Cairo University
Faculty of Engineering
Public Works Department

Highway and Traffic Engineering
PBW 401
2013 - 2014

GEOMETRIC DESIGN
Course Overview

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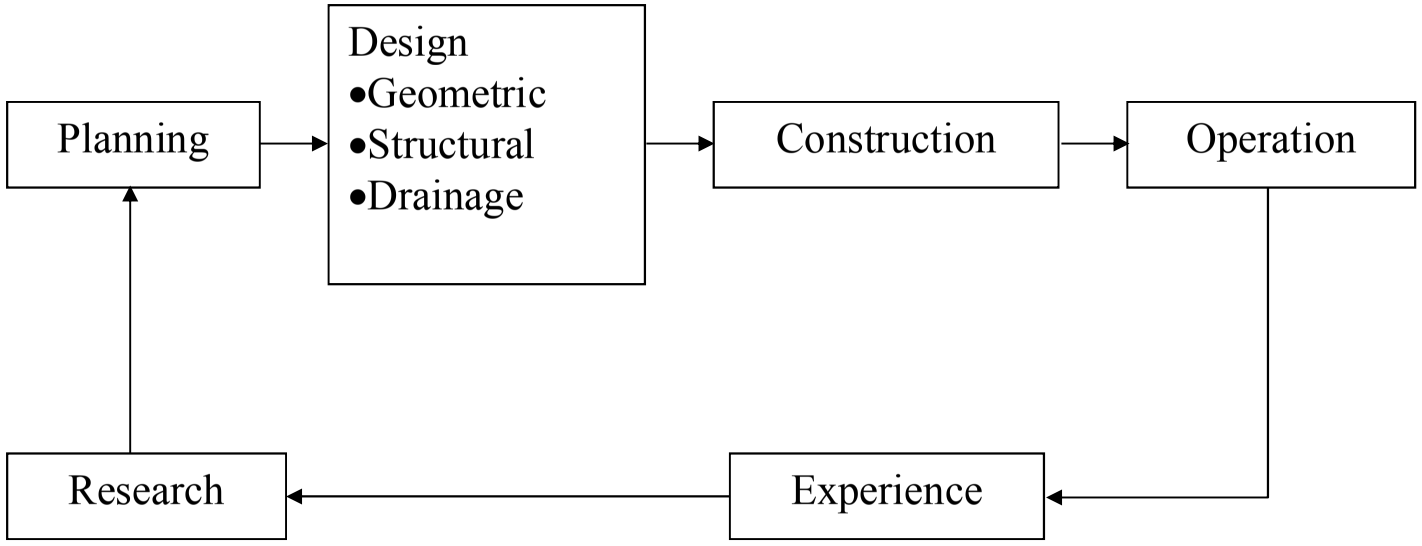
1. Introduction and Course Overview

- **Course Objectives**:
  - The main objective of this course is to introduce Civil Engineering students to the basic concepts and techniques of Highway Engineering.
  - Emphasis is placed on the components of the highway system, i.e., driver, vehicle, structure and the interaction between them as related to the design, construction, operation and maintenance of the highway system.
  - After this course you will be able to carry out designs of rural and urban highways and streets. This would include route selection, geometric alignment design, and structural design.

Introduction and Course Overview

- **Employment in Transportation**:
  - Transportation represents one of the broadest opportunities for employment. It involves many disciplines and modes.
  - As a civil engineer you can work in planning, design, construction, operation, and maintenance of transportation systems. You consider also the efficiency of the system in an economic point of view, and the external requirements concerning energy, air quality, safety, congestion, noise, and land use.



- Opportunities for engineering careers in transportation are numerous
- Careers related to civil engineering include:
  - Planning: selection of projects for design and construction through defining the problem, gathering and analyzing data, and evaluating alternatives based on social, economic, and environmental considerations
  - Design: designing all physical components to ensure smooth, efficient, and safe operation
  - Construction: use of machinery and labour and managing time and resources
  - Traffic operation: integration of vehicle, driver, and pedestrian characteristics to improve the safety and capacity of roads
  - Maintenance: involves all work necessary to ensure that the highway system is kept in proper working order and includes maintenance of pavement, traffic control devices, and other elements

Introduction and Course Overview

- **Course Access**:
  - Access online through facebook group , and a hard copy will be provided in Print Shop.
  - Keep an eye for any announcements
  - You should have a copy of all lectures and assignments each week before lectures and sections.
  - Important Note: Not all information is available in posted lectures.

- **T.As.:**
  - 1. Eng. Elhashemi Mohammed
  - 2. Eng. Hossam Saeed
  - 3. Eng. Peter Ramzy

Introduction and Course Overview

- **Geometric Design Portion Course Outline**:

Week	Topic
1	***Introduction***: Importance of Transportation, Road Classification, Road Classification in Egypt, Factors Influencing Highway Design
2	***Quick Review:*** The Human Response Process, Braking Distance , Sight Distance
3	Cross Section Elements and Horizontal Alignment
4-5	Horizontal Alignment
6	Vertical Alignment
7	Midterm
8	Vertical Alignment
9-10	Intersection Design
11-12	Interchanges

Introduction and Course Overview

- Important Notes:
  - Students should not attend in sections other than their own.
  - Considerable percentage of the mark will be deducted for messy assignments.
  - Students will be expected to submit cover page to the sheet with name, bench number, sheet number and title.
  - Due dates will be strict. Any delay in sheets (even the next day) will cause deduction in marks. 20% can be deducted per day late to a maximum of 60% deduction.
  - Copied sheets will be monitored and marks will be deducted.
  - Students are expected to attend both lectures and sections. Not all subject material is covered in both and students are responsible for all material. Sections will mainly focus on problem solving.
  - Tables/ Figures handbook is available in the Department and needs to be with the students in all lectures and sections.