

Study Guide for Final Exam
(April 11th, 2019 from 14:00 to 17:00 at 125 University (GYM))

General:

- 5 questions
- CLOSED BOOK
- Formula sheet with space for personal notes (download from Virtual Campus and bring it to exam)
- Only non-programmable calculators are permitted

Advice:

- Prepare your "formula sheet" and study with it ... do not leave this till the last minute
- Try each question: 5 questions / 180 minutes ~ 30 minutes for each question
- Ask if you do not understand the question
- If you are stuck, move on to the next question

What does the exam cover?

- **Everything!**

How to study?

- examples in class
- examples in the tutorials
- examples in the homework assignments

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Note: (P) refers to Philpot's textbook.

Statics:

- Support reactions: section 7.1 (P), handout posted on Virtual Campus
- Internal forces in beams and frames: section 7.2 (P)
- Shear and moment diagrams using the graphical method: section 7.3 (P), handout posted on Virtual Campus
- Trusses: review method of joints & sections, handout on special joints posted on Virtual Campus

Assignment #1, Tutorials #1, #2, Q2 from midterm

Geometric properties of an area:

- Centroid: section A1 (P)
- Moments of inertia: sections A2-A4 (P)
- Handout posted on Virtual Campus

Assignment #2, Tutorial #3, Q1 from midterm

Axially-loaded members:

- Deformation of an axially-loaded member : sections 5.3-5.4 (P)
- Statically indeterminate axially-loaded members: section 5.5 (P)

Assignment #3, Tutorial #4, Q3 from midterm

Columns:

- Critical load for a column with pin supports: sections 16.1-16.2 (P)
- Columns with other supports: section 16.3 (P)
- Factor of safety: section 4.4 (P)

Assignment #3 (last question), Tutorial #5

Flexural stresses:

- Bending deformation: section 8.2 (P)
- Flexure formula: sections 8.3-8.4 (P)

Assignment #4, Tutorial #6

Deflection of beams:

- The elastic curve: sections 10.2-10.3 (P)
- Double-integration method: sections 10.4-10.5 (P)
- Discontinuity functions: section 10.6 (P), handout posted on Virtual Campus

Assignment #5, Tutorial #7

Shear stresses:

- Shear stresses due to bending: sections 9.2-9.5, 9.7 (P)

Assignment #6 (problems 1-3), Tutorial #8

Torsion of members with circular cross section:

- Torsional deformation & torsion formula: sections 6.2-6.3 (P)
- Angle of twist: section 6.5-6.6 (P)
- Statically indeterminate torque-loaded members: section 6.9 (P)

Assignment #6 (problems 4-5), Tutorial #9

Combined stresses:

- Combined loadings: sections 15.2-15.4 (P), handout posted on Virtual Campus
- Transformation equations: sections 12.2-12.7 (P)
- Principal stresses & maximum in-plane shear stresses: sections 12.8-12.9 (P)
- Mohr's circle: section 12.10 (P), handout posted on Virtual Campus

Assignment #7, Tutorial #10