancement Course-V	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
Total					15	1	10	30	500	500	1000	21

PCC: Professional Core Course, PCC Lab: Professional Core Course laboratory, PEC: Professional Elective Course, PEC Lab: Professional Elective Course Lab, OEC: Open Elective Course, AEC: Ability Enhancement Course, HSS: Humanities and Social Science, PW: Project work

Project (PROJ): A batch of 4 to 5 students (Same branch or different branches) with a guide, may undertake one project (1 hour of theory/tutorial or two hours of practice /activities).

## 5<sup>TH</sup> SEMESTER

**Note: Energy Engineering Department students are not allowed to choose the parent department open elective subjects. Energy Engineering Department students have to choose Open elective courses from other departments.**

### **Professional Elective Courses -I (For EEG Students)**

Sl No	21EG54X	Course Name
1	21EG541	Operation Research
2	21EG542	MEMS- Micro Electro Mechanical System

### **Open Elective Courses -I (For Non EEG Students)**

Sl No	21EG55X	Course Name
1	21EG551	Energy & Environment
2	21EG552	Non-Conventional Energy Resources

### **Ability Enhancement Course-V**

Sl No	21AEC510	Course Name
1	21AEC510	Entrepreneurship & Development

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**(Effective from the academic year 2021-22)**

**Programme: B. Tech.: Energy Engineering**

**VI SEMESTER**

Sl. No.	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	21EG61	Electrochemistry	TD:EG/CHEM PSB: EG/CHEM	3	0	0	03	50	50	100	03
2	PCC	21EG62	Power Generation & system Planning	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
3	PCC	21EG63	Solar Energy Utilization	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
4	PEC	21EG64X	Professional Elective -2	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
5	OEC	21EG65X	Open Elective -2	TD:EG/ME PSB:EG/ME	3	1	0	03	50	50	100	04
6	PCC LAB	21EGL66	Solar Energy Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
7	PCC LAB	21EGL67	Manufacturing Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
8	PCC LAB	21EGL68	Virtual Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
9	PROJ	21PROJ69	Project-VI	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
10	AEC	21AEC610	Ability Enhancement Course-VI	TD:EG/ME PSB:EG/M0	0	0	2	03	50	50	100	01
Total					15	1	10	30	500	500	1000	21

Note: PCC-Professional Core Course, PEC-Professional Elective Course, OEC Open Elective Course, PW-Project Work, HSS-Humanity and Social Science, AEC- Ability Enhancement Course.

Project (PROJ): A batch of 4 to 5 students (Same branch or different branches) with a guide, may undertake one project (1 hour of theory/tutorial or two hours of practice /activities).

## 6<sup>TH</sup> SEMESTER

**Note:** Energy Engineering Department students are not allowed to choose the parent department open elective subjects. Energy Engineering Department students have to choose Open elective courses from other departments.

### Professional Elective Courses II (For EG Students)

Sl No	21EG64X	Course Name
1	21EG641	Instrumentation and Control
2	21EG642	Cryogenics

### Open Elective Courses -II (For Non EG Students)

Sl No	21EG65X	Course Name
1	21EG651	Optimization Techniques in Engineering
2	21EG652	Power Plant Engineering

### Ability Enhancement Course-VI

Sl No	21AEC610	Course Name
1	21AEC610	Information & Communication Technology (ICT)

**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. Student shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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**(Effective from the academic year 2021-22)**

**Programme: B. Tech, Energy Engineering**

**VII SEMESTER**

Sl. No.	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	21EG71	Python for Energy Engineering	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
2	PCC	21EG72	Wind Energy Utilization	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
3	PEC	21EG73X	Professional Elective-3	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
4	PEC	21EG74X	Professional Elective-4	TD:EG/ME PSB:EG/ME	3	0	0	03	50	50	100	03
5	OEC	21EG75X	Open Elective -3	TD:EG/ME PSB:EG/ME	4	0	0	03	50	50	100	04
6	PCC LAB	21EGL76	Python lab for Energy Engineering	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
7	PCC LAB	21EGL77	Environmental Engineering Lab	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
8	AEC	21AEC78	Intellectual Property Rights	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
9	PROJ	21PROJ79	Project-VII	TD:EG/ME PSB:EG/ME	0	0	2	03	50	50	100	01
10	HSS	21HSM710	Industrial Psychology and Organizational Behavior	TD:EG/ME PSB:EG/ME	1	0	0	03	50	50	100	01
Total					17	0	8	30	500	500	1000	21

Note: PCC-Professional Core Course, PEC-Professional Elective Course, OEC-Open Elective Course, PW-Project Work, HSS-Humanity and Social Science, AEC-Ability Enhancement Course.

Project (PROJ): A batch of 4 to 5 students (Same branch or different branches) with a guide, may undertake one project (1 hour of theory/tutorial or two hours of practice /activities).

### 7<sup>TH</sup> SEMESTER

**Note: Energy Engineering Department students are not allowed to choose the parent department open elective subjects. Energy Engineering Department students have to choose open elective courses from other departments.**

Professional Elective Courses -III (For EG Students)			Professional Elective Courses -IV (For EG Students)		
SL.No	Course Code	Course Title	SL.No	Course Code	Course Title
1	21EG731	Hydrogen Energy and Fuels Cells	1	21EG741	Waste to Energy
2	21EG732	Conservation and Energy Audit	2	21EG742	Refrigeration and Air Conditioning System
Open Elective Courses -III (For Non EG Students)					
SLNo	Course Code	Course Title			
1	21EG751	Measurements and Instrumentation			

**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. Student shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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Sl. No.	Course category	Course Code	Course Title	Teaching Dept. (TD) Question Paper Setting Board (PSB)	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PROJ	21PROJ81	Project -8		0	0	14	03	50	50	100	07
2	INT	21EGI82	Internship		0	0	16	03	50	50	100	08
Total					0	0	30	06	100	100	200	15

Note:

PCC-Professional Core Course, PEC-Professional Elective Course, OEC-Open Elective Course, PW-Project Work, HSS-Humanity and Social Science, AEC- Ability Enhancement Course. Internship-To be carried out during the vacation/s of VI and VII semesters or VII and VIII semesters

Project (PROJ): A batch of 4 to 5 students (Same branch or different branches) with a guide, may undertake one project (1 hour of theory/tutorial or two hours of practice /activities).

**Note: Project-8 Manufacturable and marketable project / Research project/Field Project.**