

## REGISTRATION

### Registration deadline:

2 November 2011.

Please, download the registration form and follow the instructions to complete the course registration: <http://iuca.unizar.es/idi.php?section=25>

### Registration fees: 275 €.

Bank: Ibercaja.  
IBAN: ES 82 2085 0111 79 0330788546.  
Swift code: CAZRES2Z.

### Financial support to young students.

The Environmental Sciences Institute will give some financial support to young students to cover their expenses in full or party (accommodation, travel or registration fees). More information: <http://iuca.unizar.es/idi.php?section=25>

# SCIENCE & PAST: MATERIALS DATING

## 3<sup>rd</sup> INTERDISCIPLINARY COURSE

**NOVEMBER 14-17, 2011**  
UNIVERSIDAD DE ZARAGOZA - SPAIN

### Course Coordinator:

Dr. Josefina Pérez-Arantegui (IUCA, University of Zaragoza).

**ENVIRONMENTAL SCIENCES INSTITUTE  
UNIVERSITY OF ZARAGOZA-SPAIN**

### For further information:

C/ Pedro Cerbuna, 12.  
Fac. Ciencias. Ed. D. 1<sup>a</sup> planta.  
50009 Zaragoza - Spain.

Tel./Fax: (+34) 976 76 29 72  
UNIVERSITY OF ZARAGOZA

<http://iuca.unizar.es/idi.php?section=25>

email: [iuca@unizar.es](mailto:iuca@unizar.es)



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### ORGANISATION:

Environmental Sciences Institute - IUCA (Universidad de Zaragoza)  
Facultad de Ciencias. C/Pedro Cerbuna, 12 · 50009 Zaragoza - Spain  
Tel. (+34) 976 76 29 72  
[iuca@unizar.es](mailto:iuca@unizar.es) · <http://iuca.unizar.es>

### TO BE HELD:

Biblioteca María Moliner. Campus San Francisco. Universidad de Zaragoza

Colaboran:



Organizan:



The course is focused on the development and use of scientific techniques in order to date paleontological, archaeological and geological materials.

The lectures are addressed to students, researchers and professionals in chemistry, physics, geology, geography, archaeology, conservation science, art, etc., to acquire a solid knowledge on dating applied to the study, safeguarding and authentication of material heritage.

## PROGRAM

### MONDAY, 14TH NOVEMBER

**09:30.** PRESENTATION.

**09:45.** DATING THROUGH ARCHAEOBOTANY: "The role of the anthracologist in radiocarbon dating. Expected results?". **Ernestina Badal** (*Universidad de Valencia, Spain*) and **Yolanda Carrión** (*CIDE - CSIC, Spain*).

**11:00.** Coffee break.

**11:30.** DATING THROUGH ARCHAEOBOTANY: "The woody flora as chrono-ecological marker. Reconstructing the palaeoenvironmental sequence of southern Iberia". **Yolanda Carrión** (*CIDE - CSIC, Spain*) and **Ernestina Badal** (*Universidad de Valencia, Spain*).

**12:30.** Discussion.

**16:00.** DATING THROUGH PALEONTOLOGY: "The small mammals as tools for dating Quaternary deposits". **Gloria Cuenca** (*Universidad de Zaragoza, Spain*).

**17:00.** Discussion.

### TUESDAY, 15TH NOVEMBER

**9:30:** LUMINESCENCE DATING: "Basic principles". **Marco Martini** (*Università di Milano Bicocca, Italy*).

**10:30:** Coffee break.

**11:00:** LUMINESCENCE DATING: "Thermo- and Opto-luminescence dating: practical techniques and applications". **Marco Martini** (*Università di Milano Bicocca, Italy*).

**12:00:** LUMINESCENCE DATING: "Examples". **Marco Martini** (*Università di Milano Bicocca, Italy*).

**13:00:** Discussion.

### WEDNESDAY, 16TH NOVEMBER

**9:30.** RADIOCARBON DATING: "Principles and Methods". **Michael Dee** (*University of Oxford, United Kingdom*).

**10:30.** Coffee break.

**11:00.** RADIOCARBON DATING: "Applications to Archaeology". **Michael Dee** (*University of Oxford, United Kingdom*).

**12:30.** Discussion.

**16:00.** Paleontological Museum visit.

### THURSDAY, 17TH NOVEMBER

**9:30:** AMINO ACIDS FOR DATING: "An amino acid clockwork: mechanisms of protein diagenesis". **Beatrice Demarchi** (*University of York, United Kingdom*).

**10:30:** Coffee break.

**11:00:** AMINO ACIDS FOR DATING. "Dating for the desperate: applications of AAR geochronology to the Quaternary record". **Beatrice Demarchi** (*University of York, United Kingdom*).

**12:00:** Discussion.

**13:00:** CONCLUDING REMARKS.