# ISHIK UNIVERSITY
# FACULTY OF ENGINEERING
# Department of CIVIL ENGINEERING,
# 2018-2019 Fall
# Course Information for CE 418 TRAFFIC ENGENEERING

| | |
|---|---|
| **Course Name:** | TRAFFIC ENGENEERING |

| Code | Course type | Regular Semester | Theoretical | Practical | Credits | ECTS |
|---|---|---|---|---|---|---|
| CE 418 | 2 | 8 | 3 | - | 3 | |

| | |
|---|---|
| **Name of Lecturer(s)-Academic Title:** | Barham Haydar - MSc |
| **Teaching Assistant:** | NA |
| **Course Language:** | English |
| **Course Type:** | Area Elective |
| **Office Hours** | NA |
| **Contact Email:** | barham.haydar@ishik.edu.iq<br><br>Tel:07705042603 |
| **Teacher's academic profile:** | MSc holder in construction materials |
| **Course Objectives:** | This course is prepared to provide a comprehensive understanding about the main principles of traffic engineering spanning from key areas of transportation system, flow elements and characteristics, capacity, traffic control devices, pedestrian, bicycle facilities, to parking and traffic safety. |
| **Course Description (Course overview):** | Introduction to transportation systems. Modes of transportation, urban transportation. Highway planning and surveys. Highway financing and economy, principles of highway location. Studies and planning of transportation. Planning of urban roads. Intersections. Road user, vehicle and road characteristics, volume speed, travel time and delay studies. Channelization of traffic. Traffic control devices, intersection design, traffic signs and marking and traffic signals. Parking and terminals. Introduction to airport and railroad engineering. |

## COURSE CONTENT

| Week | Hour | Date | Topic |
|---|---|---|---|
| **1** | 3 | 2-4/10/2018 | Introduction to Transportation Engineering including Highway and Traffic Engineering Studies, Historical Review and the role of transportation in developing the state locally, regionally, and internationally. |
| **2** | 3 | 7-11/10/2018 | Highway cross section, classification methods and a brief explanation for each type |
| **3** | 3 | 14-18/10/2018 | The road user, the vehicles, and their characteristics |
| **4** | 3 | 21-25/10/2018 | Continue on: The road user, the vehicles, and their characteristics |
| **5** | 3 | 28/10-1/11/2018 | Basic factors of traffic flow and their relationships (Volume, speed, and density) |
| **6** | 3 | 4-8/11/2018 | Traffic Engineering Studies: speed studies, Volume studies, Important definitions, methods of conducting traffic volume counts, presentation of traffic volume data. |
| **7** | 3 | 11-15/11/2018 | Forecasting Travel demand |
| **8** | 3 | 18-22/11/2018 | Midterm Exam |
| **9** | 3 | 25-29/11/2018 | Capacity and Level of Service: Two lane highways |
| **10** | 3 | 2-6/12/2018 | Continue on: Capacity and Level of Service: Two lane highways |
| **11** | 3 | 9-13/12/2018 | Intersections and Interchanges |
| **12** | 3 | 16-20/12/2018 | Speed change lanes |

| | | | |
|---|---|---|---|
| **13** | 3 | 23-24/12/2018 | Accidents and accident analysis |
| **14** | 3 | 2-3/1/2019 | . |
| **15** | 3 | 7-10/1/2019 | . |
| **16** | 3 | 13-17/1/2019 | Final Exam |
| **17** | 3 | 20-24/1/2019 | Final Exam |

**COURSE/STUDENT LEARNING OUTCOMES**

| | |
|---|---|
| **1** | to gain theoretical and practical experience for analyzing, planning, design, and implementation of transportation projects in real world application. |
| **2** | To understand the key elements of traffic engineering including highway classes |
| **3** | To enable the students to collect traffic data and how to present these data. |
| **4** | To understand some aspects of transportation planning. |

**COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES**

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced )

| | **Program Learning Outcomes** | **Cont.** |
|---|---|---|
| **1** | An ability to apply knowledge of mathematics, science, and engineering | P |
| **2** | An ability to design and conduct experiments, as well as to analyze and interpret data | P |
| **3** | An ability to design a system, component, or process to meet desired needs | P |
| **4** | An ability to identify, formulate and solve engineering problems | P |
| **5** | An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice | P |
| **6** | Skills in project management and recognition of international standards and methodologies | I |
| **7** | An ability to function on multi-displinary teams | I |
| **8** | An understanding of professional and ethical responsibility | P |
| **9** | An ability to communicate effectively | P |
| **10** | The broad education necessary to understand the impact of engineering solutions in a global and social context | P |
| **11** | A recognition of the need for and ability to engage in, lifelong learning | I |
| **12** | A knowledge of contemporary issues | P |

| | |
|---|---|
| **Prerequisites (Course Reading List and References):** | Fwa, T. F., 2006. The Hand Book of Highway Engineering, Taylor and Frances Group, USA. Ashworth, R., 1972. Highway Engineering, Heinemann Educational Books Ltd., UK. Garber N. J and Hoel, L. A, 2002. Traffic and Highway Engineering, Brooks/Cole, USA. Pignataro, L. J., 1973. Traffic Engineering: Theory and Practice, Prentice-Hall Inc., USA. Wright, P. H. and Dixon, K. K., 2004. Highway Engineering, John Wiley and Sons, USA. Hickerson, T. F., 1953. Route Location and Design, Mcgraw-Hill, USA. State Organization of Roads and Bridges (SORB), 1983. Design and Studies Department, Road and Traffic division, standard Specification for Roads and Bridges, Iraq. American Association of State Highway and Transportation Officials (AASHTO), 2001, USA. Design Manuals for Roads and Bridges, (1992 – 2008). The Highways Agency, UK. Mannering, F. L., Washburn, S. S. and Kilareski, W. P., 2009. Principles of Highway Engineering and Traffic Analysis, John Wiley & Sons Inc., USA. |
| **Student's obligation (Special Requirements):** | to attend the classes and contribute to the discussions effectively. Submit the assignments. |
| **Course Book/Textbook:** | Pignataro, L. J., 1973. Traffic Engineering: Theory and Practice, Prentice-Hall Inc., USA. Garber N. J and Hoel, L. A, 2002. Traffic and Highway Engineering, Brooks/Cole, USA. Mannering, F. L., Washburn, S. S. and Kilareski, W. P., 2009. Principles of Highway Engineering and Traffic Analysis, John Wiley & Sons Inc., USA. |
| **Other Course Materials/References:** | The lectures' notes and handouts Internet the other references of traffic engineering |
| **Teaching Methods (Forms of Teaching):** | Lectures, Practical Sessions, Excersises, Presentation, Self Evaluation, Assignments, Case Studies |

**COURSE EVALUATION CRITERIA**

| **Method** | **Quantity** | **Percentage (%)** |
|---|---|---|
| Attendance | 1 | 4 |

| | | |
|---|---|---|
| Participation | 1 | 2 |
| Quiz | 2 | 5 |
| Homework | 3 | 3 |
| Project | 1 | 5 |
| Midterm Exam(s) | 1 | 30 |
| Final Exam | 1 | 40 |
| **Total** | | **100** |

**Examinations:** True-False, Multiple Choices, Short Answers

**Extra Notes:**

**ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD**

| Activities | Quantity | Duration (Hour) | Total Work Load |
|---|---|---|---|
| Course Duration (Including the exam week: 16x Total course hours) | 16 | 3 | 48 |
| Hours for off-the-classroom study (Pre-study, practice) | 16 | 1 | 16 |
| Assignments Mid-terms | 3 | 4 | 12 |
| Final examination | 1 | 3 | 3 |
| Other | | | 0 |
| **Total Workload** | | | **79** |
| **ECTS Credit (Total workload/25)** | | | **3.16** |

**Peer review**

| | | |
|---|---|---|
| Signature: | Signature: | Signature: |
| Name: | Name: | Name: |
| Lecturer | Head of Department | Dean |