



Wayne County Community College District

COURSE SYLLABUS

GTT 201 REHC Technology

CREDIT HOURS: 3:00

CONTACT HOURS: 45.00

COURSE DESCRIPTION:

This course is designed to provide the students with the knowledge of Geothermal HVAC/R technology. Ground Source Heat Pump trainer and conventional Gas Forced Air equipment will be used to articulate how the stability of the Earth's heat can heat and cool homes and commercial buildings. Sustainable systems for individuals, communities, and municipalities are surveyed as well as their environmental impact and cost-benefit analysis. Calculating Geothermal Renewable Energy Heating and Cooling (REHC) system efficiency ratings and calculating payback periods will be surveyed. Current incentives, tax credits, rebates, and local and national legislation will be researched

PREREQUISITES: GTT 101, GTT 105

EXPECTED COMPETENCIES:

Upon completion of this course, the student will be familiar with:

- Define and explain different views of sustainability.
- Illustrate an understanding of renewable energies, environmental conservation and sustainable developments.
- Discuss the historical and socio-cultural aspects of environmental sustainability and sustainable design.
- Demonstrate how heat energy is absorbed by the Earth for REHC(Renewable Energy Heating & Cooling) and how the Earth's core provides heat for EGS(Enhanced Geothermal System).
- Demonstrate a basic understanding of HVAC/REHC.
- Explain the concept of Compression heating and cooling related to the transport of refrigerant.
- Demonstrate an understanding of SEER(Seasonal Energy Efficiency Rating); COP(Coefficient Of Performance); and, conventional systems "efficiency".
- Identify and understand the Fossil Fuels, Alternatives, and Renewables.
- Analyze the economical and environmental impacts of renewable energy sources and sustainable materials.
- Review the concept of Sustainable Development.
- Identify products and materials utilized to create a sustainable environment.
- Analyze and explain the role of an integrated geothermal REHC for dwellings and municipalities.
- Increase in knowledge of GSHP's(Ground Source Heat Pumps); Loop Field designs; pressure testing; and, site plans/blueprint reading.
- Discuss and review: site safety; drilling equipment; excavation, and quality control.



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ASSESSMENT METHODS:

Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE:

90%-100% = A

80%-89.9% = B

70%-79.9% = C

60%-69.9% = D

<60% = E