ECT 282: ADV AIR COND/REFRIG COM/DOM

Proposer:

Name:	Email:
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Effective Term:
Fall 2026

Does this course use a CA Common Course Number
No

Credit Status:
Credit - Degree Applicable

Subject:
ECT - Environment Control Technology

Course Number:
282

Discipline:

And/Or	(	Discipline	)
		Air Conditioning, Refrigeration, Heating (Solar energy technician)	

Catalog Title
Advanced Air Conditioning/Refrigeration Commercial/Domestic

COS Course Description
An advanced course offered in Environmental Control Technology that covers commercial and domestic air conditioning and refrigeration theory. Topics include the fundamentals of wiring circuits and the concept of electrical problem solving as it relates to both commercial and residential applications. Topics also include using methods to calculate heat loads values necessary to sizing equipment in the industry.

Prerequisites
ECT 280 and ECT 281 with a minimum grade of C

Validation

Validation Type
Sequential - Same Discipline

Course
ECT 280

Validation Type
Sequential - Same Discipline

Course
ECT 281

Complete the Prerequisite/Corequisite Objectives and provide sound quantitative research to document the need for the requisite.

Method of Instruction:
Distance Education

Laboratory
Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
12

Lecture Hours Minimum (week)
9

Lab Hours Minimum (week)
9

Total Contact Hours Minimum (semester)
315

Total Outside Hours Minimum (semester)
315

Total Student Learning Minimum Hours (semester)
630

Repeatability:
No

Open Entry/Exit:
No

Field Trips:
Not Required

Grade Mode:
Standard Letter

TOP Code:
094600 - * Environmental Control Technology

SAM Code:
B - Advanced Occupational

Course Content

COS Methods of Evaluation:
Oral presentations
Short answer quizzes or exams
Skill demonstrations

COS Course Topics:

	COS Course Topics
1	Air conditioning systems, cooling, dehumidifying
2	Air conditioning/refrigeration systems, heat loads
3	The fundamentals of psychometrics
4	Special refrigeration systems applications
5	Commercial systems, heat loads and piping
6	Commercial Systems: Installing, Servicing, Electrical Schematics, and Diagnosing
7	Domestic and commercial applications

COS Course Objectives:

	COS Course Objectives
1	design a ladder schematic for a basic refrigeration unit to include electrical loads and correct symbols.
2	calculate a residential heat load using long hand method.
3	diagnose electrical/refrigeration problems in a refrigeration system using simurefrigeration computer assisted program.

Course Outcomes:

	Course Outcomes
1	AC Electrical Sequence: Upon completion of this course the student will be able to explain the electrical sequence of operation of a commercial refrigeration unit with a 70% or better score on their skilled exam.
2	Commercial Refrigeration Simulator: Upon completion of this course the students will be able to diagnose a commercial refrigeration computer trainer with score of 70% or better on a skilled exam.
3	Diagnose Supermarket Computer Simulator: Upon completion of this course the students will be able to diagnose a supermarket computer simulator trainer with a score of 70% or better on a skilled exam.
4	Simuheat Pump Computer Simulator: Upon completion of this course the students will be able to diagnose a simuheat pump computer simulator trainer with a score of 70% or better.

Assignments:

Assignment Type:	Details
Reading	Handouts and chapter reading assignments are given in advance of topics and subjects that are covered in class lectures.
Writing	Students are required to write a short paper on certain lab assignments, such as explain flame rectification and how is it measured.
Homework	Students are required read chapter topics and write the answers to the questions at the end of each chapter assignment.
Lab	Commercial refrigeration simulator trainer • Supermarket refrigeration simulator trainer • Group ice machine presentation • Heat pump simulator trainer • Simugas simulator trainer • Packaged heating and cooling units

Representative Texts, Manuals, and/or OER that is equivalent, Other Support Materials:

Texts used by individual institutions and even individual sections will vary. The list of representative texts must include at least one text with a publication date within five (5) years of the course outline approval date.

COS Textbooks or other support materials

Resource Type:	Details
Books	Modern Refrigeration & Air Conditioning Althouse Turnquist Bracciano The Goodheart-WilCox Company, Inc 22nd 2023 979-8888174890

Other Degree Attributes

Degree Applicable
Not Transferable
Not a Basic Skills Course

Materials Fee:

15

Distance Learning Addendum

ECT DLA - 11-2023 - Fillable Form.pdf

Banner Title:

Adv Air Cond/Refrig Com/Dom

Course Control Number:
CCC000510081

Equity Review

Select elements of the COR that were reviewed for equity. Must select at least one:

Pre/Corequisites
Textbooks / Other Support Materials