

## **CE 890 Graduate Seminar**

**May 2, 2011**

**2:30 p.m.**

**Fiedler Hall, Rm. 1107**

**Guest Speaker:** Dr. Harshinie Karunarathna, Lecturer in Civil Engineering, Univ. of Glasgow, Scotland, UK

### **Biography:**

Dr. Harshinie Karunarathna leads Estuary/Coastal Engineering and Impacts of Climate Change research in the school of Engineering at the University of Glasgow. Her main research focus is on mathematical modelling of hydro- and morphodynamic variability in coasts and estuaries. Her research combines multi-scale process dynamics with behaviour-oriented geomorphological knowledge of coastal and estuarine systems to develop novel, emerging modelling approaches for morphodynamic predictions at time scales of engineering significance. In addition, Dr. Karunarathna investigates impacts of marine renewable energy production on the coastal and estuarine environment.

### **Abstract:**

#### **Global Climate Change and Modelling Coastal Morphology**

Coasts and estuaries are an extremely important element of the natural environment. Most coastlines and estuaries across the globe are under significant pressures of rapid industrial development and population growth, and are in the verge of evolving beyond the thresholds of stable existence. Rising sea levels and increasing storminess associated with global climate change induce added pressures on these already vulnerable natural systems. Therefore, it is extremely important to effectively manage them, to maintain their integrity and sustainability in future.

A prerequisite for effective coastal and estuary management is the ability to predict their behaviour at timescales relevant to the planning and implementation of major engineering projects. Coasts and estuaries are both complex and varied, and accurate prediction of their future evolution depends upon detailed knowledge of processes and ability to model them. The talk will discuss a range of computational modelling approaches that can be effectively used in modelling future morphodynamic variability of coastal and estuarine systems and demonstrate their application through a series of case studies.