Course Designation: Technical Elective for MSE program with Civil Engineering Concentration
2008-10 5193 Design of Bridge Structures. (3-0) Credit 3 semester hours

Catalog Data: Design of reinforced concrete, steel beam, continuous beam and girder bridges; design of piers, abutments and bearings; bridge construction and fabrication.

Prerequisites: CVEG 3083 and CVEG 4013

Textbook: None


References:
- AASHTO Standard Specifications for Highway Bridges (http://www.aashto.org)
- AASHTO LRFD Bridge Design Specifications (http://www.aashto.org)
- AISI Four LRFD Design Examples of Steel Highway Bridges (http://www.aisc.org)
- PCI Precast Prestressed Concrete Bridge Design Manual (http://www pci org)
- Forest Service Timber Bridges
- Bridge Rehabilitation and Replacement by Sung H. Park
- Bridge Inspection by Sung H. Park
- FHWA Bridge Inspector's Training Manual
- Bridge Substructure and Foundation Design by P.P. Xanthakos (http://vig.prenhall.com:8081/catalog/academic/product/0,4096,0133006174,00.html)

Course Learning Outcomes:
Students will be able to
- Develop an understanding of the AASHTO LRFD Bridge Design Specifications.
- Develop the ability to read contract document bridge plans.
- Observe an existing bridge site as well as bridge girder fabrication at prestressed -concrete and steel girder manufacturing plants.
- Hear from an experienced local bridge contractor.
• Develop the ability to determine a bridge’s type, width, span, and clearance.
• Develop an understanding of bridge aesthetics.
• Develop an understanding of bridge loads and how they are distributed.
• Develop the ability to design a reinforced-concrete bridge deck.
• Develop the ability to design a single-span superstructure using prestressed-concrete girders.
• Develop the ability to design a single-span superstructure using welded-steel-plate girders.
• Develop an understanding of multi-span bridge design.
• Develop the ability to design a reinforced-concrete bridge bent/pier.
• Develop an understanding of abutment and bearing design.

Topics Covered:
• Course Introduction Preliminary Exam
• Bridge Types, Aesthetics
• Bridge Plans, Width, Span, Clearance
• Bridge Site in Houston
• Loads
• Structural Analysis
• Concrete Decks
• Concrete Girders
• Steel Plate Girder
• Prestressed Concrete Fabrication Plant
• Prestressed Concrete Girder
• Guest Speaker – Bridge Contractor
• Multi-span Bridges
• Bent/Pier
• Abutment, Bearings

Class Schedule
Lecture: 1 three-hour session per week

Relationship of Course to Program Outcomes: Program outcome e is assessed in the course.

Calendar
• Instruction Begins: January 19
• Last Day to Drop courses without Record: February 3
• Drop day (courses canceled for Non Payment): February 3
• Mid-Semester Examinations: March 11-13
• Last date to withdraw from classes with automatic “W”: April 5
• Final Exam: May 7-12