# ARCH 331. Study Guide for Quiz 3

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 9, 10, 11 & 12**

- ☐ Equivalent center of load area
- ☐ Equivalent Force Systems
- ☐ Composite shape
- ☐ Centroid, moment of inertia, *Q*, radius of gyration
- ☐ Negative area method
- ☐ Parallel axis theorem
- ☐ Bending & shear stress (beams)
- ☐ Relation of strain to stress & Modulus of Elasticity
- ☐ Neutral axis, section modulus, *Q*, extreme fiber
- ☐ Stiffness (relative to EI/L through $\Delta$)
- ☐ Maximum bending stress (& location along length and in cross section)
- ☐ Maximum shear stress (& location along length and in cross section)
- ☐ Maximum shear stress by beam shape (proper equations)
- ☐ Economical selection by A or S charts
- ☐ Shear flow and shear center
- ☐ Connected area
- ☐ Nail capacity and pitch for resisting longitudinal shear
- ☐ Statically Determinate vs. Indeterminate
- ☐ Restrained
- ☐ Continuous
- ☐ Inflection point
- ☐ Compound beams with pins
- ☐ Use of Beam Diagrams and Formulas
- ☐ Pinned arches and frames
- ☐ Rigid vs. non-rigid pinned frames
- ☐ Rigid frame behavior
- ☐ Internal pin connections
- ☐ Free Body Diagram rule for force at a pin of a frame
- ☐ Two-force bodies and relationship to loads
- ☐ Three-force bodies
- ☐ Moment *redistribution* for statically indeterminate beams
- ☐ Connection types and load/moment transfer
- ☐ Types and purpose of bracing
- ☐ Stability
- ☐ Buckling
- ☐ Slenderness
- ☐ Critical Buckling and Euler's Formula
- ☐ Effective length, K & bracing
- ☐ Beam-columns
- ☐ Combined bending and compression - *interaction*
- ☐ P-$\Delta$ effect
- ☐ Eccentricity
- ☐ Load combinations on rigid frames
- ☐ One-way and two-way slab behavior and support types
- ☐ Relative joint stiffness for determining effective length ($\psi$)