ABET course syllabus (Pavement Design)

1. *Course number and name*
   0901482: Pavement Design

2. *Credits and contact hours*
   3 Credit Hours

3. *Instructor's or course coordinator's name*
   Instructor: Khair Jadaan, Professor of Civil Engineering
   Course Coordinator: Khair Jadaan, Professor of Civil Engineering

4. *Text book, title, author, and year*
   Huang, Y. H., "PAVEMENT ANALYSIS AND DESIGN", Prentice Hall, 2nd Ed., 2004, 792 p.

   a. *other supplemental materials*
      GUIDE FOR THE DESIGN OF PAVEMENTS, AASHTO, 1993.

5. Specific course information
   a. *brief description of the content of the course (catalog description)*
      Pavement types, structural design: stress analysis, vehicle and traffic consideration, structural design of flexible and rigid pavements, pavement materials: bituminous materials and their uses, asphalt concrete mix design, pavement distress and maintenance, preparation and construction of pavements. Planning of maintenance works.

   b. *prerequisites or co-requisites*
      Prerequisite: Highway & Traffic Engineering (0901481)

   c. *indicate whether a required, elective, or selected elective course in the program*
      Required for Civil Engineering

6. Specific goals for the course
   a. By the end of this course, the student will be able to:
   - Students will have a fundamental understanding of the methodology of pavement analysis and design, and the required inputs for pavement design.
   - Students will be familiar with the methods to characterize load and traffic, and the methods to characterize materials.
   - Students will be familiar with new Mechanistic-Empirical Pavement Design Guide (MEPDG).
   - Students will be able to design both flexible and rigid pavements according to AASHTO methods.

   b. *Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*
      Course addresses ABET Student Outcome(s): c, e, h, and k

7. *Brief list of topics to be covered*

- Introduction

- Types of distresses in flexible and rigid pavement
- Stresses and strains in flexible pavements
- Stresses and strains in rigid pavements
- Traffic loading and other design variables
- Materials characterization
- Flexible pavement design methods
- Rigid pavement design methods
- Mechanistic-Empirical Pavement Design Guide
- Nondestructive testing and overlay design
- Superpave design method/ Pavement Management System