HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the program specification.

1. Teaching Institution	University of Diyala - College of Engineering
2. University Department/Centre	Chemical Engineering Department
3. Course title/code	Combustion Engineering / Ch. E.312
4. Modes of Attendance offered	Yearly system with full study
5. Semester/Year	2nd Semester/Academic Year 2020 – 2021
6. Number of hours tuition (total)	30 hrs (2 hrs per week)
7. Date of production/revision of this specification	12/6/2021
8. Aims of the Course Learn the basics of combustion engineering and the factors effect.	

9· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

1. Definition the basics of combustion engineering.
2. Classification of fuel.
3. Combustion calculations.
4. Total Enthalpy and Enthalpy of Formation.
5. The furnaces used.

6. Mixing the oxidizer with the fuel.
7. Liquid fuel.
8. Solid fuel.

B- Subject-specific skills

1. Calculating the heating value for fuel.
2. Types of furnaces used.

C- Thinking Skills

1. The ability of characterization the fuel type.
2. The ability to calculate the heating value for the fuel.

D- General and Transferable Skills (other skills relevant to employability and personal development)

1. Activity with society.
2. The work with a team.
3. How engineering is benefit for society and environment.
4. Calculating the heating value for the natural gas from the experimental data.

Teaching and Learning Methods

1. Lectures
2. Presenting Power point (PPT) slides
3. Problems discussion (Tutorial)

Assessment methods

1. Daily exams
2. Monthly exams
3. Home work
4. Final exams

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	1. Definition of combustion. 2. Properties of combustion.	Introduction	1.Lectures (PPT) 2. Tutorial	Oral exam
2	2	1. Classification of fuels.	Classification of natural gas	1.Lectures (PPT) 2. Tutorial	Oral exam
3	2	1. Combustion calculation.	Gas Reservoirs	1.Lectures (PPT) 2. Tutorial	Quiz
4	2	1. Tutorial for combustion calculations.	Impurities	1.Lectures (PPT) 2. Tutorial	Monthly exam
5	2	1. Flue gas analysis	Importance of natural gas	1.Lectures (PPT) 2. Tutorial	Oral exam
6	2	1. Total enthalpy and heat of formation	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
7	2	1. Heating value of fuel.	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
8	2	1. Furnaces and burners	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
9	2	1. Tubular furnace	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Monthly exam
10	2	1. The flames.	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
11	2	1. Liquid fuels.	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
12	2	1. Solid fuels.	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Oral exam
13	2	1. Solid partials combustion	Natural gas processing	1.Lectures (PPT) 2. Tutorial	Quiz
14	2	1. Drying of solid fuels.	Trnasportation of natural gas	1.Lectures (PPT) 2. Tutorial	Oral exam
15	2	1. Heating Value of Fuel.	Fuel evaluating	1.Lectures (PPT) 2. Tutorial	Monthly exam

11. Infrastructure	
Required reading: 1. Gary L.borman. "Combustion Engineering",1998 by Mc Grawhill. 2. Stephen R.turns. "An introduction to Combustion“, 2000 by Mc Grawhill. 3. F .ElMahallawy and S.ElDin Habik ," Fundamentals and Technology of Combustion",2002 by Elsevier Science. 4. W.Francis and M.C.Peters, 1980. "Fuels and Fuels Technology". Others Lecture notes Students answers for problems	
Special requirements (include for example workshops, periodicals, IT software, websites)	Internet knowledge for chemical engineering
Community-based facilities (include for example, guest Lectures , internship , field studies)	Internship, field studies

12. The development of the curriculum plan