

**The Kelkar Education Trust's  
V. G. Vaze College of Arts, Science, and Commerce (Autonomous)**

<b>B. Sc (Information Technology)</b>		<b>Semester – I</b>	
<b>Course Name: Environmental Study for Sustainable IT I</b>		<b>Course Code: VGVUVE108</b>	
<b>Periods per week (1 Period is 60 minutes)</b>		<b>2</b>	
<b>Credits</b>		<b>2</b>	
		<b>Hours</b>	<b>Marks</b>
<b>Evaluation System</b>	<b>Theory Examination</b>	<b>2</b>	<b>60</b>
	<b>Internal</b>		<b>40</b>

**Course Objective**

To aid learner to

1. Understand the concept of Green IT , green IT's hardware and software aspects,
2. Understand how software characteristics impact the sustainability or greenness of computing applications, and outlines the notion of sustainable software engineering.
3. Understand Key sustainability challenges associated with data centers and strategies to minimize data center's energy consumption and carbon footprint.
4. Understand regulatory, non regulatory and other influences affecting business and the IT industry to make them more environmentally sustainable.
5. Get in-depth coverage of energy-efficient storage technologies and data storage systems.

<b>Unit</b>	<b>Details</b>	<b>Lectures</b>
I	<p><b>Green IT An Overview :</b> Introduction, Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green IT, Holistic Approach to Greening IT, Greening IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labeling of IT.</p> <p><b>Green Devices and Hardware :</b> Introduction, Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose</p> <p><b>Green Software :</b> Introduction, Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power.</p>	10



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II	<p><b>Sustainable Software Development</b> : Introduction, Current Practices, Sustainable Software, Software Sustainability Attributes, Software Sustainability Metrics, Sustainable Software Methodology, Defining Actions.</p> <p><b>Regulating Green IT: Laws, Standards and Protocols</b> : Introduction, Introduction, Nonregulatory Government Initiatives, Industry Associations and Standards Bodies, Green Building Standards, Green Data Centres, Social Movements and Greenpeace.</p>	10
III	<p><b>Green Data Storage</b> : Introduction, Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System-Level Energy Management.</p> <p><b>Green Data Centres</b> : Data Centres and Associated Energy Challenges, Data Centre IT Infrastructure, Data Centre Facility Infrastructure: Implications for Energy Efficiency, IT Infrastructure Management, Green Data Centre Metrics</p>	10

**Course Outcome**

**Learners should be able to**

**CO1** Discusses the scope of emerging green IT regulations and public policy.

**CO2** Identify the energy management techniques.

**CO3** Know laws, standards and regulations related to Green IT.

**CO4** Discuss how the choice of hardware and software can facilitate a more sustainable operation.

**CO5** Develop knowledge about green data storage and data centers.



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<b>Books and References:</b>					
<b>Sr. No.</b>	<b>Title</b>	<b>Author/s</b>	<b>Publisher</b>	<b>Edition</b>	<b>Year</b>
1.	Green IT	Toby Velte, Anthony Velte, & Robert Elsenpeter	McGraw Hill		2008
2.	Harnessing Green It Principles And Practices	San Murugesan, G.R. Gangadharan	WILEY		-
3.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers And Distributors		2011
4.	Green Computing and Green IT Best Practice	Jason Harris	Emereo		
5.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014

