Online Learning Experience + BME Student Experience

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Online Learning

Pros

- Flexibility
- Repetition
- Office hours

Cons

- Distractions
- Tests

Summer 2020

Home Insert Draw View

Cut Copy Format Paste

Calibri 11

Heading 1 Heading 2

To Do Question Definition Important Remember for later Highlight To Do

BME...

- Lecture 1 - I...
- Lecture 2 -...
- Lecture 3 -...
- Lecture 4ab
- Lecture 4cd
- Lecture 5ab
- Lecture 5c
- Lecture 6a
- Lecture 6bc
- Lecture 7a
- Lecture 7b
- Lecture 8a
- Lecture 8b
- Euler + Fixe...
- Lecture 9a

Page

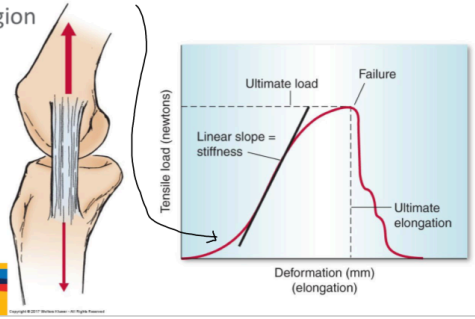
regions of tissue

	Collagen fibril organization	Uniaxial—parallel to tendon long axis	Bundles for multiaxial loading pattern
% Ground substance	Lower	Higher	
% Water	Lower	Higher	

a. Percentage of cross sectional area filled by collagen fibril.

Basic Mechanical Behaviour

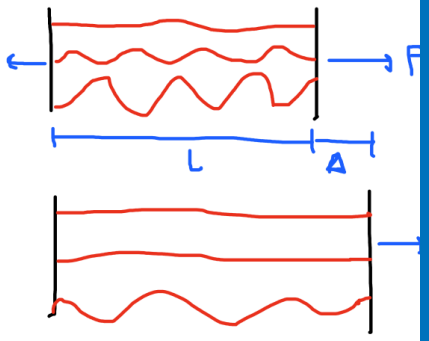
- Connective tissues are significantly non-linear & viscoelastic under normal physiologic loading conditions
  - Lets consider a quasi-static situation where viscoelasticity can be ignored
  - Why is the there an initial non-linear toe-in region?
    - Tissue progressively stiffening in this region
    - Initially few fibers are carrying load because they are crimped
    - As they straighten, they carry load & increase total stiffness



Viscoelasticity is the property of materials that exhibit both viscous and **elastic** characteristics when undergoing deformation.

Non-linear toe-in region: has something to do with hierarchical structure of the ligament and the crimped structure

As you stretch it out more and more fibers will straigten and begin carrying load, stiffening overall ligament.
Progressive stiffening



Basic Mechanical Behaviour

- Connective tissue has time & history dependent visco-elastic properties
  - Rate of loading, time under load, and number of cycles all affect

Time and history dependent!

Rate of loading, time under load, number of cycles

Hysteresis Hysteresis is the dependence of the state of a system on its history. For exampl
may have more than one possible magnetic moment in a given magnetic field, depending
field changed in the past

If you take a piece of tissue and load it: very first time induces a permanent change. As you
and more, the change becomes less and less

There is a reset period -> assuems back in original postion when you wake up in the morni

Online Learning

Tips:

- Study groups
- Study spaces
- If possible, get a second monitor
- Comfortable desk set up
- Do a course load that works for you

BME Student Experience

Design and Research Opportunities

- Volunteer
- Work Study
- Co-op

Check out Faculty and “Labs and Links” on the biomedical engineering home page.

BME Student Experience

BME Events

- Health Hackathon
- BEEP Day / BME Day
- Vancouver Island Life Sciences (VILS) Events

BME Student Experience

Cool classes!

Small classes!

Mentorship Opportunities

Leadership Through Diversity Mentorship Program

- Pairs upper and lower year students for course recommendations, homework advice, and any engineering related questions
- Email ltd.uvic@gmail.com

Thank you!