

HVACR On-line@Ferris State University: An option for working professionals

Necessary Qualifications To qualify for admissions, you must have already earned your associates degree in HVACR (or its equivalent) with an overall grade point average of 2.5 or above, and you must have completed the following transferable courses w/ a "C" or better:

- College level Intermediate Algebra class (FSU Math 115).
- Two semesters of English (FSU ENGL 150 and 250 or 211)
- Laboratory Science course (preferably Physics)
- Computer Competency (FSU ISYS 105)
- Social Awareness
- Cultural Enrichment

Check at the following URL for a quick assessment of general education credits::

<http://www.ferris.edu/admissions/Transfer/WebPages/equivalencies.htm>

HVACR Department Background

The program is unique. It is the only one of its kind offered by a university - on campus or on line. Our emphasis on systems, design, controls and energy management combined with our pragmatic approach to engineering consistently produces graduates that are highly recruited throughout the country. And our graduates find successful and rewarding careers - in a variety of sectors within the HVACR industry. Even before graduation, our students achieve significant success. They have dominated the annual ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers) student competition with an unprecedented record of nine first-place, four second-place and two third-place finishes. We are proud of the achievements of our students and graduates, and I am delighted that you are interested in our program.

Brief Description of the on-line Bachelor of Science in HVACR Engineering Technology The online program was designed for working adults who have several years (4 to 13) of experience in the HVAC industry, and was set up for students to take the HVAC courses through Ferris and the general education classes at a local institution. Most of the general education courses are also available online through Ferris. We are working on converting enough for you to complete all of your degree requirements through the university. If you take general education classes through another institution, you can transfer them to Ferris to fulfill your graduation requirements. The on-line degree program consists of the same curriculum as the highly successful on campus program - it simply uses a different delivery method. We offer the seven upper level HVACR Engineering Technology courses online. These classes total 30 credit hours. An additional 31 credit hours of general education courses must also be completed. (See above.) Note, one 5-day visit to campus is required during August of your first year in the program to complete the hands-on competency portion of the program. This program is not designed to be taken full-time. In fact, it cannot be taken on a full-time basis because only one HVAC class is offered each semester. The first class begins in the fall semester and seven subsequent semesters are needed to take all seven HVAC classes (fall, winter, summer, fall, winter, summer, fall). It is your option to take general education courses at the same time.

Difference Between the Campus and Online Program

The online program was not designed for recent associate degree graduates with little or no industry experience. Learning online is different than learning on campus. The content of the online program is exactly the same as the on campus program. The only difference is the method of delivery. We use some pretty cool technology to record lectures so that students can "attend class" from their home computer, and we're currently developing graphics and animations that illustrate the workings of mechanical systems to better explain how the stuff works. However, no matter how many bells and whistles we can put into the online program, it is still an online program. Face to face interaction with faculty and fellow students is no longer possible and many students find the communication lag caused by email to be frustrating. Further, students without a significant amount of industry experience find themselves lacking much of the HVACR understanding that can only come with experience. This lack of understanding can be a huge deficit in the online program. If you don't have a good grasp on the fundamentals, you will have a difficult time grasping the engineering concepts that you will study as a bachelor degree student. Because we expect incoming students to have a good grasp on the fundamentals and because the program moves fast, we don't have time for review.

While we don't prevent admission to recent associate degree graduates who lack industry experience, we do discourage it. At the very least, we want you to be fully aware that the online program consists of full-blown college level courses. The program is challenging and requires 20 - 25 hours per week of effort per class IF you have a good grasp on the fundamentals, and will require more time if you find yourself in a catch-up mode.

Engineering or Engineering Technology: What is the difference?

Engineering programs tend to be theoretical and fairly general fields of study. Engineering Technology programs such as ours, are practical and focused on a narrow field of study within the spectrum of engineering. Mechanical engineering students study a wide variety of engineering fundamentals and principles, but typically do not have any classes that are specifically designed to teach about HVACR. Upon graduation, some enter the HVACR industry, but most enter a variety of other industries that design machines, automobiles, airplanes, boats, engines and so on. Our students learn only those engineering principles that apply specifically to HVACR and concentrate instead on engineering within the HVACR industry. Engineering students take several Calculus courses. Our students take only pre-Calculus (because Calculus is not used in the industry). Engineering students are required to take several Chemistry and Physics courses. Our students are required to take two Science courses of their choosing (we recommend, but do not require, Physics). For an illustration of this, please see the attachment below for a list of classes in our program as compared to the classes found in a typical mechanical engineering program. The program results in a Bachelor of Science in HVACR Engineering Technology, while a typical mechanical engineering program results in a Bachelor of Science in Mechanical Engineering (BSME). A "pure" engineering program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board of Engineering Technology (ABET). ABET sets the standards for quality assurance of engineering programs and requires that students take certain core engineering courses, such as those contained in the attachment above for mechanical engineering programs. Our program is not accredited by ABET, because we would have to replace many of our core HVAC classes with ABET required courses. Doing so would eliminate our unique niche in higher education and remove our specialization in HVACR. In short, we would no longer be able to offer a degree in HVACR. This is both good and bad. Here is why. A professional engineer (PE) is a person that has graduated from an ABET accredited program and has passed a state test. The difference between an engineer and a professional engineer is similar to the difference between an accountant and a certified public accountant (CPA). Both perform the same work, but one has passed a state exam and is qualified to certify the accuracy of an audit (in the case of an accountant), or a design (in the case of an engineer). Graduates of programs accredited by ABET are qualified to take the PE exams, while graduates of the HVACR Engineering Technology program at Ferris are not. This leaves you with a choice: Study at any one of a number of universities that offer ABET accredited engineering degrees, learn very little about HVACR but become a PE upon graduation; or study at Ferris State and learn HVACR Engineering Technology in depth, but do not become a PE. Earning a PE does not assure employability or mean that you will earn more during your career. Some engineering firms will hire only PE's, so you may have more opportunities with a PE. Often, firms will hire our graduates to actually do the design work and have their PE review the designs to certify that they are valid. Note that the program builds on the AAS in HVACR and requires two additional years. A mechanical engineering degree requires four years of study, whether you already have an AAS in HVACR or not.

Other Facts to Consider

If you are working full time and taking online classes, usually one class per semester is plenty. The online program takes two years and one semester to complete the technical courses. And additional 31 credits of non-HVAC courses need to be taken as well. If you take just one class per semester, the program could easily take you five years to complete online. The campus program takes two academic years to complete. In short, you can get through the campus program faster than the online program, and you can concentrate on your studies while you are here without the distraction of your career. Obviously, taking the course online allows you to work and earn an income while you attend school and from a financial perspective, that is a very attractive option.

IMPORTANT!

If you think you meet the entrance criteria and want to apply, or simply want to find out if you are eligible to enroll, get your admissions process started using the following URL: <http://www.ferris.edu/ucel/apply/index.htm> Information on the program including HVAC course descriptions, schedule of classes and a Transcript Request Form is included at this site. To apply, click on the "Apply Online" link in the top menu bar and then follow the instructions.

A quick link to the Transcript Request Form is: <http://www.ferris.edu/admissions/Transfer/WebPages/RequestTrans.pdf>

Tuition for the online courses from Ferris is charged at in-state rates. You can find current tuition rates at: <http://www.ferris.edu/htmls/administration/businessoffice/rates.htm>.

Tuition for the general education courses will vary depending on the institution where you take them. We estimate that the total cost of the degree to be about \$14,000 to \$16,000.

Also, a check sheet is located on the HVACR Home page. This sheet contains all of the classes needed for graduation. You can use it to check off classes that you have already taken to see if you are prepared for entry in the B.S. program. You will notice that it is divided into a page for AAS degree requirements and a page for BS degree requirements. Note

that the technical courses listed are those offered by Ferris State for both the AAS and BS degrees. The courses that you may have taken for your AAS degree will probably not be exactly the same. That is not a problem as long as you have done significant work in HVACR at an accredited institution.

