

Sharnbasva University, Kalaburagi
Faculty of Engineering & Technology (Co-Edu.)
Scheme of Teaching and Examination 2022-23
[As Per NEP, Outcome Based Education (OBE) and Choice Based Credit System (CBCS) Scheme]
(Effective from the academic year 2022-23)

Programme: B.Tech: Energy Engineering

III SEMESTER

Sl. No.	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	
1	BS	22MATM31	Mathematics for MES-III	Mathematics	3	0	0	3	50	50	100	03
2	PCC	22EG32	Thermodynamics and Energy Conversion	EEG	4	0	0	3	50	50	100	04
3	PCC	22EG33	Mechanics of Materials	EEG	3	0	0	3	50	50	100	03
4	PCC	22EG34	Materials Science for Energy Engineering	EEG	3	0	0	3	50	50	100	03
5	PCC	22EG35	Power Electronics	EEE/EEG	3	0	0	3	50	50	100	03
6	PCC	22EGL36	Energy Conversion Lab -1	EEG	0	0	2	3	50	50	100	01
7	PCC	22EGL37	Material Science and Testing Lab	EEG	0	0	2	3	50	50	100	01
8	PCC	22EGL38	Power Electronics Lab	EEG/EEE	0	0	2	3	50	50	100	01
9	PW	22PRJ39	Project-III	EEG	0	0	2	3	50	50	100	01
10	HSS	22HSM310	Social Connect Responsibility	Humanities	1	0	0	3	50	50	100	01
11	AEC	22AEG311	Ability Enhancement Course-III	EEG	0	0	2	3	50	50	100	01
Total					17	0	10	33	550	550	1100	22

Note: BS-Basic Science, PCC- Programme Core Course, PW-Project Work, AEC- Ability Enhancement Course, HSS-Humanity and Social Science, NCMC-Non-Credit Mandatory Course.

Project (PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

Ability Enhancement Course-3												
Course code under 22AEG311X				Course Title								
22AEG311				Workshop Practice on Refrigeration and Air Conditioning								
Courses prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs												
12	NCMC	22MATDIP31	Additional Mathematics – I	Mathematics	2	-	-	-	100	00	100	00
<p>1) Non-Credit Mandatory Courses (NCMC) Additional Mathematics-I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of 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 50% 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.</p> <p>2) These courses shall not be mandatory for vertical progression, but completion of the courses shall be mandatory for the award of degree.</p>												
Courses prescribed to lateral entry B.Sc. degree holders admitted to III semester of Engineering programs												
Lateral entry students from B.Sc. stream, shall clear the noncredit courses Computer Aided Engineering Drawing, Elements of Civil Engineering of 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 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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Programme: B.Tech: Energy Engineering

IV SEMESTER

Sl. No.	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	
1	BS	22MATM41	Mathematics for MES-IV	Mathematics	3	0	0	3	50	50	100	03
2	PCC	22EG42	Electrical Machines	EEG/EEE	3	0	0	3	50	50	100	03
3	PCC	22EG43	Renewable Energy Technologies	EEG	3	0	0	3	50	50	100	03
4	PCC	22EG44	Fluid Mechanics	EEG	3	0	0	3	50	50	100	03
5	PCC	22EG45	Heat Transfer	EEG	3	0	0	3	50	50	100	03
6	PCC	22EGL46	Electrical Machines Lab-1	EEG/EEE	0	0	2	3	50	50	100	01
7	PCC	22EGL47	Fluid Mechanics Lab	EEG	0	0	2	3	50	50	100	01
8	PCC	22EGL48	Heat Transfer Lab	EEG	0	0	2	3	50	50	100	01
9	PW	22PRJ49	Project-IV	EEG	0	0	2	3	50	50	100	01
10	HSS	22UHV410	Universal Human Values	EEG	3	0	0	3	50	50	100	03
11	AEC	22AEG411	Ability Enhancement Course-IV	EEG	0	0	2	3	50	50	100	01
Total					18	0	10	33	550	550	1100	23

Note: BS-Basic Science, PCC- Programme Core Course, PW-Project Work, AEC- Ability Enhancement Course, HSS-Humanity and Social Science, NCMC-Non-Credit Mandatory Course.

Project (PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

Ability Enhancement Course-4

Course code under 22AEG411X	Course Title
22AEG411	Computational Lab

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

12	NCMC	22MATDIP41	Additional Mathematics – II	Mathematics	2	-	-	-	100	00	100	00
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1) Non-Credit Mandatory Courses (NMC) Additional Mathematics-I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of 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 50% 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.

2) These courses shall not be mandatory 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 entry students from B.Sc. stream, shall clear the non-credit courses Computer Aided Engineering Drawing, Elements of Civil Engineering of 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 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 (noncredit) 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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V SEMESTER

Sl. No.	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	
1	HSS	22HSM51	Engineering Economics	EEG	3	0	0	3	50	50	100	03
2	PCC	22EG52	Fluid Machinery	EEG	4	0	0	3	50	50	100	04
3	PCC	22EG53	Python for Energy Engineering	EEG	3	0	0	3	50	50	100	03
4	PEC	22EG54X	Professional Elective Course-I	EEG	3	0	0	3	50	50	100	03
5	OEC	22EG55X	Open Elective Course-I	EEG	4	0	0	3	50	50	100	04
6	PCC	22EGL56	Fluid Machinery Lab	EEG	0	0	2	3	50	50	100	01
7	PCC	22EGL57	Python Lab for Energy Engineering	EEG	0	0	2	3	50	50	100	01
8	PEC	22EGL58	Electrical Machines Lab -2	EEG	0	0	2	3	50	50	100	01
9	PW	22PRJ59	Project-V	EEG	0	0	2	3	50	50	100	01
10	AEC	22AEG510	Ability Enhancement Course-V	EEG	0	0	2	3	50	50	100	01
Total					17	0	10	30	500	500	1000	22

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

Project (PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

Professional Elective Course-I (For EG Students)	
Course Code	Course Title
22EG541	Reaction Engineering and Combustion
22EG542	MEMS - Micro Electro Mechanical System

Open Elective Course-I (For NON EG Students)	
Course Code	Course Title
22EG551	Energy and Environment
22EG552	Non-Conventional Energy Resources

Ability Enhancement Course-V	
Course Code	Course Title
22AEC510	Entrepreneurship and Development
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 Code		Course Title	Teaching Departmen	Teaching Hours/week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration	CIE Marks	SEE Marks	Total Marks	
1	PCC	22EG61	Electrochemistry	EEG	3	0	0	3	50	50	100	03
2	PCC	22EG62	Power Generation and System Planning	EEG	3	0	0	3	50	50	100	03
3	PEC	22EG63X	Professional Elective Course-II	EEG	3	0	0	3	50	50	100	03
4	PEC	22EG64X	Professional Elective Course-III	EEG	4	0	0	3	50	50	100	03
5	OEC	22EG65X	Open Elective Course-II	EEG	3	0	0	3	50	50	100	04
6	PCC	22EGL66	Solar Energy Lab	EEG	0	0	2	3	50	50	100	01
7	PCC	22EGL67	Artificial Intelligence and Data Science for Energy Engineering Lab	EEG	0	0	2	3	50	50	100	01
8	PEC	22EGL68	Virtual Lab	EEG	0	0	2	3	50	50	100	01
9	PW	22PRJ69	Project-VI	EEG	0	0	2	3	50	50	100	01
10	HSS	22HSM610	Professional Ethics	EEG	1	0	0	3	50	50	100	01
11	AEC	22AEG611	Ability Enhancement Course-VI	EEG	0	0	2	3	50	50	100	01
Total					17	0	10	33	550	550	1100	22

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

Professional Elective Course-II (For EG Students)	
Course Code	Course Title
22EG631	Operation Research
22EG632	Solar Energy Utilization

Professional Elective Course-III (For EG Students)	
Course Code	Course Title
22EG641	Artificial Intelligence and Data Science for Energy Engineering
22EG642	Cryogenics

Project (PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

Open Elective Course-II (For Non EG Students)	
Course Code	Course Title
22EG651	Optimization Techniques in Engineering
22EG652	Power Plant Engineering

Ability Enhancement Course-V	
Course Code	Course Title
22AEC611	Information and Communication Technology (ICT)

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Sl. No.	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	
1	PCC	22EG71	Energy System Modeling and Analysis	EEG	3	0	0	3	50	50	100	03
2	PCC	22EG72	Wind Energy Utilization	EEG	3	0	0	3	50	50	100	03
3	PCC	22EG73	Control and Instrumentation	EEG	3	0	0	3	50	50	100	03
4	PEC	22EG74X	Professional Elective Course-IV	EEG	3	0	0	3	50	50	100	03
5	OEC	22EG75X	Open Elective Course-III	EEG	4	0	0	3	50	50	100	04
6	PCC	22EGL76	Energy Conversion Lab-2	EEG	0	0	2	3	50	50	100	01
7	PCC	22EGL77	Manufacturing lab	EEG	0	0	2	3	50	50	100	01
8	PEC	22EGL78	Environmental Lab	EEG	0	0	2	3	50	50	100	01
9	PW	22PRJ78	Project-VII	EEG	0	0	2	3	50	50	100	01
10	HSS	22HSM79	Industrial Psychology and Organizational Behavior.	Humanities	1	0	0	3	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. Internship-To be carried out during the vacation/s of VI and VII semesters or VII and VIII semesters
 Project(PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

Professional Elective Course-IV (For EG Students)	
Course Code	Course Title
22EG741	Hydrogen Energy and Fuels Cells
22EG742	Conservation and Energy Audit

Open Elective Course-III (For NON EG Students)	
Course Code	Course Title
22EG751	Mechanical Measurements and Instrumentation
22EG752	Waste to Energy

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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VIII SEMESTER

Sl. No.	Course Code		Course Title	Teaching Department	Teaching Hours/week			Examination				Credits
					Theory	Tutorial	Practical/Drawin	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
1	PROJ	22PRJ81	Research Project / Field Project - VIII	EEG			16	3	50	50	100	08
2	INT	22EGI82	Internship	EEG			12	3	50	50	100	06
Total							30	06	100	100	200	14

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(PRJ): A Batch of 4 students (Same Branch or Different Branches with a Guide, May undertake one project.

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