Course Description Form

1. Course Name: Traffic engineering
2. Course Code: CIV055
3. Semester / Year: First semester/2025
4. Description Preparation Date: 3/09/2025
5. Available Attendance Forms: Bologna system attendance form
6. Number of Credit Hours (Total) / Number of Units (Total): SSWL 62+ USSWL 63 5
7. Course administrator's name (mention all, if more than one name)
Name: Sally Muwaffaq Talib Email: sallay.muwafaq@uowa.edu.iq
8. Course Objectives

Course Objectives	This course diseusses the fundamental concepts of traffic engi by introduce students to cover the technical details of traffic characteristics, elements of roads and highways, and analysis a design the highway section according to vehicle operation.
9. Teaching and Learning Strategies	
Strategy	Providing a comprehensive introduction to each study topic and conn the current topic to previous ones. Delivering theoretical lectures. Presenting short scientific films. Providing and explaining sufficient examples. Using brainstorming to convey the material.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learn
1+2	6	1. Demonstrate understanding of the need for developing highway engineering. 2. Outline the behaviour of drivers and vehicle characteristics on roads and highways. 3. Outline the principal means of speed, sight distances on roads and highways. 4. Roadways and their geometric characteristics. 5. Outline the principal means of Traffic stream characteristics (relations of speedflow-density). 6. Illustrate the ethics of traffic design. 7. Demonstrated the responsibility of traffic operators.	**Introduction to traffic engineering** • General definitions • Objectives of traffic engineering • Responsibility, ethics, and liability in traffic engineering • Transportation systems and their function • Concepts of mobility and accessibility • Transportation modes • Elements of traffic engineering Modern problems for the traffic engineer	Theoretica
3+4+5	9		**Road user and vehicle characteristics** Overview of traffic stream components Dealing with diversity Road users ▪ Visual characteristics of drivers ▪ Perception-reaction time ▪ Reaction distance ▪ Pedestrian characteristics Vehicles ▪ Concept of the design vehicle ▪ Turning characteristics of vehicles ▪ Low-speed turns ▪ High-speed turns ▪ Braking characteristics ▪ Acceleration characteristics ▪ Decision sight distance ▪ Passing sight distance ▪ Intersection sight distance	Theoretica

6+7+8+9	12		**Roadways and their geometric characteristics** • Highway functions and classification ▪ Highway classification ▪ Preserving the function of a facility • Highway design elements • Horizontal alignment ▪ Quantifying the severity of horizontal curves: radius and degree of curvature ▪ Review of trigonometric functions ▪ Critical characteristics of horizontal curves ▪ Superelevation of horizontal curves ▪ Spiral transition curves ▪ Sight distance on horizontal curves	Theoretica	
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			▪ Compound horizontal curves: ▪ Reverse horizontal curve • Vertical alignment of highways ▪ Grades ▪ Geometric characteristics of vertical curves ▪ Sight distance on vertical curves ▪ Other minimum controls on length of vertical curves • Cross-section elements of highways ▪ Travel lanes and pavement ▪ Shoulders ▪ Side-slopes for cuts and embankments ▪ Guardrail		
10+11	6		**Traffic stream characteristics** • Types of facilities • Traffic stream parameters ▪ Volume and rate of flow ▪ Speed and travel time ▪ Density and occupancy ▪ Spacing and headway: microscopic parameters • Relationships among flow rate, speed, and density	Theoretical	

12+13+ 14+15	12		**Volume, speed, travel time and delay studies and characteristics** ▯ Volume ▪ Critical volume parameters ▪ Volume, demand, and capacity ▪ Volume characteristics ▪ Intersection volume studies ▪ Types of volume counts ▪ Traffic volume data presentation ▯ Spot speed studies ▯ Locations for spot speed studies ▪ Time of day and duration of spot speed studies ▪ Sample size for spot speed studies ▪ Methods for conducting spot speed studies ▪ Presentation and analysis of spot speed data ▪ Methods for conducting travel time and delay studies ▯ Its advanced technologies	Theoretical	
11. Course Evaluation					

1. **Participation within the classroom 5%.**
2. **Short written tests 5%.**
3. **Assigning homework at the end of each topic 5%.**
4. **Attendance 5%.**
5. **Monthly written exams 20%.**
6. **Final semester exam 60%.**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• R. P. Roess, E. S. Prassas, and W. R. McShane " Traffic Engineering", 4th edition • N.J. Garber & L.A. Houel "traffic & Highway engineering" 4th edition • Traffic Engineering Handbook, 6th edition
Main references (sources)	• Uniform Vehicle Code and Model Traffic Ordinance • Manual on Uniform Traffic Control Devices, 2003(new edition anticipated in 2009-2010) • Highway Capacity Manual, 4th edition (5th edition anticipated in 2010) • A Policy on Geometric Design of Highways and Streets (The AASHTO Green Book), 7th edition • Traffic Signal Timing Manual, 1st edition • Transportation Planning Handbook, 3rd edition • Trip Generation, 8th edition • Parking Generation, 3rd edition
Recommended books and references (scientific journals, reports…)	Ministry of housing and construction " Highway design Manual'' 2003

Electronic References, Websites	-------