

Course Name	Highway Engineering		
Semester, Year	Second Semester, 2018 (Fall Term)	Number of Credits	2 credits
Course level	3000	Course Number	27094
Instructor(s) (Institution)	Tamon UEDA (大学院工学研究院) Hiroshi YOKOTA (大学院工学研究院) Toru HAGIWARA (大学院工学研究院) HENRY Michael (大学院工学研究院)		
Course Objectives	Study on highway traffic, such as design of highway materials and pavement structures, geometrical design of highway, traffic volume, expression of traffic flow, traffic jam measures, cause of traffic accidents and traffic safety measures.		
Course Goals	Understand design methodology for safe, comfortable and smooth highway traffic and its maintenance and repair methods.		
Course Schedule	<p>1. Introduction of Course Outline</p> <p>2. Human, Car and Highway Identify traffic problems, such as traffic safety, traffic congestion and environmental pollution, in aspect of human, cars and highways and recognize role of traffic engineering.</p> <p>3. Geometric Design of Highway and Traffic Volume Study basic concept, components and background of design guidelines for geometric design as well as concepts of traffic volume and service level for flow at uninterrupted section and intersection.</p> <p>4. Traffic Flow Theory, Traffic Control and Operation Understand expression for traffic flow, such as fluid model and tracking model, traffic flow characteristics and description of dynamic governing equation, and study theory on traffic control and practical examples of traffic control system.</p> <p>5. Traffic Safety Study actual situation of traffic accident, relationship between highway structure and human error, relationship between human characteristics and accident, and traffic safety measure.</p> <p>6. Examination for Traffic Engineering</p> <p>7. Design of Highway Structures (two times) Study on estimation of loads, bearing capacity of roadbed, and load distribution.</p> <p>8. Materials (two times) Study on properties of asphalt, cement, crushed rock, sand and stone powder.</p> <p>9. Highway Damages and Maintenance and Repair (2 times) Study on types of damages and their causes, and maintenance and repair works.</p> <p>10. Examination for Pavement Engineering</p>		
Homework	Two credits will be given for 90 hours of study for the course in a lecture form. Actual lecturing hours are 30 hours, which is 90 minutes (accounted as 2 hours) times 15, so that 4 hours of study before and after each class is required. This point should be remembered for your own study plan.		
Grading System	Scores of in-class exercise and report, and regular examinations will be considered. However, if class attendance rate is below two thirds, students will be disqualified for the regular examinations.		
Textbooks / Reading List	交通工学 大蔵泉 コロナ社 1993		
Websites	http://www.eng.hokudai.ac.jp/labo/maintenance/Lecture(Ueda)/Highway_Engineering/HighwayEng.htm		
Website of Laboratory	http://www.eng.hokudai.ac.jp/labo/maintenance/team_ueda/index.html		
Additional Information	Prof Hagiwara will take the part for traffic engineering (1st half) and Prof Yokota, Prof Ueda and Dr Henry will take the part for pavement engineering (2nd half). The regular examination will be conducted separately for traffic engineering and pavement engineering. The course is taught in English but the material may be prepared in both English and Japanese. The course is registered for HUSTEP and International Exchange.		