Preamble:

From Syllabus Sub-committee: "Renewable Energy Engineering"

With the expansion of engineering education in India the major challenge is to ensure quality in education and today's need. It is a well known fact that sources of fossil fuels are depleting very fast and with time we have to depend on non-conventional sources. This will not only eliminate the problem of global warming and pollution of the surrounding environment but also initiate green technology. Based on these facts the giant power sectors like NTPC, TATA Power, Indo Solar, Vestas India, GE Wind Energy Ltd. etc. are leaning towards renewable energy power plants to a great extent to meet the significant increasing demand of power.

Considering this requirement and recent thrust in technology, the course in **"Renewable Energy Engineering"** is introduced first time in our diploma education. The course is aimed for the students' pursuing for their Diploma in "Renewable Energy Engineering".

The course is of three years (Six Semesters) course. First year (Semester-I & Semester-II) is common as with other Engineering Disciplines. Subjects shown in the curriculum structure for the Second year (Semester-III & Semester-IV) and Third year (Semester-V & Semester-VI) consist of three categories –

(i) Program Core subjects (Code – PC),

(ii) Program Elective subjects (Code – PE),

(iii) Open Elective subjects (Code – OE)

as per the guideline of AICTE- 2019 Model Syllabus.

The Program Elective subjects and Open Elective subjects are to be chosen by the students from a list of Elective subjects prepared for the same.

Sessional/Practical subjects include – **(i) Laboratory, (ii) Minor Project, (iii) Major project, (iv) Summer Internship-I, (v) Summer Internship-II and (vi) Seminar.**

Apart from the above subjects three compulsory subjects are included as per the AICTE guideline namely – **(i) Essence of Indian Knowledge & Tradition, (ii) Indian Constitution and (iii) Entrepreneurship & Start ups.**

To ensure quality in diploma education the major emphasis is to measure the outcomes of the program beside its specified objectives. Course outcomes are essentially a range of skills and knowledge that a student will have at the end of the course.

After completion of the course the students will be able to move to the renewable energy power sectors as well as other power sectors and its allied organisations. As the course content is prepared considering all the divisions of the renewable power plants, the students' may also have the opportunity to be an entrepreneur of making a complete plant and producing power from renewable energy sources. This will certainly increase their job opportunity and also meet demand of electricity of our society significantly.

Syllabus Sub-committee:

Prof. Biswajit Ghosh (Expert), Professor, School of Energy Studies, J.U.(Retired),
Vice Chancellor, The Neotia University

Dr. Niladri Chakraborty (Expert), Professor, Power Engineering, J.U.

Sri Angshuman Majumder (Expert), Divisional Engineer, WBREDA

Dr. Ujjal Kr. Bhattacharyya (Member)

Shri Pratul Biswas (Member)

Shri Subhodeep Roy (Member)

Dr. Sujoy Pal (Convenor)

West Bengal State Council of Technical & Vocational Education and Skill Development
Semester-wise Detailed Curriculum: "RENEWABLE ENERGY ENGINEERING"

West Bengal State Council of Technical & Vocational Education and Skill Development

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER - III

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit	MARKS	
			L	T	P			IA	ESE
1.	REEPC201	Solar Photovoltaic - I	3	0	0	3	3	40	60
2.	REEPC203	Solar Photovoltaic – I Laboratory	0	0	3	3	1.5	60	40
3.	REEPC205	Solar Thermal	3	0	0	3	3	40	60
4.	REEPC207	Solar Thermal Laboratory	0	0	2	2	1	60	40
5.	REEPC209	Renewable Energy Instrumentation Applications	3	0	0	3	3	40	60
6.	REEPC2011	Renewable Energy Instrumentation Applications Laboratory	0	0	2	2	1	60	40
7.	REEPC2013	Thermodynamics and Fluid Power	3	0	0	3	3	40	60
8.	REEPC2015	Thermodynamics and Fluid Power Laboratory	0	0	2	2	1	60	40
9.	REEPC2017	Electrical Machine and Measurement	3	0	0	3	3	40	60
10.	REEPC2019	Electrical Machine and Measurement Laboratory	0	0	3	3	1.5	60	40
11.	SI201	Summer Internship – I (3 – 4 weeks after 2nd. Semester)	0	0	0	0	2	60	40
		Total	**15**	**0**	**12**	**27**	**23**	**560**	**540**

L- Lecture, T-Tutorial, P-Practical, IA-Internal Assessment , ESE-End Semester Exam

Total Marks : 1100

The student has to obtain 40% marks individually both in Internal Assessment and End Semester Examination to pass.

West Bengal State Council of Technical & Vocational Education and Skill Development

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER - IV

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit	MARKS	
			L	T	P			IA	ESE
1.	REEPC202	Solar Photovoltaic - II	3	0	0	3	3	40	60
2.	REEPC204	Solar Photovoltaic – II Laboratory	0	0	2	2	1	60	40
3.	REEPC206	Wind Energy	3	0	0	3	3	40	60
4.	REEPC208	Wind Energy Laboratory	0	0	3	3	1.5	60	40
5.	REEPC2010	Bio-Energy	3	0	0	3	3	40	60
6.	REEPC2012	Bio-Energy Laboratory	0	0	3	3	1.5	60	40
7.	REEPE202	Elective –I (Any one from Program Elective list)	3	0	0	3	3	40	60
8.	REEPE204	Elective –II (Any one from Program Elective list)	3	0	0	3	3	40	60
9.	PR202	Minor Project	0	0	4	4	2	60	40
10.	AU202	Essence of Indian Knowledge & Tradition	2	0	0	2	0	---	---
		Total	**17**	**0**	**12**	**29**	**21**	**440**	**460**

L- Lecture, T-Tutorial, P-Practical, IA-Internal Assessment , ESE-End Semester Exam

Total Marks : 900

The student has to obtain 40% marks individually both in Internal Assessment and End Semester Examination to pass.

West Bengal State Council of Technical & Vocational Education and Skill Development

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER - V

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit	MARKS	
			L	T	P			IA	ESE
1.	REEPC301	Distributed Generation Systems	3	0	0	3	3	40	60
2.	REEPC303	Energy Efficiency, Economics and Audit	3	0	0	3	3	40	60
3.	REEPC305	Energy Efficiency, Economics and Audit Laboratory	0	0	3	3	1.5	60	40
4.	REEPC307	Energy Conversion Devices & Methodologies	3	0	0	3	3	40	60
5.	REEPC309	Energy Storage Laboratory	0	0	3	3	1.5	60	40
6.	REEPE301	Elective –III (Any one from Program Elective list)	3	0	0	3	3	40	60
7.	REEPE303	Elective –IV (Any one from Program Elective list)	3	0	0	3	3	40	60
8.	REEOE301	Open Elective – I (Any one from Open Elective list)	3	0	0	3	3	40	60
9.	SI301	Summer Internship – II (4 – 6 weeks after 4th.Semester)	0	0	0	0	3	60	40
10.	PR301	Major Project	0	0	2	2	^	--	--
		Total	**18**	**0**	**8**	**26**	**24**	**420**	**480**

L- Lecture, T-Tutorial, P-Practical, IA-Internal Assessment , ESE-End Semester Exam

Total Marks : 900

The student has to obtain 40% marks individually both in Internal Assessment and End Semester Examination to pass.

^ Note: one credit is carried forward from the 5th. Semester to 6th. Semester for major project evaluation.

West Bengal State Council of Technical & Vocational Education and Skill Development

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER - VI

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit	MARKS	
			L	T	P			IA	ESE
1.	REEPC302	Renewable Energy Power Plants	3	0	0	3	3	40	60
2.	REEPC304	Renewable Energy Power Plants Laboratory	0	0	2	2	1	60	40
3.	HS302	Entrepreneurship & Start - ups	3	1	0	4	4	40	60
4.	REEOE302	Open Elective – II (Any one from Open Elective list)	3	0	0	3	3	40	60
5.	REEOE304	Open Elective – III(Any one from Open Elective list)	3	0	0	3	3	40	60
6.	AU302	Indian Constitution	2	0	0	2	0	---	---
7.	PR302	Major Project	0	0	6	6	4^	120	80
8.	SE302	Seminar	2	0	0	2	1	100	---
		Total	**16**	**1**	**8**	**25**	**19**	**440**	**360**

L- Lecture, T-Tutorial, P-Practical, IA-Internal Assessment , ESE-End Semester Exam
Total Marks : 800

The student has to obtain 40% marks individually both in internal assessment and end semester examination to pass.

^ One credit is carried forward from the 5th. Semester major project evaluation.

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

List of Program Elective (PE) subjects:

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit
			L	T	P		
1.	REEPE	Power Electronics	3	0	0	3	3
2.	REEPE	Energy Storage	3	0	0	3	3
3.	REEPE	Energy from Ocean & Earth	3	0	0	3	3
4.	REEPE	Electric Vehicles	3	0	0	3	3
5.	REEPE	Fuel cell & Hydrogen Energy	3	0	0	3	3
6.	REEPE	Energy Environment & Sustainable Development	3	0	0	3	3
7.	REEPE	Installation , Maintenance & Monitoring of Renewable Energy Power Plant	3	0	0	3	3

L- Lecture, T-Tutorial, P-Practical

COURSE NAME: RENEWABLE ENERGY ENGINEERING

COURSE CODE : REE

List of Open Elective (OE) subjects:

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours /Week	Credit
			L	T	P		
1.	OE	Operations Research	3	0	0	3	3
2.	OE	Mechatronics	3	0	0	3	3
3.	OE	Internet of Things	3	0	0	3	3
4.	OE	Engineering Economics and Accountancy	3	0	0	3	3
5.	OE	Project Management	3	0	0	3	3
6.	OE	Heat Transfer	3	0	0	3	3
7.	OE	Microcontroller Applications	3	0	0	3	3
8.	OE	Programming in C	3	0	0	3	3

L- Lecture, T-Tutorial, P-Practical