CE3015 – Highway Engineering

Credit Distribution: C:9 L:3 T:0 P:0 E:0 O:6 TH:0

Course Type: Theory

Description: To provide fundamental knowledge in highway engineering so that the students can understand and solve problems with a focus on geometric and pavement design

Course Content: Introduction to transportation systems, characteristics; Highway engineering: classification of roads, highway planning; Road – vehicle performance; Geometric design road cross-section, sight distance and applications, superelevation, horizontal and vertical alignment, integration of horizontal and vertical alignment; Types of pavements; bituminous and concrete pavements; Materials for use in highway construction and their characterization; Pavement design- design elements, traffic and stress analysis methods; Bituminous pavement design - Introduction to layered elastic theories, load equivalency factors, IRC method of pavement design; Concrete pavement design - introduction to Winkler foundation, stress analysis, influence of traffic and temperature, IRC method of pavement design - Pavement failures and introduction to pavement construction and maintenance

Text Books

- Highway Engineering, Karen K. Dixon and Paul H. Wright, Wiley, 7th edition, 2009.
- Transportation Engineering, C. Jotin Khisty, B. Kent Lall, Pearson; 3rd edition, 2017.
- Highway Engineering, Martin Rogers, Bernard Enright, Wiley, 3rd edition, 2016.
- Transportation Engineering, L. R. Kadiyali, Khanna Publishers, 1st edition, 2016.
- Principles of Highway Engineering and Traffic Analysis, Fred L. Mannering, Walter P. Kilareski, Scott S. Washburn, Wiley, 3rd edition, 2007.

Reference Books

- Pavement Analysis and Design, Yang Huang, Pearson, 2008.
- Transportation Engineering and Planning, Papacostas, Pearson, Third edition, 2015.
- A Policy on Geometric Design of Highways and Streets (Green Book), AASHTO, 2011 edition.

Prerequisite: NIL