

Arkansas State University-Newport's mission is to provide an accessible, affordable, quality education that transforms the lives of our students, enriches our communities, and strengthens the regional economy.

## ECT1314: Residential Heat Pump Systems

**Course Description:** The course will include the study of residential heat pumps along with their application and operation. The practical application will include the electrical wiring installation, service, repair and operation of residential type heat pump systems. Dual fuel applications will also be covered.

**Prerequisites:** ECT1123 Basic Electrical Circuits, ECT1133 Basic Electrical Circuits Lab, ECT1144 Introduction to Air Conditioning System

**Course Type:** Theory w/ Lab

**Instructor Name:**

**Office:**

**Office Phone:**

**Email:**

**Office Hours:**

### Department Information

Course Department:

Academic Department:

Academic Coordinator:

Email:

Associate Dean:

Associate Dean Contact Number:

Email:

### Materials: Required and Optional

Required Text(s): Modern Refrigeration and Air Conditioning 20<sup>th</sup> Edition, ALTHOUSE, ANDREW, ISBN#9781631263545

2014 National Electrical Code. National Electric Code Committee, National Fire Protection Agency. ISBN: 9781455906727

Required Materials: Pencils, Paper, Basic Scientific Calculator, ASUN Campus Email and —My ASUN Portal Username and Password (same for email and Portal)

Optional Materials: None

### Institutional Learning Outcomes

Upon graduating from ASU-Newport with any Associate Degree, a student will be proficient in the following:

#### ILO1: Communication

Goal: Students will express ideas, knowledge, and concepts in a clear and concise manner.

- a) Written
- b) Verbal
- c) Interpersonal

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**ILO2: Reasoning**

Goal: Students will apply reasoning skills in a variety of environments, which demonstrates problem-solving and applied knowledge.

- a) Explore
- b) Locate
- c) Interpret
- d) Evaluate
- e) Apply

**ILO3: Responsibility**

Goal: Students will participate in service activities that instill in them a sense of social responsibility.

- a) Civic
- b) Academic
- c) Financial

**Institutional Grading Scale**

Grading Scale:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: 0-59
- S: Satisfactory
- U: Unsatisfactory

**Americans with Disabilities Act Compliance**

In order to obtain appropriate disability related accommodations and services to which they are entitled, students with documented disabilities should voluntarily and confidentially provide the Office of Disability Services (870-512-7838 or [disabilityservices@asun.edu](mailto:disabilityservices@asun.edu)) with appropriate medical documentation regarding the nature and extent of their disability, make their needs known to this Office and follow established procedures for acquiring needed services and accommodations in the classroom or online.

**Information Technology Services**

If you experience any problems or issues with the Portal or other equipment, please contact ITS at 870-512-7783 or <http://its.asun.edu>. ASU-Newport provides a number of different services to assist students in areas that directly impact their academic success. The following direct websites will help you get in touch with those services that may be needed during your time as an ASUN student.

Academic Support Center: <http://academicsupport.asun.edu>

Financial Aid: <http://financialaid.asun.edu>

Career Pathways: <http://pathways.asun.edu>

University Police: <http://cpd.asun.edu>

Information Technology Services: 512-7783 or [its@asun.edu](mailto:its@asun.edu)

Disability Services: [http://www.asun.edu/disability\\_services](http://www.asun.edu/disability_services)

Admissions: <http://admissions.asun.edu>

**Academic Dishonesty** (As found on pages 75-76 of the [ASUN Student Handbook](#))

ASU-Newport enthusiastically promotes academic integrity and professional ethics among all members of the ASU-Newport academic community. Violations of this policy are considered serious misconduct and may result in disciplinary action and severe penalties. Cheating in any form-including plagiarism, turning in assignments prepared by others, unauthorized possession of exams-may result in the student being dropped from the class with an “F” and/or being suspended from the College. Students who feel they have been unfairly accused of cheating may appeal to the Division Chair and the Vice Chancellor for Academic Affairs.

**Campus Safety Information**

Last name of Faculty, Semester

What to know and do to be prepared for emergencies at ASUN:

- Opt-in to receive ASUN’s School Messenger notifications regarding weather closings, emergencies, and other important notifications. All currently enrolled students will receive an email within the first two weeks of the semester prompting them to Opt-in to the messaging system.
- Know the safe evacuation route from each of your classrooms. Emergency evacuation routes are posted in on-campus classrooms.
- Listen for and follow instructions from your instructor or other designated authorities.
- For additional emergency information see the ASUN Emergency Response Guide in the Portal under “More” then select “Department of Safety”.
- Know the emergency phone number for ASUN Campus Police or dial 911.
- Report suspicious activities and objects found on campus.
- Keep your permanent address and emergency contact information current in My Campus.

**Inclement Weather**

In the event of inclement weather, class cancelation is left to the discretion of the Chancellor. You will be notified of class cancelation on the university website, through news media, and through our school messaging system.

**Children in the Classroom:**

ASUN classroom policy requires that the learning environment should be free of distraction in order to provide the highest learning opportunity for all students. In this light, students should not bring children to the classroom. If you must bring a child on campus, please have your child properly supervised in the public gathering areas.

**Course Learning Outcomes**

Upon the successful completion of this course, students will be proficient in the following:

**ECT 1314 Course Learning Outcomes ILO #1&2**

Learning Outcomes	Assessment
Inspecting National Electric Code Requirements Calculating Air Conditioning Wiring Calculating Electric Heating Systems Applying Arkansas Health Codes Applying Mathematical Calculations	National Electric Code Requirements Theory Exam <ul style="list-style-type: none"> <li>• Exams, Participation, and Safety of Lab Construction Projects</li> <li>• See Course Policies and Procedures for grading</li> </ul>
Identifying Components Demonstrating Knowledge of Electronic Controls Calculating Airflow Sizing Refrigerant Lines Explaining Sequence of Operations	Heat Pump System Theory Exam <ul style="list-style-type: none"> <li>• Exams, Participation, and Safety of Lab Construction Projects</li> <li>• See Course Policies and Procedures for grading</li> </ul>
Detailing Basic Heat Pump Refrigeration Cycle Initiating Defrost methods Calculating Superheat and Sub-Cooling Identifying High and Low Pressure Points Explaining Indoor and Outdoor Coils Positions	Refrigeration Process Theory/Lab Exam <ul style="list-style-type: none"> <li>• Exams, Participation, and Safety of Lab Construction Projects</li> <li>• See Course Policies and Procedures for grading</li> </ul>
Identifying and Measuring Low Voltage Coils Wiring High Voltage Load Contacts Identifying Limit Switches Demonstrate Sequence of Operations Knowledge	Troubleshooting System Electrical Diagnostics <ul style="list-style-type: none"> <li>• Exams, Participation, and Safety of Lab Construction Projects</li> <li>• See Course Policies and Procedures for grading</li> </ul>
Applying Critical Charging Techniques Electrical Diagnostics Code Requirements Demonstrate Sequence of Operations Knowledge for Refrigeration Cycle	System Diagnostics Theory/Lab Exams (MSA) <ul style="list-style-type: none"> <li>• Exams, Participation, and Safety of Lab Construction Projects</li> <li>• See Course Policies and Procedures for grading</li> </ul>

**Course Policies and Procedures**

**Academic Calendar**

**Disclaimer**

This syllabus and all documents associated with the syllabus are considered a contract between the student and the instructor. Students are expected to carefully read and review the syllabus and all associated documents in order to be familiar with course expectations and policies. This syllabus is subject to change at the discretion of the instructor, who will inform students of any changes. Students are responsible for keeping up with any changes.