

DT004 - Structural Analysis

Lecturer: Dr. Colin Caprani, Chartered Engineer

Subject: Analysis of structures for load effects

Aims: To provide students with:

- An intuitive understanding of structural behaviour;
- Methods for the determination of various load effects;
- Appreciation of different types of structures.

Semester 1 Syllabus:

1. Fundamentals of structural analysis;
2. Stability, determinacy and indeterminacy;
3. Analysis of statically determinate beams;
4. Analysis of statically determinate frames;
5. Qualitative analysis of beams and frames.

Semester 2 Syllabus:

1. Review of beams and frames;
2. Analysis of statically determinate trusses;
3. Moment distribution for the analysis of indeterminate beams;
4. Virtual Work for deflections of trusses;
5. Macaulay's Method for the deflections of beams.

Note that there may be some crossover of topics between semesters, depending on class progress. Any such changes will be well signified.

The class will usually be broken up into 1.5 hours lectures, a half-hour break, followed by a 1-hour tutorial session.

Course Website

The course will be supported through the lecturer's website:

www.colincaprani.com – go to the *Structural Engineering* section of the site.

On the site there are two main resources:

- **Lecture notes:** most of the lecture notes will be available in PDF format for download from the website. Class handouts will still be the main source of material.
- **Discussion Forum:** to facilitate students studying on their own, or maybe when home for the weekend, there is a forum through which you can liaise with others. Feel free to ask questions and to answer them. Though the forum will be facilitated by your lecturer, there is no guarantee that a question will receive an answer from me. This is primarily a way to encourage student-to-student remote learning.

Some other resources that may prove useful will be links to sites with good material and the provision of some software (with absolutely no guarantees!).

The website support for the course is only meant to help, so please:

- Do not abuse either the facility or the facilitator!
- Try to use the site to best help you and your friends.
- Suggest ways to improve the usefulness of the website.
- Do not post inappropriate comment/content – your site access will be removed, with more serious consequences also possible.

You are required to register for the forum – **only registrations in your own name will be approved**. You can change your display name later on.