



# Using CES EduPack in Introductory, First, and Second Year Courses

## User reports and comments

The following is a selection of reports and comments from users of the CES EduPack software and teaching resources who are either teaching introductory courses in materials and processes, or extending their existing use of the EduPack to cover such courses.

For further reports and comments see: [www.grantadesign.local/education/reviews.htm](http://www.grantadesign.local/education/reviews.htm)

### *University of Pretoria*

#### **Chris Pistorius, Head of the Department of Materials Science and Metallurgical Engineering**

“The University of Pretoria, South Africa, has just purchased a five-year campus licence for CES EduPack. This purchase forms part of a strategy to improve undergraduate teaching, utilising an ad hoc grant from the Department of Education. A revised undergraduate curriculum in Engineering is being phased in from 2008, and the Department of Education grant allows specific aspects of teaching to be enhanced: in the new curriculum, CES EduPack will be used to offer tutorials in the first-year module in Materials Science. Most of the students in engineering take this module, giving a total group size of some 900 students. The Materials Science module is the first in-depth exposure to engineering for most of these students; in the new curriculum, the prescribed text will be the new Materials book by Ashby, Shercliff and Cebon, to make the most of the availability of CES EduPack. CES EduPack has been in use at Pretoria for two years now, in a module offered to third-year students in Interior Architecture; this familiarity will be used to plan the roll-out of CES EduPack to the much larger group of engineering students.”

### *State University of New York*

#### **Prof. Junghyun Cho**

“The software is used by junior students in Mechanical Engineering at the State University of New York at Binghamton. Students love it and told me that it makes the course more appealing. I believe this is because the software has a design component that I can teach and that students can then implement for actual applications. Students always get excited when the topics they learn can be applied to real life.”

### *The Open University*

#### **Dr Steve Garner, Course Team Chair, Design and Designing (T211)**

As a distance learning university that is open to all, the Open University has a particular need for effective tools suited to introductory courses.

“We enrol about 400 students each year and these possess a great variety of abilities, including some who are new to using computer-based learning resources (in some cases, even new to using computers). The students have found CES to be a robust and helpful part of our teaching. The tutors seem to be very impressed with the quality of information available and the fact that each page is very visual and approachable - vital to teaching at this novice undergraduate level. It seems well suited to the style of independent study required on OU courses. I have written a number of tutorials into our course that require students to demonstrate their growing ability to exploit the CES. Their acquired skills and

knowledge with materials and processes also contribute to the end-of-course design project and so the CES has become a key component throughout the course. It's my opinion that the CES is an excellent resource for design education and I'm very happy to continue integrating it into course work at the Open University."

### ***French Lycée System***

**Bernard Gilabert and Jean-Claude Tachoire, Lycee Louis Rascol, Albi**

CES EduPack is widely used in the French lycée system – the BTS qualification usually results from a two-year course taken immediately after secondary education.

"Students studying for the BTS qualification currently use CES EduPack. The software supports teaching of material and process selection during the STS CPI and IPM courses in industrial product design. Specifically, it enables an industrial project at the end of the course in which students analyze a product that is under development. The software helps students to find the information that they need and to analyze product functionality against technical and economic constraints. Its key advantages are the rich and comprehensive database and the links that it makes between information on processes and related information on materials. Examples make it easier to study the different fields in which materials are used, while the illustrations provide essential knowledge on processes. The graphical tools for materials selection help to structure students' thinking. Information on commercial designations, producers, and equivalences helps to resolve real design problems. Professor Ashby's book helps teachers to exploit the database and the software as fully as possible."

### ***Sheffield Hallam University***

**John Metcalf, Materials Engineering**

"A colleague and I are responsible for teaching a Materials and Process Selection module to a large group of second year Engineering Design undergraduate students. This module would be impossible to deliver effectively without CES. Within a few sessions the students begin to get the hang of the CES suite of software and start to produce outstanding work. It's a joy to watch them when I see the penny drop as they realise what a powerful design tool CES is. For most of them this is the first time they make the connections between the materials universe, the process universe and the manufacture real products, products that that they will soon be designing in industry. For me, the assessment burden is reduced by the adoption of the varied and many examples of supplied case studies. As a relatively new lecturer the CES package has made my teaching life that little bit more enjoyable and dare I say easier!"

### ***Cambridge University***

**Professor Norman Fleck, Department of Engineering**

"We have completely reorganized our Materials courses for Engineering students in Cambridge. Instead of beginning in the old way with crystals and dislocations, we now start our first year students with materials selection for design. What is the best material for the forks of a bicycle?..... and so on. This relates the basic structures and mechanics to material properties. Having illustrated the characteristics and uses of the main classes of materials in this way, we then spend the next two years investigating the science behind their properties. This makes the materials science much more relevant, and integrates our materials courses with design teaching."