UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title:	Upstream Production and Refinery Operations
Module Code:	CPE7007-B
Academic Year:	2019-20
Credit Rating:	20
School:	Department of Chemical Engineering
Subject Area:	Chemical and Process Engineering
FHEQ Level:	FHEQ Level 7 (Masters)
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	**Hours**
Lectures	36
Tutorials	12
Directed Study	152

Availability	
Occurrence	**Location / Period**
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

The objective is to provide the students with expert level knowledge of upstream petroleum and refining processes synthesis, simulation and design.

Outline Syllabus

Onshore/offshore oil recovery, well-field processing, three-phase separation, crude oil stabilization, gas sweetening, gas dehydration, other gas processing processes, water treatment processes, environmental constraints of processes, crude oil desalting, distillation (atmospheric and vacuum), alkylation, catalytic reforming, cracking, coking, desulfurization, blending, heat exchanger network for energy recovery, FCC. Products discharge or exports to market. For the given courseworks, the students will carry out detailed simulation using ASPEN and/or gPROMS.

Learning Outcomes	
1	Synthesise the right process configurations for any given well fluid and crude oil quality and design the entire upstream petroleum and refining processes with the given product quality constraints as well as HSE (health, safety and environment) concerns.
2	Critically evaluate current research and address solutions to complex problems of the upstream petroleum and refining operations emerging from current research.
3	Apply assumptions to complex problems in order to gain useful design information and models, individually and in a team and to present clear procedures for a given design problem.

Learning, Teaching and Assessment Strategy

The learning material is delivered through a series of lectures (formal presentations), supported by appropriate case study material as necessary. Lectures discuss the engineering technologies, chemical processes and scientific parameters involved in the upstream production and refining operations met in the petroleum industry. Case studies sourced from current research in the chemical processing technologies of the upstream production and refining operations, are based on the syllabus of the delivered lectures and modeled/simulated in the courseworks. Case studies of courseworks promote the critical ability of the students and knowledge dissemination. Lectures are supported by computer laboratory based tutorial sessions, which promote teamwork, development of ICT skills (simulation, modeling) towards the assessed coursework, e-learning, peer evaluation and feedback and self-learning.

Students are given feedback on theoretical and practical aspects during the lectures and practicals respectively, in preparation of their course works. Learning outcomes are assessed by 3 pieces of course work released every four weeks. Courseworks 1 and 2 are group works. The individual mark of the student is decided based on the peer review by the students. Coursework 3 is an individual work. Each coursework is submitted by a 3,000 words report along with a simulation/modeling file. All courseworks are simulations and/ or modeling of chemical processing technologies of the upstream production and refining operations. Students are assessed on identifying health, safety and environmental concerns, their knowledge, problem solving, analysing their results and their extented understanding of the engineering technologies, chemical processing and scientific parameters in the upstream processing and refining operations of the petroleum industry. Simulation and optimisation of a process technology assesses the students problem formulation and solving ability.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Coursework	3 detailed reports and simulation using ASPEN and/or gPROMS on the entire upstream petroleum and refining processes with the given product quality constraints as well as HSE concerns	-9000 words	100%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html.

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.