Teaching Forensic Engineering

New Learning Environments in Engineering Education

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Programme

15.15 Quick Introduction into the Course & its Background

15.30 Introduction to the "Mysterious Case of the Cracked Eggs" & split into groups

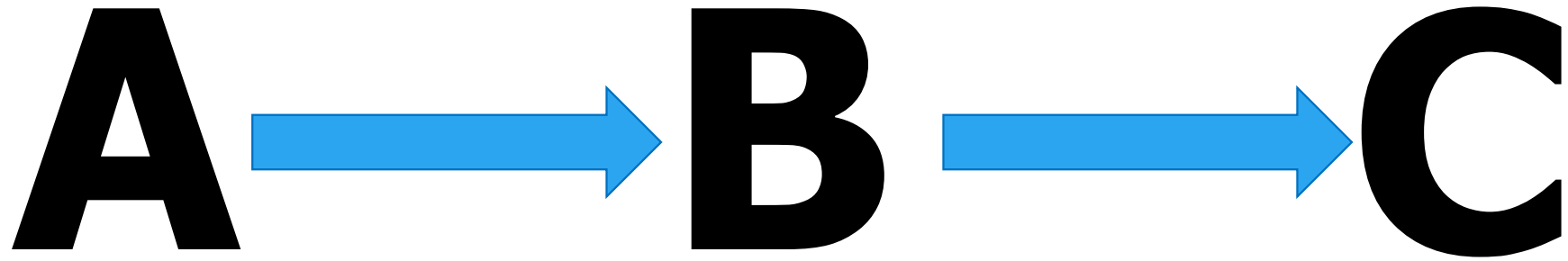15.45 Solve Case Assignment in groups in Self-Study Space Main Hall

16.15 Report back to the plenary group in Lecture Room D

16.30 Main Conclusions and Q&A

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The Challenge?

- To teach students that live is not like television

TV teaches us:

A → **B** → **C**

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Forensic Engineering

Learning objectives

At the end of the course students will be able to:

- Describe and explain the accident investigation goal and identify and analyse the different investigation phases.

- Demonstrate and apply accident investigation techniques.

- Select and use forensic investigation techniques to determine failure causes.

- Have knowledge of constructing and testing hypothesis and the ability to go through a verification process.

- Write an Annex 13 accident report with fact, analyses and conclusion including the formulation of recommendations to prevent reoccurrence or diminish the consequence of future events.

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Learning objectives

At the end of the course students will be able to:

- Apply Logical and Critical thinking skills

- Work together in a team

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How do we teach this?

By combining

- Theory
  - Investigation Techniques
  - Investigation Methodologies
  - Data
  - Collisions
  - Fire and Explosion investigation
  - Interviewing

- Practice
  - Case studies investigation incidents practising interviewing, observation and data collection techniques, applying critical and logical thinking skills and working together

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Example: Interviewing witnesses

Case study of a failed landing

- Digital Field Examination using simulation

- Students in groups interview different witnesses (colleagues role play)

  - On-scene investigation (Group 1)

  - ATC Controller (Group 2)

  - Captain (Group 3)

  - Co-Pilot (Group 4)

- Teams must then meet and combine information to draw conclusions

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Assessment

Exam: "Crash Day"

- Pre-briefing (last lecture)

- Crash day
  - Briefing
  - Field time (1 hour)
  - De-Briefing

- Deliverable: Final Accident Report 2 weeks later

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# Today's Case Study: The Eggercise

Data interpretation through Eggstigation

- Instructors made a 'dropbox'

- Eggs were dropped from a height onto a plate

- The plate had sensor attached
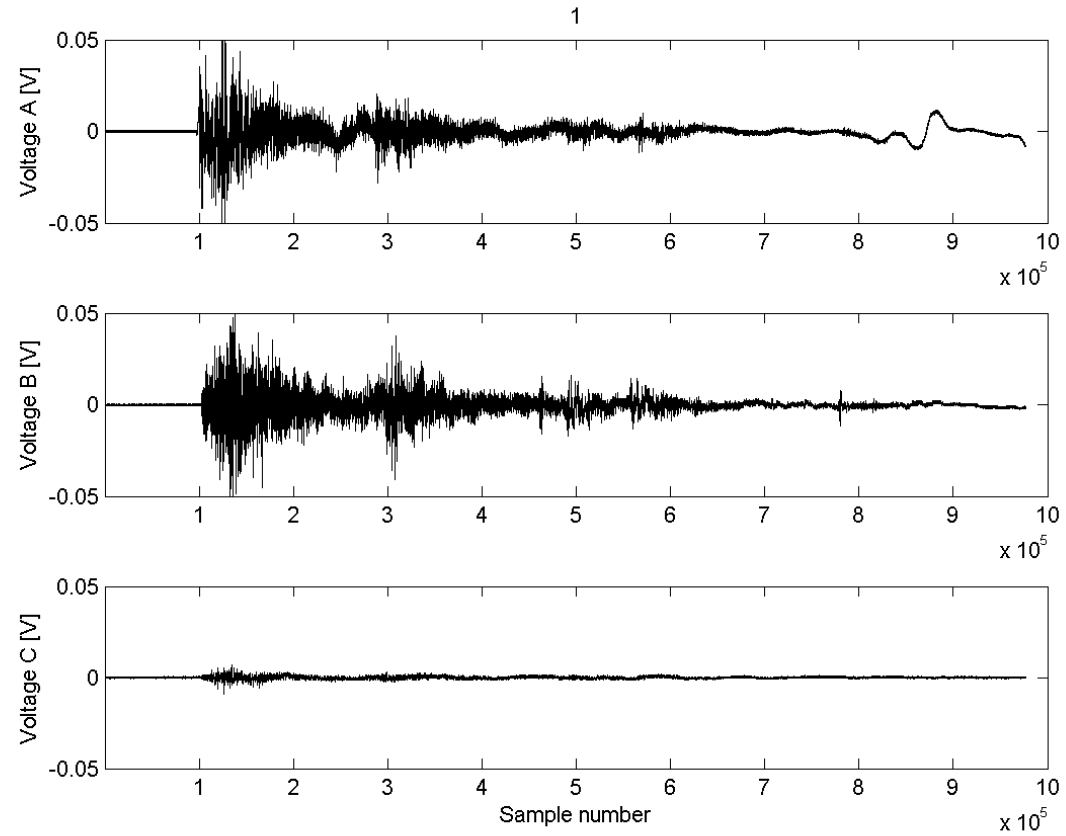
- Photographs were made of the dropped eggs

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Your Eggsignment

- In groups you will receive an envelope containing 4 different cases

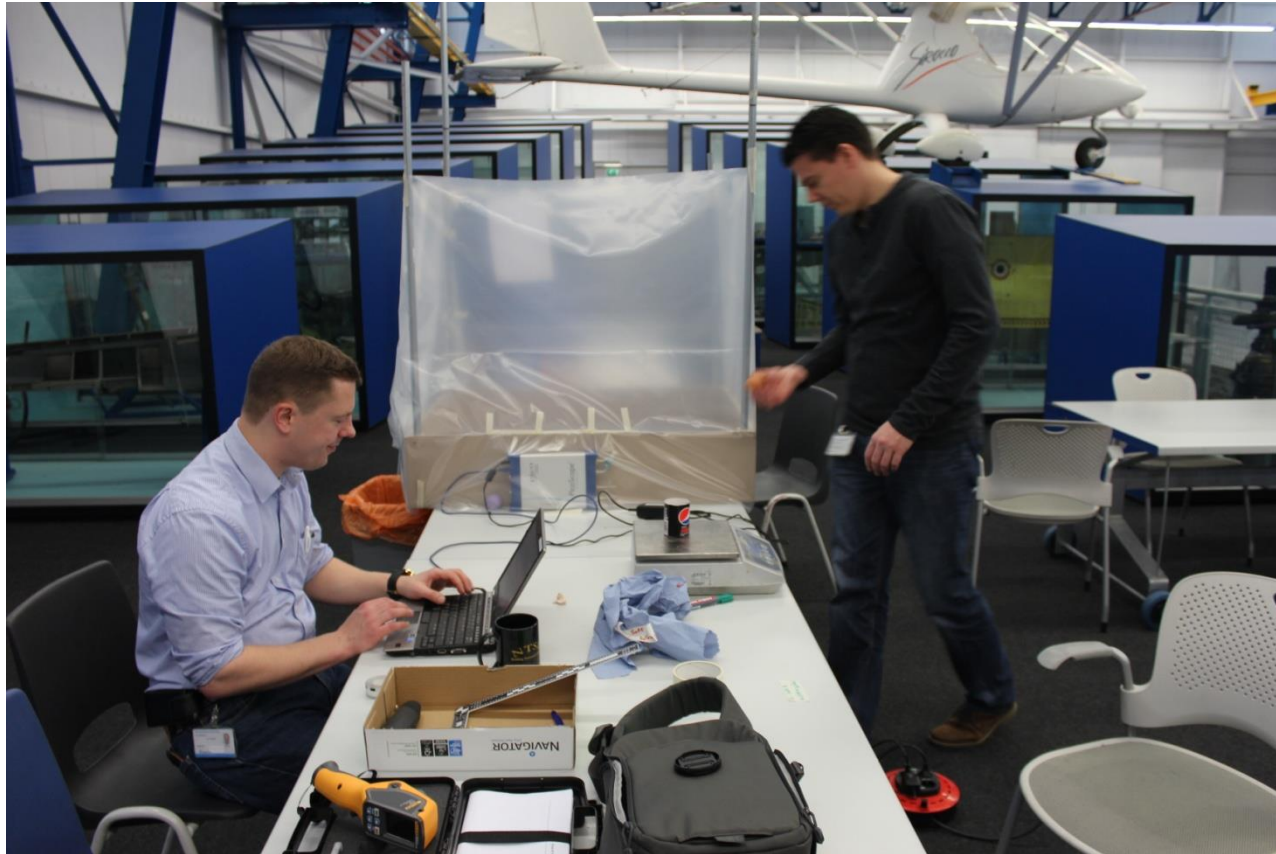- Determine for each case what happened

- Please be back here at 16.15h
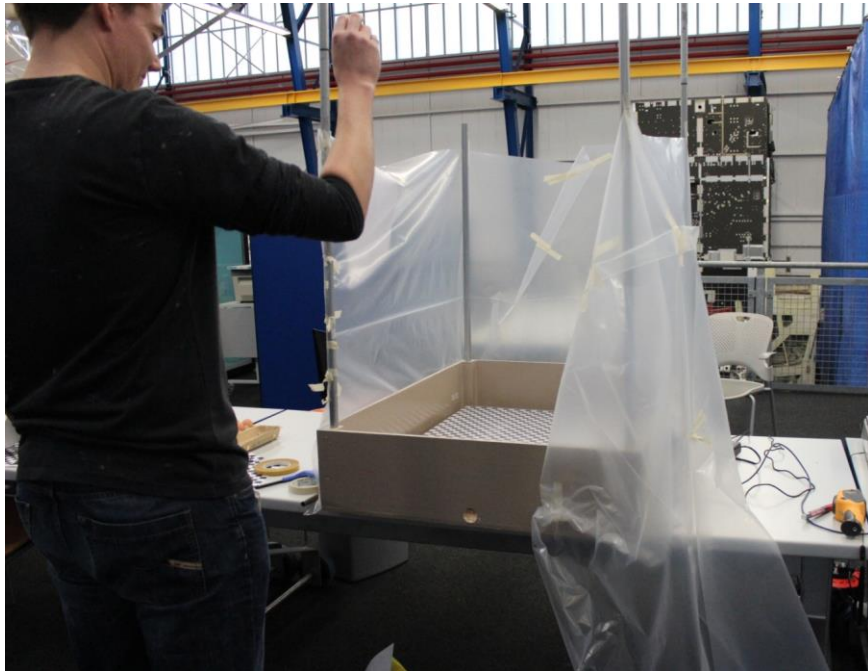
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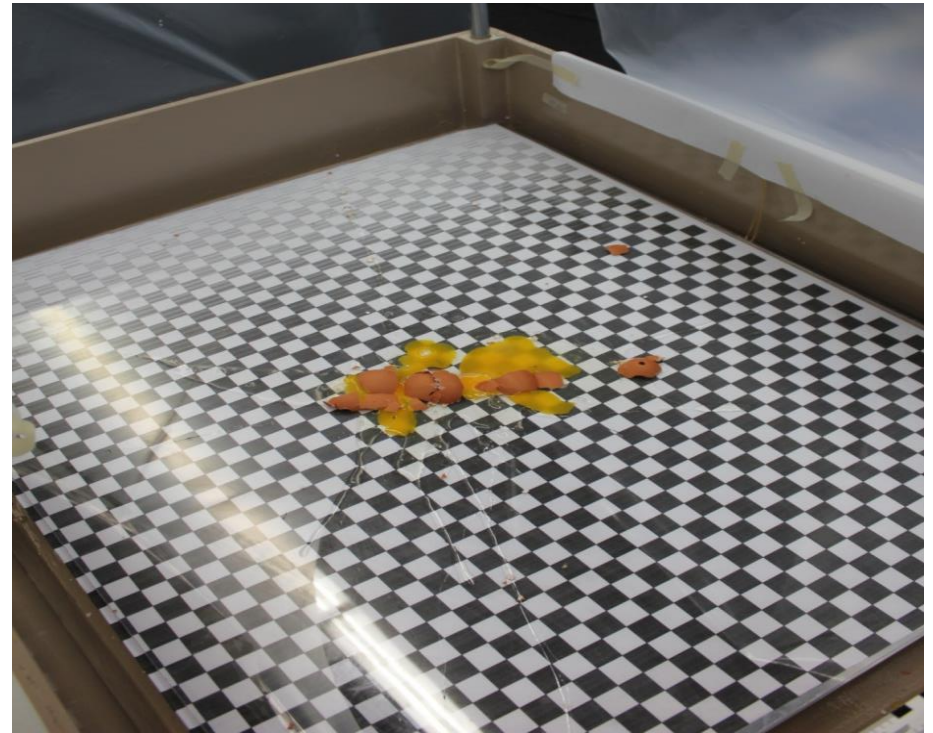
Eggsercise

Eggsercise

Sensor data

Eggsercise
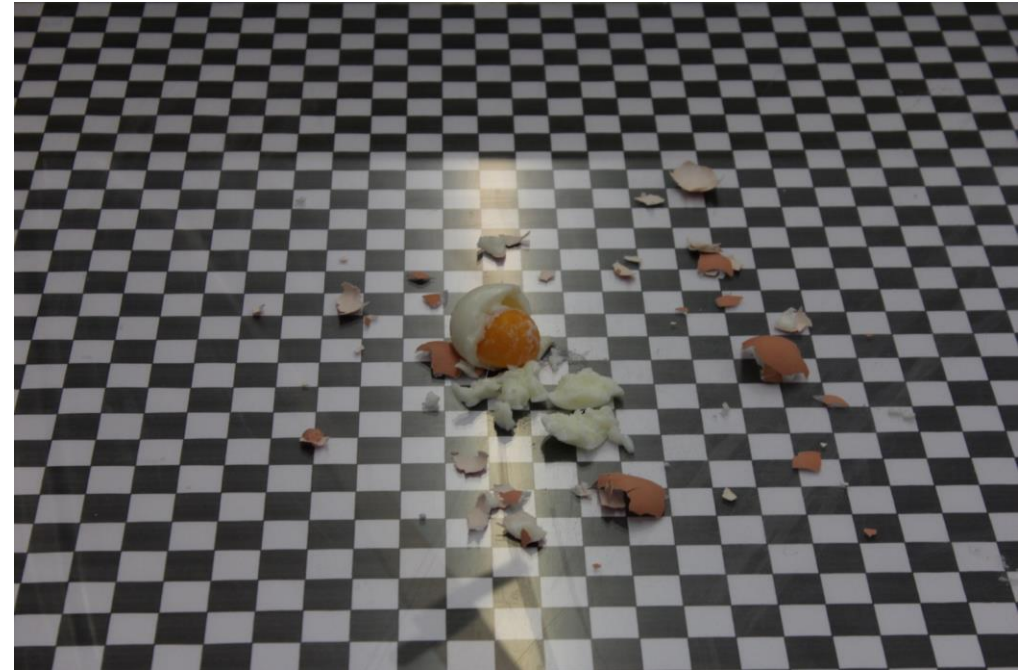
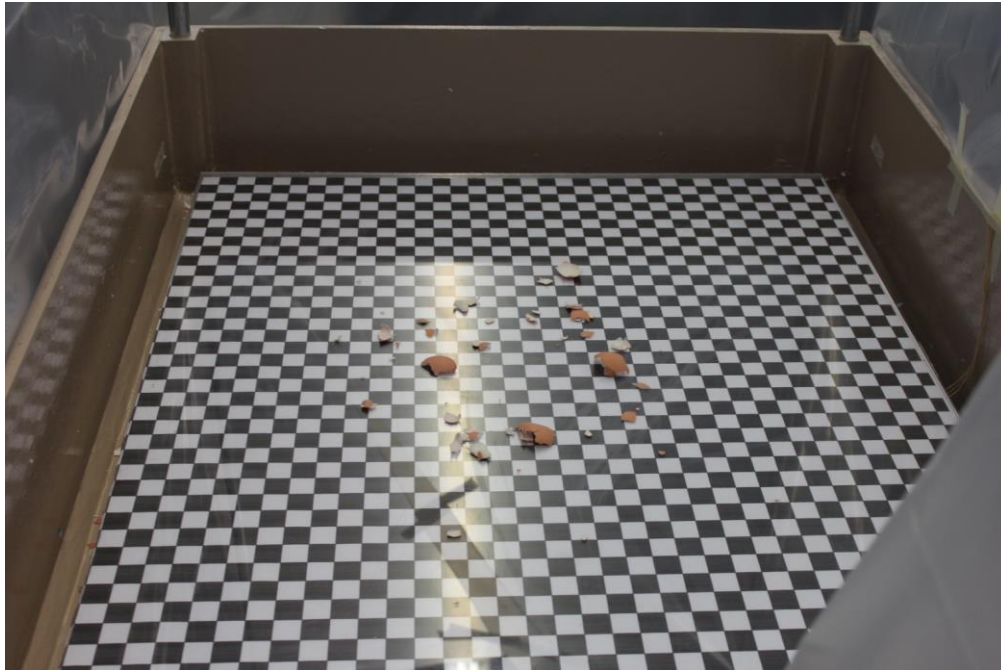**How did we measure?**

Eggsercise

Testing

Eggsercise

Boiled, frozen or raw?

Wrapping up

What did you like about the eggsercise?   **How could you do something similar?**

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Questions?

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