

**Generic Elective****Offering Department:** Department of Chemistry**Integrated B.Sc.-M.Sc. Semester-VIII**

(From AY 2016-17 onwards)

<b>16PCHGE01</b>	<b>Green Chemistry for Sustainable Development</b>	<b>2 Hrs./Week</b>	<b>2 Credits</b>
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**Unit-1: Introduction**

Introduction to the concept & need of green chemistry, meaning of development in varied perspective, need of sustainable development, case studies of chemical hazard - pollution of water and other natural resources.

**Unit-2: Twelve Principles of Green Chemistry**

Emergence of Green Chemistry as a new philosophy (Paul Anastas), Twelve principles of green chemistry, representative examples.

**Unit-3: Case studies: Green Chemistry & Sustainability**

Case studies: Green Chemistry in chemical industries, representative award winning / highly profitable green pathways - Lilly Research Labs process for Talampanol, Pfizer process for Sertraline, etc.

**Unit-4: Twelve Principles of Green Engineering**

Similarities and differences between Green Chemistry & Green Engineering, Clean Technology, Twelve principles of green engineering, representative examples.

**Unit-5: Case studies: Green Engineering & Sustainability**

Case studies and example of awarded / high impact greener technologies - Non-thermal power plants, polymeric metal coatings, etc.

**Reference Books**

1. Green Chemistry and Engineering: A Pathway to Sustainability by Anne E. Marteel-Parrish, Martin A. Abraham, ISBN: 978-0-470-41326-5
2. Green chemistry for environmental sustainability by Sanjay K. Sharma, Ackmez Mudhoo, ISBN: 1439824746.