


**POLITECNICO
DI TORINO**

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Politecnico di Torino

Anno Accademico 2016/17 (istituito per la prima volta nell'A.A.2015/16)
01SABRW
Linear viscoelasticity of Materials (didattica di eccellenza vp)
Dottorato di ricerca in Ingegneria Civile E Ambientale - Torino

Docente	Qualifica	Settore	Lez	Es	Lab	Anni incarico
Underwood Benjamin Shane			20	0	0	1

SSD	CFU	Attività formative	Ambiti disciplinari
*** N/A ***			

Presentazione

PERIODO: MAGGIO

The aim of this course is to introduce concepts and calculation methods for responses of linear viscoelastic materials. The approach will be presented using principally a strength of materials approach, but with linkages to general continuum mechanics methods at the end of the course.

This course will have the following objectives;

- Derive a mathematical model for linear viscoelasticity from a mechanical analog and apply the theory to experimental data in order to characterize the parameters of the associated models;
- Apply Laplace and inverse Laplace Transforms to relate elastic solutions to viscoelastic problems;
- Calculate the time-dependent stress (strain) response to a generalized strain (stress) input; and
- Derive the time-dependent linear viscoelastic response functions from the frequency-dependent response functions and vice-versa.

Programma del corso:

Theory of Viscoelasticity

- Time-dependent material response (Mechanical analog)
- Linear black box theory using hereditary integral
- Creep compliance, relaxation modulus, and complex modulus
- Linear viscoelastic constitutive equations
- Linear elastic-viscoelastic correspondence principle

Programma

Calendario:

- 15 maggio: 14.30-17.30
- 17 maggio: 9-13
- 19 maggio: 14.30-17.30
- 24 maggio: 9-13
- 26 maggio: 9-13
- 29 maggio: 9-13
- 31 maggio: 9-13

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Programma provvisorio per l'A.A.2016/17

