MOHAWK VALLEY COMMUNITY COLLEGE

UTICA AND ROME, NEW YORK

COURSE OUTLINE

Introduction to Green Building Technology

FM244

CATALOG DESCRIPTION:

### FM 244 Introduction to Green Building Technology C-3, P-3

This web-based course focuses on the principles of commercial construction using a sustainable methodology. Green building principles such as energy efficiency, environmental impacts, resource conservation, indoor air quality, renewable energy sources, and community issues are studied. National and International programs for design as well as building rating systems are investigated. Codes and building standards are reviewed with emphasis on the LEEDS standards. Current building ratings and standards are reviewed.

Student learning outcomes:

Upon completion of this course, the student will be able to:

* Construct a LEED building plan
* Evaluate building designs for best LEED credits.
* Differentiate between various alternative energy sources
* Design best practice procedures for acquiring LEED credit
* Develop recycling practices for LEED credits
* Integrate LEED construction techniques into current construction

DETAILED COURSE OUTLINE:

# 1. Introduction to Sustainable Construction

(3 period)

1. Sustainable Development
2. The Shifting Landscape
3. Green Building Progress
4. Case studies

# 2. Green Building Foundations (3 period)

1. Ethics and sustainability
2. Basic Concepts
3. The Green building movement
4. Case Study Stuggart, Germany

# 3. Ecological Design (3 period)

1. Design versus Ecological Design
2. Historical Perspectives
3. Contemporary ecological design
4. Future ecological designs
5. Thermodynamics

# 4. Green Building Assessment (3 period)

1. Green Star Case Study
2. BREAM Case Study
3. Performance Assessment
4. Major Green Building Assessment Systems in the US

# 5. The US Green Building Council (3 period)

1. Brief History of LEED
2. Structure of LEED assessment
3. LEED Credentials
4. The LEED Process
5. LEED Categories
6. Case Study

# 6. The Green Globes Building Assessment System (3 period)

1. The Green Globes Process
2. Green Globes Certification and verification
3. The Green Globes Professional
4. Case Study

# 7. The Green Building Design Process (3 period)

1. Conventional Versus Green Building Process
2. Executing the Gren Building Project
3. The Integrated Design Process
4. Role of the Charette
5. Green Building Documentation Process

# 8. Sustainable Sites and Landscaping (3 period)

1. Land and Landscape Process for Green Buildings
2. Land Use Issues
3. Sustainable Landscapes
4. Enhancing Ecosystems
5. Stormwater Management
6. Low Impact Development
7. Heat Island Mitigation
8. Light Trespass and Pollution Reduction

# 9. Energy & Carbon Foot Print Reduction (3 period)

1. Building Energy Issues
2. High Performance Building Energy Design
3. Passive Design Strategy
4. Building Envelope
5. Internal Load Reduction
6. Electrical Power Systems

# 10. The Building Hydrologic Design

(3 period)

1. Global Water Resource Depletion
2. Hydrologic Cycle Terminology
3. Water Budget Rules of Thumb
4. Sustainable Storm water Management
5. Landscaping Water Efficiency

# 11. Closing Material Loops

(3 period)

1. The Challenge of Materials and Product selection
2. Materials and Product Certification Systems
3. Design for Deconstruction and Disassembly
4. Emerging Construction Materials

# 12. Indoor Environmental Quality

(3 period)

1. Indoor Environmental Quality, the Issues
2. Integrated IEQ Design
3. Emissions From Building Materials
4. Economic Issues

# 13 Construction Operations

(3periods)

1. Site Protection Planning
2. Construction Materials Management
3. Commissioning

# 14 Green Building Economics

(4 periods)

1. Economics of Green Buildings
2. General Approach
3. Quantifying Benefits