1.	Title of the course	Pavement Engineering Laboratory
2.	Course number	CE529P
3.	Structure of credits	0-0-3-2
4.	Offered to	PG
5.	New course/modification to	Modification To CE5195/8
6.	To be offered by	Department of Civil and Environmental Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** The laboratory course presents hands-on experience of practices and techniques used in the design and evaluation of pavement mixtures: asphalt concrete and cement concrete. The laboratory is designed to provide postgraduate students with in-depth knowledge in the following areas: properties and characterization behavior of pavement binders (including, modified), mix design approaches and procedures, and state-of-the-art advanced pavement systems characterization tests currently used worldwide	
10.	**Course Content:** Binder laboratory: conventional asphalt binder consistency tests using penetrometer, ring and ball apparatus and rotational viscometer, advanced rheology using dynamic shear rheometer, aging tests using rolling thin film oven and pressure aging vessel; Mixing laboratory: specific gravities, Marshall mix design using Marshall hammer, Superpave mix design using gyratory compactor; Advanced pavement systems characterization: dynamic complex modulus, resilient modulus, compressive and tensile strength, flow number, flow time, fracture toughness using static semi-circular bending, fatigue using indirect tensile fatigue, dynamic semicircular bending and four-point bending beam, indirect tensile strength, creep compliance, triaxial strength using confined cell	
11.	**Textbook(s):** 1. Roberts F L, Kandhal P S, Brown E R, Lee D Y and Kennedy T W, *Hot Mix Asphalt Materials, Mixture Design, and Construction,* National Asphalt Pavement Association Education Foundation (1996). 2. Mamlouk M S and Zaniewski J P, Materials for Civil and Construction Engineers, Pearson Prentice Hall (2010).	
12.	**Reference(s):** 1. NAPA, *Hot-Mix Asphalt Paving Handbook 2000*, National Asphalt Pavement Association and US Army Corps of Engineers (2000). 2. FHWA, Concrete Pavement Design and Construction Practices, State of the Art Technical Digest, Applied Pavement Technology, Inc. (1999).	