MS4664 – Environmental Sustainability & Materials

Course Code	MS4664					
Course Title	Environmental Sustainability & Materials					
Pre-requisites	MS1013	Materials Chemistry I				
	MS1017	Introduction to Materials Science				
Pre-requisite for	NIL					
No of AUs	3					
Contact Hours	Lectures	26	Tutorials	13		

Course Aims

The objectives of this course are to introduce you to the environmental aspects of materials, and the role materials engineers play in building a sustainable environment, including topics such as the principles of green design, industrial ecology, product life cycle assessment, and relevant materials research for environmental and energy applications.

This course will be helpful to students intending to specialize in environmentally-conscious product design and manufacturing processes involving the usage of modern materials.

Intended Learning Outcomes (ILO)

By the end of this course, you (as a student) would be able to:

1. Understand the broad principles of environmental engineering.
2. Understand the environmental impacts of materials and chemical processing.
3. Evaluate and critically assess environmental life cycles of various materials.
4. Evaluate and describe advanced material usage in energy and environmental applications.

Course Content

Sustainable versus unsustainable use of resources
Life cycles of materials
Environmental aspects of materials selection
Tackling environmental issues using materials science

Reading and References

Textbook

Michael Ashby, Materials and the Environment, Butterworth-Heinemann, 2009

References

1. Edward S. Rubin, Introduction to Engineering and the Environment, McGraw Hill, 2001.
2. Myer Kutz, Environmentally Conscious Materials and Chemicals Processing, Wiley, 2007
3. Rolando M.A. Roque-Malherbe, The Physical Chemistry of Materials : Energy and Environmental Applications, CRC Press, 2010

Course Policies and Student Responsibilities

For CAs, all non-attendance must be supported by a medical certificate or other valid official documents.

Academic Integrity

Good academic work depends on honesty and ethical behavior. Quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honor Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student of NTU, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at the University. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, and collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.