
Preface

The book “Building Sustainability Thinking into Science and Engineering Curricula—Innovative Approaches, Methods and Tools” is a further volume of the new “World Sustainable Development Book Series” and contains some of the papers presented at the “World Symposium on Sustainability in Higher Education” (WSSD-U-2014) held in Manchester, UK, during 3–5 September, 2014.

If we want to build sustainability thinking into the science and engineering curriculum, and hence encourage students in science and engineering to think more about green issues and become more sensitive towards matters related to sustainability, we need new approaches. The ones used to date have not fully worked, due to a number of reasons. These include:

- (a) Lack of due emphasis on sustainability in the curriculum of science and engineering courses
- (b) Lack of appropriate materials to support curriculum delivery
- (c) Lack of training of the staff who should deliver sustainability issues in science and engineering courses
- (d) Limited availability of materials showcasing how it can be done

This book is meant to address the above needs, in an integrated way. Consisting of case studies, descriptions of practical experiences and empirical analyses, the book is structured around two main parts:

- Part I looks at matters related to curriculum innovation and the effectiveness of current training and education programmes, showcasing some innovative methods and tools currently being used by universities all over the world in order to include sustainability in the curriculum as a whole, but also of science, engineering and other courses in particular.
- Part II handles examples of good practice, where the handling of sustainability issues goes beyond the trivial, and engages on matters of strong social, political and economic relevance. In particular, Part II refers to cross-cutting approaches,

outlining examples of successful programmes, including replicable case studies and the examples of good practice which can convincingly show that the integration of sustainability issues in science, engineering and other courses is a feasible goal.

Students will benefit from a more sustainability-focused approach in the science and engineering curriculum in a number of ways. For instance, they will learn how to use natural, physical and economic resources more efficiently and more effectively. In addition, they will be sensitised about the need to seek multiple views when handling sustainability challenges. Moreover, they will be in a better position to recognise and manage risks, so as to minimise adverse impacts of projects on people or environment. Finally, they will be encouraged to contribute towards building a sustainable society, where they—as students now and professionals later—will be able to play a key role.

We want to thank the authors for sharing their work, their know-how and their expertise to a world audience, and hope the many experiences amassed in this book will help to support the work of sustainability lecturers, researchers and students working in this very important field.

Autumn 2014

Walter Leal Filho
Ulisses M. Azeiteiro
Sandra Caeiro
Fátima Alves

Integrating Sustainability Thinking in Science and
Engineering Curricula

Innovative Approaches, Methods and Tools

Leal Filho, W.; Azeiteiro, U.M.; Caeiro, S.; Alves, F. (Eds.)

2015, XII, 630 p. 115 illus., 65 illus. in color., Hardcover

ISBN: 978-3-319-09473-1