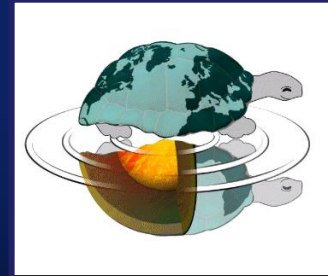




UNIVERSITÀ DEGLI STUDI DI MILANO

Corso di Dottorato in
Scienze della Terra
(PhD, Earth Sciences)



Milano - 4-6 December 2017 - Short course (4 cfu)

Shale gas - a multidisciplinary approach

PROGRAM

1. Background to the shale gas 'revolution'
2. Shale gas formation
3. Main shale plays
4. Hydraulic fracturing
5. Groundwater contamination
6. Induced seismicity
7. Production methods
8. Shale gas and climate
9. Shale gas regulation



For information and application contact:
DOCENTE DI RIFERIMENTO UNIMI (lucia.angiolini@unimi.it)

Prof. Mike Stephenson
British Geological Survey

Course contents

DAY ONE

1. Background to the shale gas revolution
 - a. US shale gas
 - b. Situation in Europe
 - c. Security of energy supply
 - d. Public attitudes
2. Shale gas formation
 - a. Palaeoenvironments
 - b. Maturation
 - c. Resource estimation
 - d. Main shale plays
 - i. Barnett
 - ii. Marcellus
 - iii. Eagle Ford Shale
 - iv. Haynesville shale
 - v. Fayetteville shale
 - vi. Muskwa (Horn River) shale
 - vii. Montney shale

DAY THREE

1. Shale gas and climate
 - a. Coal and shale gas as fuels in power stations
 - b. Fugitive emissions
 - c. Energy greenhouse gas footprints
2. Shale gas regulation
 - a. Regulation in the US
 - b. Land ownership issues
 - c. Environmental monitoring of shale gas operations

DAY TWO

1. Hydraulic fracturing
 - a. Natural fractures
 - b. Engineering issues
 - c. Fracture monitoring
 - d. Sweet spots
2. Groundwater contamination
 - a. Theoretical pathways
 - b. Contamination in Pennsylvania
 - c. Best practice
3. Induced seismicity
 - a. Case study from the UK
 - b. Water disposal and earthquakes
4. Production methods
 - a. The shale gas factory
 - b. Before development, and during drilling and fracking
 - c. Radioactivity in flowback water

