

Subject Code	Subject Name	Credits
26CS603	GREEN COMPUTING	4

Course Objectives

1. To get to understand the problems and issues with regards to pollution
2. To look into the global initiatives and laws of the various countries for the same
3. To have a greater understanding towards problems faced in recycling e-waste
4. To understand how information systems can be made greener.

Learning Outcomes

After the completion of the course, the graduate will be able to

1. To learn about green computing and its impact on the environment

Unit 1 - Green Computing (12 Hrs.)

Overview and Issues - Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, plan for the Future, Cost Savings: Hardware, Power. Initiatives and Standards: Global Initiatives: UNITED Nations, Basel Action Network, Basel Convention, North America: The UNITED States, Canada, Australia, Europe, WEEE Directive, RoHS, National Adoption, Asia: Japan, China, Korea.

Unit 2 - Minimizing Power Usage (12 Hrs.)

Power Problems, Monitoring Power Usage, Servers, Low - Cost Options, Reducing Power Use, Data De - Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low - Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software. Cooling: Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On - Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Data centre Design, Centralized Control, Design for Your Needs, Put Everything Together.

Unit 3 - Changing the Way of Work (12 Hrs.)

Old Behaviors, starting at the Top, Process Reengineering with Green in Mind, Analyzing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource. Going Paperless: Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets, What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles.

Unit 4 - Recycling (12 Hrs.)

Problems, China, Africa, Materials, Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications, Hard Drive Recycling, Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mind - set, David vs. America Online Hardware Considerations: Certification Programs, EPEAT, RoHS, Energy Star, Computers, Monitors, Printers, Scanners, All - in - Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware Considerations, Planned Obsolescence, Packaging, Toxins, Other Factors, Remote Desktop, Using Remote Desktop, Establishing a Connection, In Practice

Unit 5 - Greening Your Information Systems (12 Hrs.)

Initial Improvement Calculations, Selecting Metrics, Tracking progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling. Staying Green: Organizational Check - ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check - ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations

References:

1. Green IT, Toby Velte, Anthony Velte, Robert Elsenpeter McGraw Hill 2008
2. Green Data Center: Steps for the Journey Alvin Galea, Michael Schaefer, Mike Ebbers Shroff Publishers and Distributors 2011
3. Green Computing and Green IT Best Practice Jason Harris Emereo
4. Green Computing Tools and Techniques for Saving Energy, Money and Resources Bud E. Smith CRC Press 2014