

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

CE 631 Hydrometry

College: Engineering

Department: Civil

First: Course Definition

1- Course Code: CE 631

2- Units: 3

3- Semester:

4- Prerequisite:

5- Co-requisite:

6- Location (if not on main Campus):

Second: Course Objectives

- 1- To develop understanding of *performing measurements related to water engineering and meteorology.*
- 2- To develop understanding of the basic principles and concepts of data acquisition analysis and interpretation.
- 3- To ensure that students know how to perform measurements related to water quality.

Third: Course Specifications

1- Topics to be covered

Subject	No of Weeks	Units
Measurement of velocity, discharge, pressure, shear, turbulence in open and closed conduits.	3	9
Measurement of precipitation, infiltration, and hydro-meteorological variables.	3	9
Measurement of water levels, stage discharge relationships.	2	6

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

Collection and analyses of sediment data.	3	6
Measurement of water quality variables.	2	6
Data acquisition, analysis and interpretation.	2	6

2- Course components (Total hrs in the Semester): 42

Lecture	Lab	Other
42	-	0

3- Intended Learning Outcomes of the Course (ILO's)

a. Knowledge

i) Description of the knowledge to be acquired:

- Velocity, discharge, pressure and shear measurement's methods in open and closed conduits.
- Precipitation and infiltration relationship.
- Hydro-meteorological data collection and analysis.
- Measurement of water levels, stage discharge relationships.
- Collection and analyses of sediment data.
- Measurement of water quality variables
- Data acquisition, analysis and interpretation.

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.
-

iii) Methods of assessment of knowledge acquired

- Exams.
- Quizzes.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
---	--	--

- i) Cognitive skills to be developed***
- Data acquisition, analysis.
 - Hydro-meteorological data modeling.
 - Investigation of water levels, stage discharge relationships.

- ii) Teaching strategies to be used to develop these cognitive skills***
- Class lectures.
 - Case studies analysis.
 - Term projects.

- iii) Methods of assessment of students' cognitive skills***
- Students' seminars and presentations.
 - Term projects.
 - Written reports.

c. Interpersonal Skills and Responsibility

- i) Description of the interpersonal skills and capacity to carry responsibility to be developed***
- Decision making based on engineering analysis.
 - Communication skills.
 - Team work.

- ii) Teaching strategies to be used to develop these skills***
- Class lectures.
 - Term projects.
 - Case studies analysis.

- iii) Methods of assessment of students' interpersonal skills and capacity to carry responsibility***
- Term project.
 - Written reports.
 - Students' seminars and presentations.

d. Communication, Information Technology and Numerical Skills

- i) Description of the skills to be developed in this domain***
- Literature research.
 - Problems modeling.
 - Field data collection.
 - Utilization of computer applications in analysis and design.

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
---	--	--

<p>ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> - Class lectures. - Case studies analysis. - Computer lab sessions. - Term projects. - Field trip. <p>iii) Methods of assessment of students numerical and communication skills</p> <ul style="list-style-type: none"> - Term projects. - Written reports. - Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

<p>i) Description of the psychomotor or other skills to be developed and the level of performance required</p> <ul style="list-style-type: none"> - NA -

<p>ii) Teaching strategies to be used to develop these skills-</p> <ul style="list-style-type: none"> - NA -

<p>iii) Methods of assessment of student's psychomotor skills</p> <ul style="list-style-type: none"> - NA -
--

4- Student Assessment Schedule

Serial	Assessment tool (test, group project, examination etc.)	Week due	Weight
1	Report – 1	3 rd	10 %
2	Mid Term Exam -1	7 th	20 %
3	Reports 2,3	10 th	10 %
4	Reports 4,5	12 th	10 %
4	Term Project	13 th	10 %
5	Final Exam	16 th	40 %

5- Student Support

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
---	--	--

- Providing electronic library of textbooks and scientific periodicals.
- Providing the necessary computer applications for the course.

6- Learning Resources

- i) Essential Books (References)**
- Strangeways , I. "Precipitation: Theory, Measurement and Distribution," Cambridge University Press; Reissue edition, 2011.
 - Herschy R. W. "Hydrometry: Principles and Practice," 2e/, Wiley. USA , 1998.
 - Boiten W. " Hydrometr: IHE Delft Lecture Note Series," CRC Press, Taylor & Francis; 3th edition, 2000.

- ii) Course Notes**
- NA

- iii) Recommended Books**
- - Quevauviller, P.P and Thompson, C. "Analytical Methods for Drinking Water: Advances in Sampling and Analysis (Water Quality Measurements)," Wiley; 1st edition, 2005

- iv) Electronic Books & Web Sites:**
- Scientific journals and forums.
 - Instructor's instruction.

- v) Periodicals**
- ASCE scientific journals.
 - Journal of hydrometeorology.
 - Journal of Geography and Regional Planning

7- Course Evaluation and Improvement Processes

- i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching**
- Students' questioners.
 - Students' evaluation of course and instructor.

- ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department**
- Public faculty seminars.
 - Assessment by external evaluators of students achievements.
 - Instructor (Course) Report

- iii) Processes for Improvement of Teaching**

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة
---	--	--

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
- Seminars by industry professionals.

- iv) Processes for verifying standards of student achievement**
- Check marking by an independent faculty member of a sample of student work.
 - Periodic exchange and remarking of a sample of assignments/exams with a external evaluator.

- v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.**
- Assessment and evaluation of the level of achieving the course outcomes through a continuous improvement process (part of a quality assurance system established by the university),
 - Consequently, actions are to be taken to improve the course delivery when necessary.
 - Review of the course objectives, outcomes and curriculum every 2 years.