



SEAHA

CENTRE FOR DOCTORAL TRAINING IN
SCIENCE AND ENGINEERING IN
ARTS HERITAGE AND ARCHAEOLOGY

SEAHA Studentship: Strain modelling in historical tapestries

The EPSRC Centre for Doctoral Training in Science and Engineering in Arts, Heritage and Archaeology at University College London, University of Oxford and University of Brighton (www.seaha-cdt.ac.uk), in collaboration with Historic Royal Palaces and IBM T.J. Watson Research Center, are seeking applications for one fully funded studentship on the topic “Strain modelling in historical tapestries”. Funded by the Engineering and Physical Sciences Research Council (EPSRC) through the Centre for Doctoral Training and co-funded by Historic Royal Palaces, the four year doctoral research programme will be supervised jointly by UCL Department of Civil, Environmental & Geomatic Engineering (www.cege.ucl.ac.uk/), UCL Centre for Sustainable Heritage (<http://www.bartlett.ucl.ac.uk/graduate/csh/csh-home/>), Historic Royal Palaces (<http://www.hrp.org.uk/conservation>), and IBM T.J. Watson Research Center (<http://www.research.ibm.com/labs/watson>).

This is an exciting scholarship focusing on the historical textile tapestry collections at Hampton Court Palace. Exposure of these culturally valuable objects to environmental risks results in structural deterioration potentially leading to the loss of affected areas. The project will seek to understand how humidity and temperature influence the stress and strain distribution in hanging historic textiles to inform their preservation. Real-time data acquired from innovative tri-axial strain sensors will be used to derive and calibrate analytical structural models to predict the strain variations in the historic tapestries under fluctuating environmental conditions. The effect of conservation methods such as structural stitching will be evaluated.

- (i) What is the relationship between the environmental changes in humidity and temperature and strain in historic tapestries?
- (ii) What are the most appropriate analytical techniques to model this relationship?
- (iii) Can model-based simulations inform the optimum environmental conditions for the protection of historic tapestries?
- (iv) How can the analytical model inform current tapestry conservation methods?

The research project will use state-of-the-art in-situ strain monitoring sensors to provide data to inform the analytical modelling of the tapestries. Controlled laboratory testing will be carried out to develop an initial understanding and calibration of the measuring technique prior to the analysis of the data acquired from the complex historic tapestries. This data will be essential to develop and calibrate the analytical model of the tapestries which will be used to inform conservation decisions. This exciting project will provide the successful candidate with a wide range of professional, technical and analytical skills to develop their future career in a wide variety of multidisciplinary environments ranging from academia and conservation to engineering consultancy.

As a SEAHA student, you will have unparalleled access to research infrastructure and expertise across three universities and almost 50 heritage, research and industrial partners. In addition to the university doctoral training requirements, SEAHA students take part in an exciting range of cohort activities, ranging from residential events and group projects, to conferences and careers events. Please visit the SEAHA website (www.seaha-cdt.ac.uk) for details.

SEAHA is a Doctoral Training Centre at University College London (UCL), University of Oxford, and University of Brighton. SEAHA is funded by the Engineering and Physical Sciences Research Council (EPSRC).



SEAHA

CENTRE FOR DOCTORAL TRAINING IN
SCIENCE AND ENGINEERING IN
ARTS HERITAGE AND ARCHAEOLOGY

You will have a good first degree with a strong analytical modelling background in a relevant discipline such as engineering, physics or material science but also conservation, heritage science or architecture. For further details contact Dr. Rodolfo Lorenzo, r.lorenzo@ucl.ac.uk.

The SEAHA Studentship will cover home fees and a stipend of up to a maximum of £16,726 per year (current rate) for eligible applicants (<http://www.seaha-cdt.ac.uk/opportunities/eligibility-criteria/>), and a substantial budget for research, travel, and cohort activities.

The application should include:

- A covering letter clearly stating your motivation
- The UCL graduate application form which can be downloaded via UCL's web site: <http://www.ucl.ac.uk/prospective-students/graduate/apply/apply-now/ucl-graduate-application-form.pdf>
- Two academic references (or one academic and one professional reference if applicable)
- A copy of your degree certificate(s) and transcript(s) of degree(s)
- Proof of meeting the UCL English language proficiency requirements where necessary. For SEAHA candidates, an advanced level certificate is normally required (details of English language proficiency requirements can be found at <http://www.ucl.ac.uk/prospective-students/graduate/apply/english-language/index>)
- A short research proposal (max. 2000 words) written by taking into consideration the above research questions

The award will be subject to Grant Agreement between UCL, Historic Royal Palaces and IBM T.J. Watson Research Center.

The applications should not be submitted by UCL online admissions system. Instead, they should be sent directly to:

SEAHA Manager
manager@seaha-cdt.ac.uk
UCL Centre for Sustainable Heritage
Faculty of the Built Environment
UCL
14 Upper Woburn Place
London WC1E 0NN

UCL Taking Action For Equality.

Application deadline: 7th July 2014; Interviews: 14th July 2014

SEAHA is a Doctoral Training Centre at University College London (UCL), University of Oxford, and University of Brighton. SEAHA is funded by the Engineering and Physical Sciences Research Council (EPSRC).