UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Detrital geochronology and thermochronology

2425-1-124R023

Title

Detrital geochronology and thermochronology

Teacher(s)

Marco G. Malusà; Igor M. Villa; Massimiliano Zattin; Georgina King

Language

English

Short description

Detrital thermochronology studies are increasingly employed to investigate the erosional evolution of mountain belts and perform paleotectonic reconstructions starting from the analysis of sedimentary rocks. However, simple predictions of the detrital thermochronology approach are often in conflict with observations in sedimentary basins. In this course, we illustrate the main geo/thermochronologic methods that are commonly applied to the analysis of sedimentary rocks (zircon U-Pb, mica Ar-Ar, apatite and zircon fission-track and (U-Th)/He) and we discuss the main factors that influence the final complexity of the detrital thermochronology record in a sedimentary basin. The basic principles illustrated in the first part of the course are applied to case histories from the Alps, the Apennines and the Himalaya.

Schedule

Lecture 1 – Tuesday 7th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Introduction. Zircon U-Pb geochronology - Lecturer: Igor M. Villa (University of Milano-Bicocca)

Lecture 2 – Wednesday 8th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Mica Ar-Ar geochronology - Lecturer: Igor M. Villa (University of Milano-Bicocca)

Lecture 3 – Thursday 9th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Fission-track thermochronology - Lecturer: Marco G. Malusà (University of Milano-Bicocca)

Lecture 4 – Friday 10h January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
(U-Th)/He thermochronology - Lecturer: Massimiliano Zattin (University of Padova)

Lecture 5 – Tuesday 14th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Trapped-charge thermochronometry - Lecturer: Georgina King (University of Lausanne)

Lecture 6 – Wednesday 15th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Sedimentology of detrital geo/thermochronology
Lecturer: Marco G. Malusà (University of Milano-Bicocca)

Lecture 7 – Thursday 16th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Detrital thermochronology within a stratigraphic framework
Lecturer: Marco G. Malusà (University of Milano-Bicocca)

Lecture 8 – Friday 17th January 2025, 3 PM – 5 PM CET (room U4-3015 and Webex):
Application to orogenic belts: case studies
Lecturer: Marco G. Malusà (University of Milano-Bicocca)

Evaluation: NO

CFU / Hours

2 CFU - 16 Hours (Lecture)

Teaching period

I semester: 7, 8, 9, 10, 14, 15, 16, 17 January 2025 h 15-17

Sustainable Development Goals