ADDIS ABABA INSTITUTE OF TECHNOLOGY

SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING

CENG 5132 – Fundamentals of Bridge Design

COURSE OUTLINE

1. Introduction

2. Investigation for Bridges
- Site Selection
- Data Collection, Span Determination

3. Types of Bridges and their Selection
- Types of Bridges
- Selection of Bridges

4. Bridge Loading
- Types of Loads
- Distribution of Loads

5. Superstructure
- Reinforced Concrete Superstructures
- Steel Superstructures
- Composite Superstructures
- Arches, Cable stayed, Suspension

6. Substructures
- Piers
- Abutments
- Wing Walls
- Scour Protection

7. Bearings and Railings
- Bearings
- Railings

8. Culverts and Low-Level Water Crossings
- Culverts
- Low Level Water Crossings

9. Bridge Inspection and Maintenance
- Bridge Inspection
- Bridge Maintenance

References:

1. ERA Bridge Design Manual, 2013
2. AASHTO LRFD Bridge Design Specifications, 4th ed. 2007
3. Design of Highway Bridges an LRFD Approach, 2nd ed., Richard M. Barker, 2007
4. Bridge Engineering Handbook, Wai-Fah Chen and Lian Duan. (2000)
5. Highway Bridge Superstructure Engineering LRFD Approaches to Design and Analysis, Narendra Taly, CRC Press, 2015

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