

Faculty of Engineering

Department of Chemical Engineering

**Module Guide 2014/15**

**Fluid Mechanics (Winter semester)**

**Module Code CHNG 205**

**Module Level 2**

**Module Credit 4**

**Semester 1**

**Module Lecturer Dr.-Ing. Ahmed Al-Mukhtar**

**Other Module Team Members TBC**

**Pre-requisites None**

**Co-requisites None**

**Student class contact time 45 hours**

**Student lab contact time NA**

**Timetable details TBC**

1. **Fundamentals of Fluid Mechanics (CHNG 205)**

In General this course covers extent the following subjects; Introduction (fluid definition, fluid types, fluid flow types), Units & Dimensional analysis, Pressure measurements devices, metacenter, Buoyancy, conservation of mass, conservation of energy, Flow rate measurements devices (The Venturi meter, Orifice meter, pito static tube), Flow Regimes (Velocity distribution, Laminar flow, Turbulent flow, Darcy), Continuity equation (Mass flow arte, Volumetric flow rate, Weight flow rate), Bernoulli & Modified energy equations (Pumps, Turbine), Modified energy equation & Losses (Friction factor, Reynolds numbe), Pumps (Type of pumps, Characteristics curve and systematic curve, Net positive suction head, Packed Beds (Viodage, Fluid velocity through packing, Equivalent diameter, Reynolds number through packing, Friction  factor.

1. **Module Description**

This course is provided to the engineering students with the basic skills of fluid properties and exercises. The course covers the theoretical of fundamental fluid mechanics. Fluid mechanics is an essential subject in the study of the behavior of fluids at rest and when in motion.

1. **Learning Outcomes**

* To understand and use the general criteria in fluid flow.
* To understand and use the general ideas of Buoyancy, Center of pressure, floating bodies.
* To understand and use the general ideas of conservation of mass, conservation of energy, Darcy Formula, fluid momentum, drag coefficient, and compressible flow, etc.

1. **Assessment Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Assessment Tasks | weighting  for components (%) | Hand-in date  (university week) | Rationale for the task |
| Final exam\_ Winter Semester Only | 60 | Check University Exam timetable | To demonstrate knowledge and understanding of the module content |

1. **Outline Syllabus**

The outlines consist of the following main five chapters:

1. General principals
2. Internal fluid flow
3. External fluid flow
4. Compressible fluid dynamics
5. Hydroelectric power
6. External fluid flow
7. Compressible fluid dynamics
8. **Reading and Learning Support List**
9. A Textbook of Fluid Mechanics  By Dr. R.K. Bansal
10. Fundamentals of Fluid Mechanics, 6th Edition By Munson.
11. **Plagiarism and Collusion**

All students are strongly advised to be familiar with Student Codes of Conduct on this matter and be aware of the Soran University and KRG Ministry of Higher Education and Scientific Research procedures as outlined in the: “Teaching Quality Assurance”, etc.

Good luck with your studies