

**Department of Chemical Engineering**

**Cairo University
Faculty of Engineering**

|  |
| --- |
| **Course Specifications** |
| **Program(s) on which this course is given:** | Chemical Engineering  |
| **Department offering the program:** | Chemical Engineering  |
| **Department offering the course:** | Chemical Engineering |
| **Academic Level:** | 2nd year  |
| **Date**  | 2013-2014 |
| **Semester (based on final exam timing)** |  Fall √ Spring |
| **A- Basic Information** |
| **1. Title:** | Momentum Transfer | **Code:** | CHE 203A |
| **2. Units/Credit hours per week:**  | Lectures | 2 | Tutorial | 2 | Practical | **0** | Total | 4 |
| **B- Professional Information** |
| **1. Course description:** | The objective of this course is to provide the students with the meaning of Momentum Transfer and its applications in Fluid statics and fluid flow phenomena and to make the students familiar with flow measuring systems and devices. |
| **2. Intended Learning Outcomes of Course (ILOs):** | **a) Knowledge and Understanding** |
| 1. Methodologies of solving engineering problems, data collection and interpretation
 |
| 1. Concepts and theories of mathematics and sciences, appropriate to the discipline.
 |
| **b) Intellectual Skills** |
| 1. Select appropriate solutions for engineering problems based on analytical thinking.
 |
| 1. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
 |
| **c) Professional and Practical Skills** |
| 1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.
 |
| 1. Determine the characteristics and performance of measurement and control systems.
 |
| **d) General and Transferable Skills** |
|  1) Search for information and engage in life-long self learning discipline. |
|  2) Refer to relevant literatures. |
| **3. Contents** |
| **Topic** | **Total hours** | **Lectures hours** | **Tutorial/ Practical hours** |
| Basic Definitions & Fluid Properties  | 8 | 2 | 2 |
| Pressure Variation  | 8 | 4 | 4 |
| Forces on Submerged bodies | 8 | 4 | 4 |
| Fluids in Relative Motion  | 8 | 4 | 4 |
| Introduction to fluid kinematics | 4 | 2 | 2 |
| Governing equations to fluid kinematics | 20 | 10 | 10 |
| Flow Measurements  | 4 | 2 | 2 |
| **4. Teaching and Learning Methods** | Lectures (√) | Practical Training/ Laboratory () | Seminar/Workshop () |
| Class Activity (√) | Case Study () | Projects (√) |
| E-learning ( ) | Assignments /Homework (√) | Other:  |
| **5. Student Assessment Methods** |
| * **Assessment Schedule**
 | **Week** |
| -Assessment 1; Class Participation and Assignments | 1-13 |
| -Assessment 2; Class Test | 4 |
| -Assessment 3; Midterm exam | 7 |
| -Assessment 4; Class Test | 11 |
| -Assessment 5; Final Exam | 14 |
| * **Weighting of Assessments**
 |
| -Mid-Term Examination | 15 |
| -Class Activity | 15 |
| -Final-term Examination  | 70 |
| -Total | 100 |
| **6. List of References** |
| 1. Streeter, L.V., “Fluid Mechanics”, McGraw-Hill Book Company, New York, 1958
 |
| 1. Munson, B., Yound, D., and Okiishi, T., "Fundamentals of fluid mechanics”, John Wiley & Sons, Inc., 2002
 |
| **7. Facilities Required for Teaching and Learning** |
| 1. Organized halls
2. Data show
 |
| **Course Coordinator:** | Prof. Salwa Raafat |
| **Head of Department:**  | Prof. Fatma Ashour |

