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## **Teach Mob – Visiting Professors**

### **Academic year 2016/2017**

2 <sup>nd</sup> Term
<p><b>COURSE TITLE</b> Evolutionary Zoology and Laboratory</p>
<p><b>Scientific area</b> BIO/05 Zoology</p>
<p><b>Department of Life Sciences and Systems Biology</b></p>
<p><b>Language used to teach: English</b></p>
<p><b>Teaching Commitment: 24 hours</b></p>
<p><b>Course summary</b> The course will deal with the processes involved in animal evolution, with particular emphasis on developing an understanding of the units into which biodiversity is categorized and the manner in which stable genomic systems can be disrupted and reconstituted as new, reproductively independent species. The following topics will be covered: species concepts and speciation processes; phylogenetic reconstruction and evolutionary models based on morphological, molecular data and behavioural data; constructing and interpreting phylogenetic trees; the co-evolution of earth and life, and the impact of geotectonic events on biological evolution; the fossil record in brief; human evolution; biogeographic mechanisms (vicariance and dispersal); transoceanic colonization and island biogeography. The course will also deal with topics about molecular evolution (the study of the evolution of genes, genomes and species); methods for detecting natural selection or genetic drift in genes and genomes; the role of mobile genetic elements in speciation, shaping genomes and altering gene expression; molecular evolution and development (EvoDevo).</p>
<p><b>Learning objectives</b> Students will develop an understanding of the basic theoretical and practical methodologies of evolutionary biology and animal systematics. They also will be able to discuss critically the various methods of investigation and to apply them correctly to questions at the genetic, biomolecular, population, behavioural, taxonomic and macroevolutionary levels; to work under a stereomicroscope; to autonomously collect and organize data related to morphological and genetic characters and to summarize and represent graphically the data obtained. The students will acquire a basic knowledge of data processing with statistical software as applied to problems in evolutionary biology.</p>
<p><b>Tutorship activities</b> Tutoring of students by long distance methods: all lectures, seminars and other teaching activities will be video recorded and made available through the Moodle platform.</p>
<p><b>Lab activities</b> Students will be involved in several methodological and practical activities:</p> <ul style="list-style-type: none"> <li>- Genomic DNA extraction from <i>O. diadema</i> specimens by means of commercial kits;</li> <li>- Observation of DNA by agarose gel electrophoresis;</li> <li>- PCR amplification of loci related to reproductive functions;</li> <li>- Sequence analysis with commonly used bioinformatic software packages;</li> <li>- Methods for phylogenetic inference and interpretation of evolutionary trees.</li> </ul>

**Other activities besides the course: i.e. seminars and conferences addressed to PhD students and research fellows, dissemination conferences**

Lectures and tutorials will be held with the PhD students on the topic of presentation of scientific results to international audiences, particularly with respect to writing and publishing manuscripts in the English language literature.

Seminars will be also delivered to researchers of the Dipartimento di Scienze della Vita e Biologia dei Sistemi.

**Visiting Professor Profile**

The candidate is required to have wide and internationally recognised research experience in evolutionary theory, evolutionary genetics, phylogenetics and systematics, biogeography, and animal biodiversity and conservation, as well as extensive teaching experience in these fields and a strong record of publication in the international literature.

The candidate must have a record of international collaborations, preferably with the Università di Torino, and be prepared to strengthen and expand these collaborations, including student co-supervision and tutoring.

**Contact person at the Department**

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