

Course outline
JEE 659 Energy from biomass, 3 (3-0-6), Semester 1/2020
Monday 13.30 – 16.30 hr, EN3204

Instructor: Dr.Nakorn Worasuwanarak (Coordinator), Dr.Savitri Garivait, Dr.Warinthorn Songkasiri, Dr.Boonrod Sajjakulnukij, Prof.Shabbir Gheewala

Objective of the course is for students to understand the advantages of bio-energy production and various technologies for biomass conversion for heat and power. Biomass resource assessment, handling and processing: charcoal and biomass briquette preparation, bio-fuel and biogas production. Thermal and thermo-chemical conversion processes: pyrolysis, gasification and combustion. Finally, the impact on environment and the policy framework for biomass utilisation will be discussed.

Session	Date	Details	Instructor
1	17 Aug	Overview of biomass and biomass to energy conversion	Dr. Nakorn
2	24 Aug	Biomass potential assessment	Dr. Savitri
3	31Aug	Fuel characterization and analysis instruments	Dr. Nakorn
4	7 Sep	Basic calculation of biomass combustion	Dr. Nakorn
5	14 Sep	Biomass pretreatment	Dr. Nakorn
6	21 Sep	Bio-oil production & upgrading	Dr. Nakorn
7	28 Sep	Biomass combustion technologies & CHP application	Dr. Nakorn
	TBD	Midterm Examination	
8	5 Oct	Biomass gasification technologies & other advanced uses	Dr. Nakorn
9	12 Oct	Other advanced biomass to liquid	Dr. Nakorn
10	19 Oct	Biogas production and utilization	Dr. Warinthorn
11	2 Nov	Bio-ethanol	Dr. Boonrod
12	9 Nov	Biodiesel	Dr. Boonrod
13	16 Nov	Economic assessment of biomass utilization system	Dr. Boonrod
14	23 Nov	Policy framework for biomass utilization	Dr. Boonrod
15	30 Nov	Environment and sustainability assessment of biomass utilization system	Prof. Shabbir
	TBD	Final Examination	

Grading

Midterm examination 50 %

Final examination 50 %