

COURSE CODE	COURSE TITLE	L	T	P	C
1153CS109	GREEN COMPUTING	3	0	0	3

Course Category: Allied Elective

A. Preamble :

Student must know about basic energy management option in individual components such as CPUs, network interfaces, hard drives, memory and operating systems.

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150CS201	Problem solving using C

C. Course Educational Objectives :

Upon completion of the course, students should be able to:

- give an account of the concept green IT,
- give an account of environmental perspectives on IT use,
- give an account of standards and certifications related to sustainable IT products,
- describe green IT in relation to technology,
- relate green IT to sustainable development,
- evaluate IT use in relation to environmental perspectives,
- discuss how the choice of hardware and software can facilitate a more sustainable operation,
- use methods and tools to measure energy consumption

D. Course Outcomes :

Upon the successful completion of the course, students will be able to:

CO No's	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	To understand the concepts of technologies that conform to low-power computation	K2
CO2	To understand green (power-efficient) technologies for components of one single computer, such as CPU, memory and disk, and appreciate cutting edge designs for these components	K2
CO3	To have a basic understanding of a variety of technologies applied in building a green system and to identify the various key sustainability and green IT trends	K2
CO4	To discuss the various laws, standards and protocols for regulating green IT	K2
CO5	Be able to use a range of tools to help monitor and design green systems	K3

E. Correlation of COs with POs :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	M					M	M								
CO2	M					M	H								
CO3	M					M	H							M	
CO4	M					H	H							M	H
CO5	M					H	H						L	M	H

H- High; M-Medium; L-Low

F. Course Content:

UNIT I Fundamentals 9

Green IT Fundamentals: Business, IT, and the Environment –Green computing: carbon foot print, scoop on power –Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

UNIT II Green Assets and Modeling 9

Green Assets: Buildings, Data Centers, Networks, and Devices - Green Business Process Management: Modeling, Optimization, and Collaboration –Green Enterprise Architecture – Environmental Intelligence Green Supply Chains –Green Information Systems: Design and Development Models.

UNIT III Green Framework 9

Virtualizing of IT systems –Role of electric utilities, Telecommuting, teleconferencing and teleporting –Materials recycling –Best ways for Green PC –Green Data center –Green Grid framework.

UNIT IV Green Compliance 9

Socio-cultural aspects of Green IT –Green Enterprise Transformation Roadmap –Green Compliance: Protocols, Standards, and Audits –Emergent Carbon Issues: Technologies and Future.

UNIT V Case Studies 9

The Environmentally Responsible Business Strategies (ERBS) –Case Study Scenarios for Trial Runs – calculating the carbon footprint – greening mobile devices - CASE STUDIES – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.

TOTAL: 45

G. Learning Resources

i. Text Books

1. Bhuvan Unhelkar, Green IT Strategies and Applications-Using Environmental Intelligence, CRC Press, June 2011
2. Woody Leonhard, Katherrine Murray, Green Home computing for dummies, August 2009.

ii. Reference Books:

1. Alin Gales, Michael Schaefer, Mike Ebbers, Green Data Center: steps for the Journey, Shoff/IBM rebook, 2011.
2. John Lamb, The Greening of IT, Pearson Education, 2009.
3. Jason Harris, Green Computing and Green IT-Best Practices on regulations & industry, Lulu.com, 2008.
4. Carl Sheshocky, Empowering Green Initiatives with IT, John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), Green computing: Large Scale energy efficiency, CRC Press, 2012