The steady increase in the number of processing cores being used in modern hardware architectures is forcing engineers to rethink the way they design software by focusing on scalability through concurrency, and effective scheduling of resources.

This course will concentrate on teaching students the fundamentals of OpenCL, an open standard for programming heterogenous multi-core processors through a straight-forward API, and an ANSI-C99 based parallel programming language.

The goal of the course is to give students the opportunity to:

- Gain an understanding of OpenCL as a technology framework for enabling heterogenous parallel processing.
- Become familiar with the tools and techniques required to develop an efficient OpenCL enabled application.
- Learn techniques for adapting existing algorithms to a data and/or task parallel programming model.
- Understand the different characteristics of modern multi-core hardware architectures (e.g. CPUs vs. GPUs).

Theoretical and technical background information will be presented, as well as a hands-on discussion of practical issues that arise when trying to address scalability concerns and performance requirements for real-world applications.

The course will begin with an introductory session on Wednesday the 19th of January. The remainder of the course will consist of weekly lectures held every Wednesday from 26th January - 9th of March.

A list of challenge problems will be given, and a competition will be held at the end of the course. Winners will be chosen based on how well their solutions meet the challenge criteria (including metrics such as scalability, performance, and throughput).

All students are expected to have a solid understanding of the C/C++ programming languages, experience with Linux, and a strong interest in parallel programming and multi-core hardware architectures.

Online registration now open: http://www.wasp.uwa.edu.au/home/courses/opencl/apply

Deadline for registration is 21st Dec 2010. Limited space available. Apply now!