ARCH 331. Study Guide for Quiz 5

This guide is not providing "answers" for the conceptual questions. It is a list of topical concepts and their application you should be familiar with. It is an *aid* to help prepare for the quiz.

Covers material of Lectures 18, 19, 20, & 21

- ☐ Steel materials, hot-rolled, cold-formed, corrosion, fatigue, strength loss with heat
- ☐ Steel grades (standard properties)
- ☐ Yield strength vs. ultimate strength
- ☐ Local buckling in web & flange
- ☐ Lateral torsional buckling
- ☐ Bearing on flange
- ☐ Plastic section modulus
- ☐ Plastic moment & plastic hinges
- ☐ Braced vs. unbraced length
- ☐ W (first number meaning) x (second number meaning)
- ☐ Area of web
- ☐ Load tracing & tributary width (vs. area)
- ☐ Self-weight
- ☐ Neutral axis, section modulus, *Q,* extreme fiber
- ☐ Use of Beam Diagrams and Formulas
- ☐ Deflections & superpositioning (+ *units)*
- ☐ Lateral buckling (and bracing)
- ☐ Design methodologies
- ☐ Allowable Stress Design
- ☐ Load and Resistance Factor Design
- ☐ Unified Design Method
- ☐ Factored loads
- ☐ Resistance Factors
- ☐ "Design" values vs. "Capacity"
- ☐ Factor of Safety
- ☐ Load types (and directions) *(like D, L, S …)*

- ☐ Load combinations
- ☐ Minimum Design Loads & Requirements
- ☐ Serviceability and limits
- ☐ Economical selection by Z charts
- ☐ Design vs. analysis
- ☐ Use of beam moment capacity charts
- ☐ Equivalent distributed load based on a maximum moment
- ☐ Use of Load Tables
- ☐ Horizontal distribution of sloped dead load
- ☐ Depth with respect to span length and shape
- ☐ Joist vs. beam vs. girder
- ☐ Plate girder
- ☐ Web stiffener plates
- ☐ Decking (composite vs. non)
- ☐ Open web joist
- ☐ Method of Sections
- ☐ "Best" location for summation of moment
- ☐ Truss configurations and assumptions for analysis
- ☐ Zero-force member
- ☐ Special truss member configurations at joints and conditions
- ☐ Compound truss, space truss, tensegrity
- ☐ Diagonal tension counters and solution method
- ☐ Lateral bracing and trusses
- ☐ Compression and trusses

☐ Indeterminate trusses

☐ Slenderness criteria & l/r

☐ *with respect to least radius of gyration*

☐ kl/r limit for steel

☐ Compact section criteria

☐ Use of column load capacity charts

☐ Check for column design efficiency

☐ Bolt designations

☐ Gross area

☐ Effective net area

☐ Area of web

☐ Connection types

☐ Weld strengths

☐ Throat thickness

☐ Fillet, butt, plug, slot

☐ Coping

☐ Tension member, spacing and gage

☐ Shear lag

☐ Gusset plates

☐ Simple shear connector

☐ Single vs. double shear

☐ Capacity of a connection

☐ Block Shear Rupture

☐ Effective length, K & bracing

☐ Beam-Columns

☐ Combined bending and compression – *interaction*

☐ P-Δ effect

☐ Eccentricity