

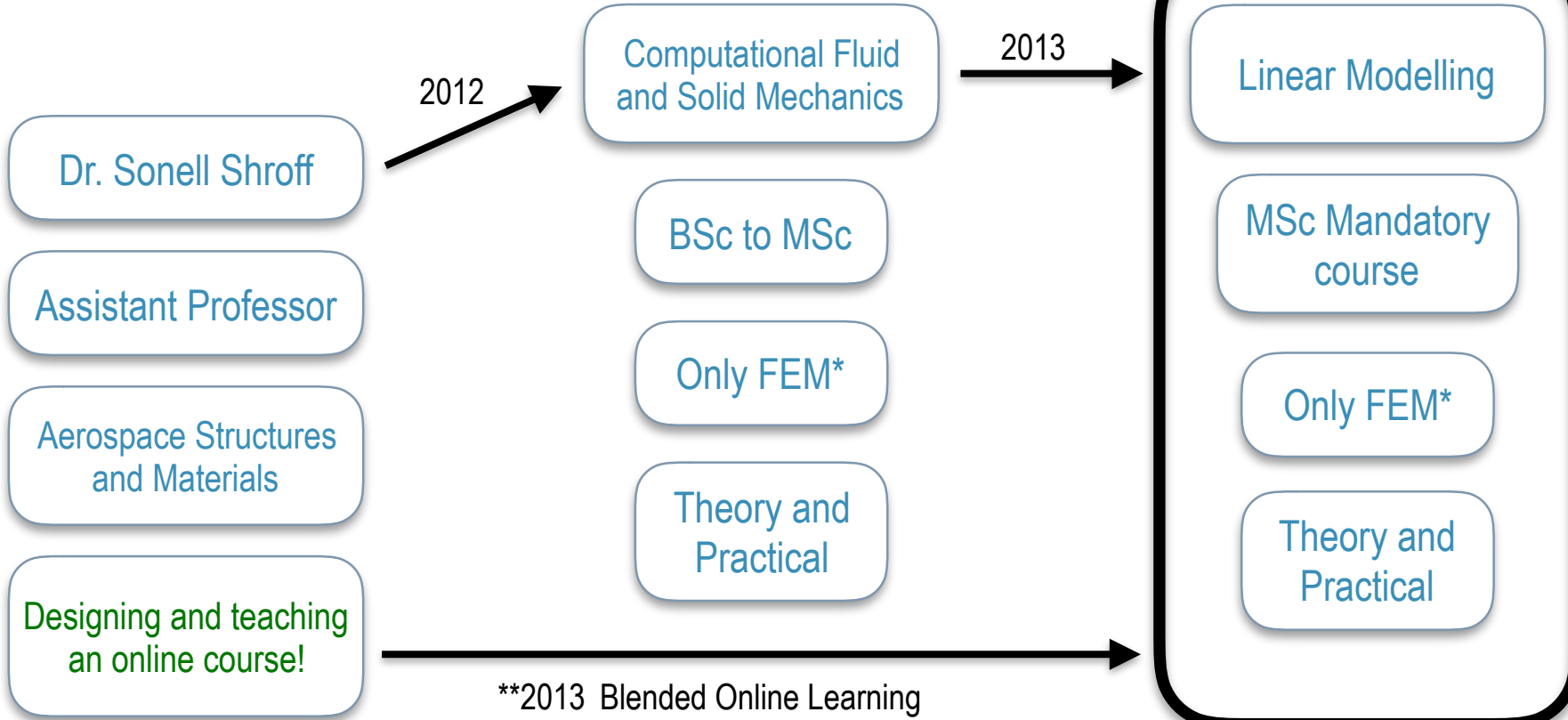
LINEAR MODELLING

A CDIO PROOF ONLINE ENGINEERING COURSE

JANUARY 26, 2016

DR. SONELL SHROFF

THE COURSE AND I

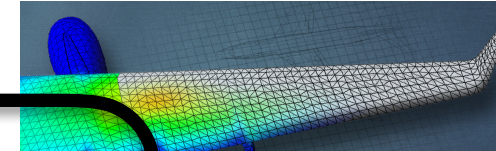
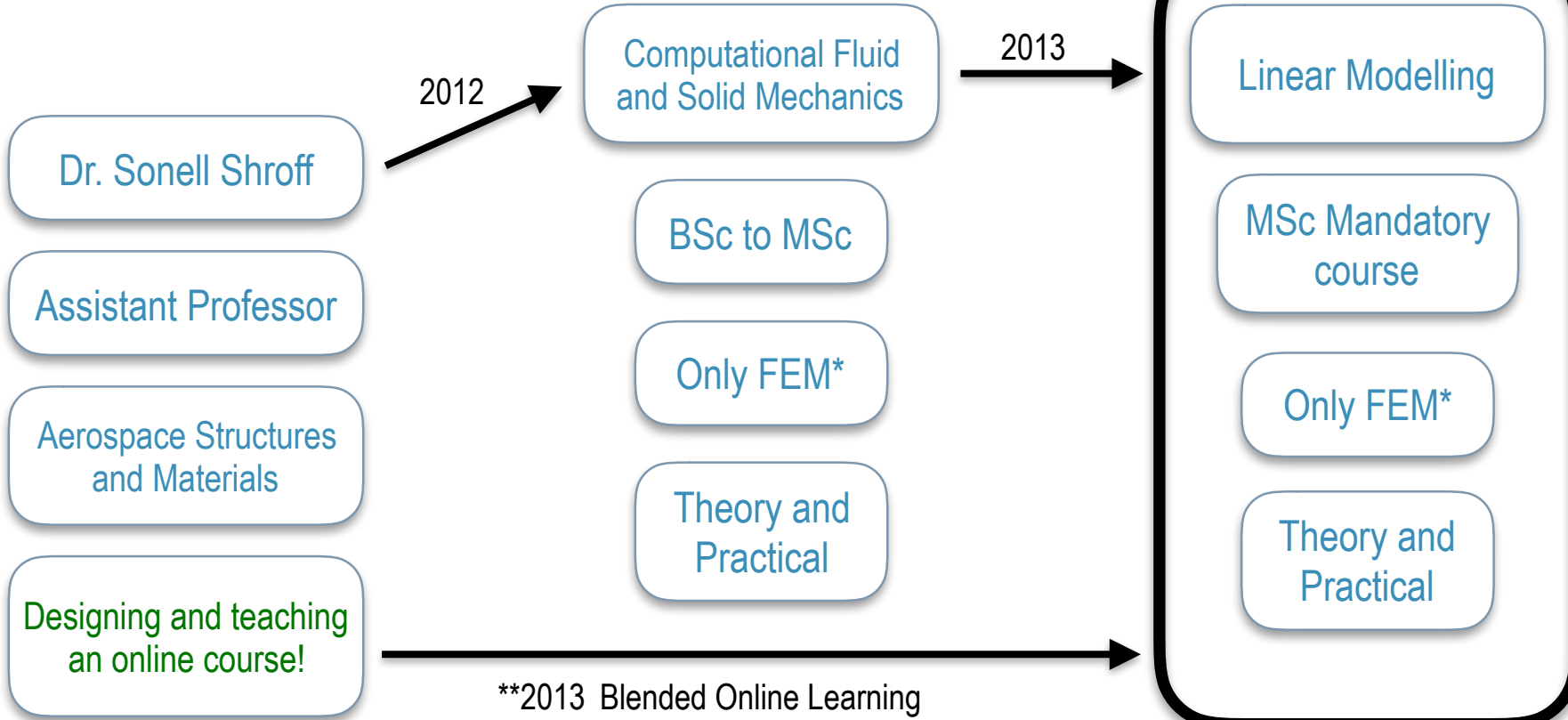


**2013 Blended Online Learning

**2014 First Purely Online Students

*FEM: Finite Element Method

THE USP



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Linear Modelling

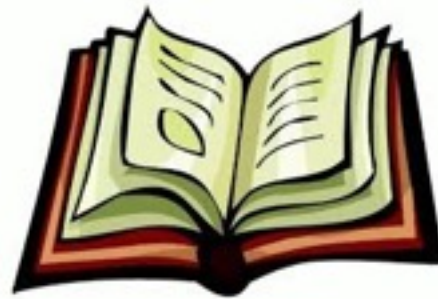
MSc Mandatory
course

Only FEM*

Theory and
Practical

2 hour theory lecture

conceive/develop



2 hour practical session

implement/operationalise



THE USP

Linear Modelling

Learning Objectives

- *Mathematical derivations
- *Solving numerical problems
- *Setting up practical problems using own code/ commercial software
- *Interpret results from fe analysis
- *Verify/Validate numerical results vs literature or experiments

THE USP

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CONCEPTION AND DEVELOPMENT

Ingredients

- *Fundamentals
- *Basic building blocks
- *Hands-on problem solving in the classroom/virtually
- *Everything that can be solved reasonably is handwritten!
- *Extension to problems are discussed “online”

Experiences!

High level of
preparation

Appreciation of
discussion

Allowing
sufficient time for
discussion

Frustration of not
joining in live

Pace

Time is off the
essence!

Feeling of being
part of the group

IMPLEMENTATION AND OPERATIONALISE

Ingredients

- *Real life structural problems
- *Physical interpretation before numerical setup
- *Choice of multiple software (Closed and Open source)
- *Tutorial videos with sufficient explanation and reasoning
- *Aerospace related assignments
- *Long running assignments for feedback and improvement

Experiences!

High level of preparation

Favourite part of the course!

LOTS of support (Assistants, e-moderators, etc.)

Requests for more tutorials

Pace

Co-ordination with other courses in the study

Link between theory and practical

HIGHER EDUCATION FOR ENGINEERS

Motivations

- *MSc thesis ready
- *PhD ready
- *Industry “ready”
- *Broader scope for jobs
- *Increased understanding of physical meaning of simulations
- *Create your own tools
- *Use ready tools more efficiently

Experiences!

Lower effort to get students started

Helps with job upgrade

Short, heavily loaded course suited for dedicated students

Motivates to follow full MSc

Faster problem recognition

Too fast and short for engineering professionals

Link between theory and practical

SUCCESS AND FAILURE

Still a long way to go....

- *10 paid fully online students in 2015
- *Attracting professionals from Boeing, NCAIR (India), etc.
- *PhD students from all over EU
- *Students spread over the entire world
- *Practical sessions not video recorded/ live
- *No exam strategy is highly appreciated
- *10% drop-out rate

Experiences!


Personalise
experience

Assignments with
variable deadlines and
questions

Intensive e-
moderation

INTERESTED IN LEARNING MORE?

<https://online-learning.tudelft.nl/courses/linear-modeling-fem/>



Linear Modeling (including FEM)

Home / Find courses / Linear Modeling (including FEM)

About this online course

- OVERVIEW
- DETAILS
- BENEFITS
- ADMISSION
- CONTACT

This course delivers the skillset in linear or structural modeling that is required to solve structural problems from which you can develop finite element (FE) models for practical applications. It also teaches how results can be correctly interpreted. The course uses an open-source FE package in a series of weekly practical sessions where models are constructed for sample problems and results are validated against simplified analytical models or open literature.

The main topics of this course:

- 3 finite element method
- 3 linear static analysis
- 3 finite element type formulation
- 3 finite element model setup using commercial software
- 3 plane stress/strain

In this course you will gain:

- 3 Strong theoretical understanding of FEM
- 3 Application of FEM to practical engineering problems
- 3 Efficient modeling techniques
- 3 Understanding the importance of verification and validation

Practicals and assignments are done using either Abaqus or Patran/Nastran (based on your preference). After finishing this course, or if you have sufficient experience with stress/structural analysis, you may choose to take the second course [non-linear modeling](#).

AEROSPACE ENGINEERING MATERIALS ENGINEERING

Enrollment period is over

Start Date
Future dates to be announced

Admission Deadline
Aug 23, 2015


Cost
€ 600

Course Length
8 weeks

Estimated Effort
7-8 hours per week



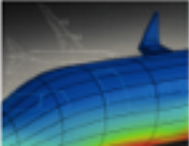
Course Code
AE4AGM003

Instructors



Sonell Shroff
Sonell Shroff is a lecturer at Department of Aerospace Structures and Computational Mechanics, Faculty of Aerospace Engineering at Delft University of Technology.

Related courses



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