# *PhD course: BA 8305 Geodynamics 2017*

*2th to 5th October, 13th to 16th November*
*at NTNU, Trondheim*

Offered by
Norwegian University of Science and Technology (NTNU) and
Norwegian Geotechnical Institute (NGI)

Lecturers:

Professor Steven Kramer - UW, Seattle
Professor Amir M. Kaynia – NGI, Oslo / NTNU, Trondheim
Professor Steinar Nordal – NTNU, Trondheim
Professor Gudmund Eiksund – NTNU, Trondheim (Course organizer)

*The course provides the necessary background for estimating the dynamic response of foundations and vibrations in soils. Course content: Basic theory for dynamic systems with one or many degrees of freedom. Wave propagation in elastic media. Vibration of footings and foundations on soils. Geotechnical earthquake engineering. Vibrations from traffic and construction activity including pile driving and blasting. Parameters for soil dynamics determined by laboratory and field tests. Numerical simulations using the Finite element method. Examples of application.*
*The course is taught in English and is made up by intensive lecturing in combination with exercises. In addition compulsory homework is given for self study and a written examination is offered in December. The exam may be organized at different cooperating universities in Europe to minimize travelling. Participants should have a M.Sc. degree in geotechnical or structural engineering to be accepted for the exam.*

PROGRAM: The course is divided into three sequences of lectures and guided exercises:

**Part 1: 2nd to 5th October:**
**Basics of dynamics for soils, by Steinar Nordal and Gudmund Eiksund**

**Part 2: 13th and 14th November:**
**Geotechnical Earthquake by Steven Kramer**

**Part 3: 15th and 16th November:**
**Design according to EU codes, by Amir M. Kaynia**
**Vibrations from traffic and construction activity – modelling, measurement, signal processing and regulations, by Amir M. Kaynia**

*Credit hours: 10 ECTS, – i.e. 1/3 of a full semester. Exercises (as homework) are compulsory if you take the course for credit.* ***Participants are welcome to join only parts of the course: Part 2, the seminar on Geotechnical Earthquake engineering and/or Part 3, the seminar on Vibration from traffic and construction activity. These seminars are organized and offered as separate events.***

*Recommended textbook: Steven Kramer: Geotechnical Earthquake Engineering, ISBN 0-13-374943-6, Prentice Hall 1996. Course notes or PowerPoint printouts from NGI/NTNU will be made available.*

*Cost: Registered PhD students* participate for free but must pay NOK 800 for course notes and coffee. For other participants the cost for the total course is NOK 6000, or NOK 3000 for part 1, NOK 2500 each for part 2 and 3, lunch included.*

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*For registration: marit.skjak-brak@ntnu.no*

*Please register before 1 September for access to the examination to earn credits and a course certificate with a grade.*

** Submit documentation for PhD student status at registration*