

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

## CE 643 Traffic Safety, Operations, and Maintenance

**College: Engineering**

**Department: Civil**

### First: Course Definition

**1- Course Code : CE 643**

**2- Units : 3**

**3 – Semester**

**4 -Prerequisite**

**5- Co-requisite**

**6- Location (if not on main Campus):**

### Second: Course Objectives

- 1- Use the highway capacity manual, concepts and analyses.
- 2- Develop an understanding of the engineering aspects of highway traffic safety.
- 3- Have an-in depth understanding of the reduction of accident incidence and severity through highway design and traffic control.
- 4- Be acquainted with the accident analysis.
- 5- Be acquainted with the Legal implications.
- 6- Develop an understanding of the Safety in highway design, maintenance, and operation

### Third: Course Specifications

#### 1- Topics to be covered

Subject	No of Weeks	Units
Highway Capacity Manual : Principles of Capacity: introduction, concepts and applications, traffic characteristics.	2	6
Overview of traffic fatalities , Accident Analysis , Vehicle mass and size, Environment, roadway, and vehicle, Gender, age, and alcohol effects on survival	2	6

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

Older drivers, Driver performance, Effect of speed Driver behavior, Alcohol, Occupant protection	1	3
Road Safety Engineering : Road accident definition, Police recording, Data transfer to the highway authority	2	6
Presenting accident data for analysis, Summarising data	1	3
Data presentation and ranking, Statistical analysis, Problem identification	1	3
Designing road safety engineering measures, Safety in highway design, maintenance, and operation : <i>Road Design and Road Equipment, Road Maintenance, Traffic Control, Vehicle Design and Protective Devices, Police Enforcement and Sanctions</i>	4	12
Accident savings, THE COST OF ACCIDENTS	1	3

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

Lecture	Exercise	Other
42	-	0

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

### a. Knowledge

#### i) Description of the knowledge to be acquired:

- Principles of Capacity
- Accident Analysis
- Road Safety Engineering
- Safety in highway design, maintenance, and operation
- Police Accident recording
- Highway Capacity Manual 2010
- 

#### 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.

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

- Quizzes.
- Homework assignments.
- Term projects.

***b- Cognitive (Intellectual) Skills***

- i) Cognitive skills to be developed***
- Advanced concept of Road Safety Engineering
  - Police Accident Recording

- 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.

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

- 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.
- Utilization of computer applications in analysis and modeling.

**ii) Teaching strategies to be used to develop these skills**

- Class lectures.
- Case studies analysis.
- Computer lab sessions.
- Term projects.

**iii) Methods of assessment of students numerical and communication skills**

- Term projects.
- Written reports.
- Students' seminars and presentations.

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

**i) Description of the psychomotor or other skills to be developed and the level of performance required**

- **NA**

**ii) Teaching strategies to be used to develop these skills-**

- NA
- 

**iii) Methods of assessment of student's psychomotor skills**

- NA

**4- Student Assessment Schedule**

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

<i>Serial</i>	<i>Assessment tool (test, group project, examination etc.)</i>	<i>Week due</i>	<i>Weight</i>
1	Term Project – 1	3 <sup>rd</sup>	15 %
2	Mid Term Exam -1	7 <sup>th</sup>	15 %
3	Term Project – 2	10 <sup>th</sup>	15 %
4	Term Project – 3	13 <sup>th</sup>	15 %
5	Final Exam	16 <sup>th</sup>	40 %

## 5- Student Support

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

## 6- Learning Resources

### *i) Essential Books (References)*

- Evans , L. "Traffic Safety [Illustrated]," Science Serving Society; 2004. ISBN-10: 0975487108, ISBN-13: 978-0975487105
- Transportation Research Board, Highway Capacity Manual (HCM 2010), 5th edition 2010, ISBN-10: 0309160774, ISBN-13: 978-0309160773

### *ii) Course Notes*

- NA
- 

### *iii) Recommended Books*

- Daganzo, C. F. " Fundamentals of Transportation and Traffic Operations," Emerald Group Publishing Limited; 1st edition, 1997. ISBN-10: 0080427855, ISBN-13: 978-0080427850

### *iv) Electronic Books & Web Sites:*

- Scientific journals and forums.

### *v) Periodicals*

- ASCE scientific journals.
- ScienceDirect journal.

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

## 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*

- 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 (e.g. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)*

- 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.