Eastfield College
COURSE SYLLABUS
SPRING SEMESTER 2015

HART 1451 - 43501
ENERGY MANAGEMENT (this is a WECM course)
CAREER TECHNOLOGIES DIVISION

Instructor: John Jackson
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Division Office: T143
Time: Wednesdays 5:30 P.M. to 10:55 P.M.

COURSE DESCRIPTION:
Basic heat transfer theory; sensible and latent heat loads; building envelope construction; insulation, lighting, and fenestration types; and conducting energy audit procedures. The course develops energy audit recommendations based on local utility rates, building use, and construction. Laboratory activities include developing energy audit reports, installing energy saving devices, and measuring energy consumption.
(3 hours Lecture, 3 hours Lab, 4 Credit hours.)

Learning Outcomes
Describe heat transfer theory; determine heat transfer characteristics of insulation, windows, and various parts of building materials; explain utility rate structure; conduct energy audit and develop energy audit reports; explain energy saving consumption using appropriate instruments; and provide recommendations on managing energy cost.

PREREQUISITES:
HART 1401, 1403, 1407, 1441, 1445, 2449

TEXTBOOK:
Modern Refrigeration and Air Conditioning (19th Edition)
By Althouse – Turnquist – Bracciano– Bracciano– Bracciano
ISBN: 9781605251994

WECM Courses are designated by the Texas Higher Education Coordinating Board as workforce education (technical) courses offered for credit and CEU's (Continuing Education Units). While these courses are designed to transfer among state community colleges, they are not designed to automatically transfer to public four (4) year colleges and universities.

SCANS SKILLS
Secretary’s Commission on Achieving Necessary Skills
FOUNDATION SKILLS

(F1) READING – locates, understands and interprets written information.
(F2) WRITING – communicates thoughts, ideas, and information in writing.

Basic Skills
(F3) ARITHMETIC – performs basic computations.
(F4) MATHEMATICS – chooses appropriate mathematical techniques.
(F5) LISTENING – receives, interprets, and responds to verbal messages and cues.
(F6) SPEAKING – organizes ideas and communicates orally.

(F7) CREATIVE THINKING – generates new ideas.
(F8) DECISION MAKING – specifies goals and constraints, chooses best alternatives.

Thinking Skills
(F9) PROBLEM SOLVING – recognizes problem and devises/implements a solution.
(F10) MENTAL VISUALIZATION – thinking about what something will be.
(F11) KNOWING HOW TO LEARN – uses efficient learning techniques.
(F12) REASONING - discovers and applies underlying rules or principles.

Personal Qualities
(F13) RESPONSIBILITY – exerts a high level of effort and perseveres toward goals.
(F14) SELF-ESTEEM – believes in oneself and maintains a positive view of self.
(F15) SOCIABILITY – demonstrates to others that you care about them.
(F16) SELF-MANAGEMENT – assesses self accurately, sets goals, exhibits self control.
(F17) INTEGRITY/HONESTY – chooses ethical courses of action.

WORKPLACE COMPETENCIES

Manages
(C 1) MANAGES TIME – sets relevant, goal related activities, ranks and allocates time.
(C 2) MANAGES MONEY – uses or prepares budgets, keeps detailed records.
(C 3) MANAGES MATERIAL – acquires, stores, and distributes materials, supplies, etc.
(C 4) MANAGES HUMAN RESOURCES – assesses skills and distributes work.

Manages Information
(C 5) ACQUIRES INFORMATION – identifies need for data, obtains and evaluates.
(C 6) ORGANIZES INFORMATION – organizes, processes, and maintains information.
(C 7) INTERPRETS INFORMATION – selects, analyzes info. – communicates results.
(C 8) USES COMPUTERS – to acquire, organize, analyze, and communicate information.

Inter-
Personal Skills
(C 9) PARTICIPATES AS A MEMBER OF A TEAM – contributes to group effort.
(C 10) TEACHES OTHERS – helps others learn needed knowledge and skills.
(C 11) SERVES CLIENTS/ CUSTOMERS – works to satisfy client/customer expectations.
(C 12) EXERCISES LEADERSHIP – communicates ideas to justify position and lead others.
(C 13) NEGOTIATES – works toward agreements involving and technological systems.
(C 14) WORKS WITH DIVERSITY – works well with people from diverse backgrounds.

Systems
(C 15) UNDERSTANDS SYSTEMS – social, Organizational, and technological systems.
(C 16) MONITORS SYSTEMS – distinguishes trends, predicts impact
(C 17) IMPROVES SYSTEMS – makes suggestions to modify existing systems

Technology
(C 18) SELECTS TECHNOLOGY – judges which technology will produce desired results
(C19) APPLIES TECHNOLOGY – understands procedure for setup and use machines
(C20) MAINTAINS TECHNOLOGY – prevents, identifies, or solves technological problems
### COURSE COMPETENCIES:
Upon completion of this course the student will be able to:

1. **Practice good safety habits**
2. Define the basic premise of energy management
3. Determine what causes energy use in a building
4. List what is involved in an energy audit
5. List the benefits of a central control unit
6. Define the aspects of different thermostat controls including types and styles
7. Define controls including; refrigerant controls – fan switches – VAV controllers

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<thead>
<tr>
<th>Scans</th>
<th>Outcomes</th>
<th>Learning Experience</th>
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<tbody>
<tr>
<td>F1-5</td>
<td>The student will be made aware of safety both in the classroom and the workplace. This includes hazardous materials training.</td>
<td>Read and sign safety/haz mat and code of conduct sheets. Film may be available.</td>
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<tr>
<td>F-5, F9, C5 and C7</td>
<td>The student will become familiar with total energy management (TEM) as well as control concepts.</td>
<td>Read MRAC Chapter 40 in part. Discuss subject, answer review questions, lecture and lab.</td>
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<tr>
<td>F1-2, F4-5, F8 F12, F16, C1, C6-7, C18-19</td>
<td>The student will become familiar with TEM control mechanisms. The student will obtain concept of the TEM control components.</td>
<td>Read MRAC Chapter 40 in part, answer review questions, lecture and lab.</td>
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<tr>
<td>F1-5, F9, C5 and C7</td>
<td>An overview of Energy Conservation concepts</td>
<td>Read MRAC Chapter 41 Lecture/lab, review questions and film.</td>
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<tr>
<td>F1-4, F9, C1, C5 and C7</td>
<td>The student will become familiar with heating loads</td>
<td>Read Manual N pages 7-15 Lecture and discussion.</td>
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<tr>
<td>F1-5, F10, F12 C1, C5 and C7</td>
<td>The student will be introduced to the absorption system.</td>
<td>Read MRAC Chapter 27 Lecture and discussion.</td>
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<tr>
<td>F1 and F5</td>
<td>Introduction to hydronic heat.</td>
<td>Read MRAC Chapter 33 Lecture and discussion.</td>
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<tr>
<td>F1 and F5</td>
<td>Review of Solar Power and Thermal Storage.</td>
<td>Read MRAC Chapter 39 Lecture and discussion.</td>
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<tr>
<td>F1-2, F5 and C5</td>
<td>The student will be introduced to ECM’s and other PSC motor replacements</td>
<td>Films, lecture and discussion</td>
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8. Identify causes of heat loss
9. Explain “heat lag”
10. Define outside design conditions
11. Define inside design conditions
12. Explain solar radiation through glass
13. Explain heat transmission through structural components
14. Explain Design occupancy
15. Explain infiltration
16. Explain humidification and de humidification
17. Explain duct heat gain/loss
18. Explain equipment selection
19. Explain and calculate the summer and winter design loads
20. Define absorption systems
22. Define/explain solar heating
23. Identify the types of compressors used in large systems

DEVELOPMENTAL COURSES
The Texas Success Initiative (TSI) is a statewide program designed to ensure that students enrolled in Texas public colleges and universities have the basic academic skills needed to be successful in college-level course work. The TSI requires assessment, remediation (if necessary), and advising of students who attend a public college or university in the state of Texas. The program assesses a student’s basic academic skills in reading, writing, and math. Passing the assessment is a prerequisite for enrollment in many college-level classes such as English 1301/1302, History 1301/1302, Math 1414, etc. Students who do not meet assessment standards may complete prerequisite requirements by taking developmental courses in the deficient area and passing them with a grade of C or higher. In some cases retesting will also be required. It is up to each student to be aware and informed about requirements that are subject to change.

EDUCATIONAL OBJECTIVES:
- Introduce the air conditioning process.
- Describe the air conditioning systems designed for cooling, heating and ventilation.
- Follow manufacturer’s installation procedure for commercial air conditioning units.
- Describe commercial compressor capabilities and operation.
- The student will demonstrate knowledge of the air conditioning process, describe the system designed for cooling, heating and ventilation, follow manufacturer’s installation procedures and describe commercial compressor capabilities and operation.
- Student will be required to engage in oral communication activities.

STUDENT CONTRIBUTIONS:
Each student will spend at least 3 hours per week preparing for class. Attendance is critical in this class. Students should make every effort to be in class on time and prepared for class.

CLASSROOM ENVIRONMENT:
The classroom serves as a learning environment for everybody participating in this class. To facilitate academic and personal growth for everyone, you are expected to be courteous and
respectful toward the instructor and other students. While we encourage an informal and friendly classroom environment that facilitates discussion and exploration, we must still accommodate one another’s differing perspectives and opinions.

Each student must adhere to the Student Code of Conduct. The Student Code of Conduct can be found in the current Eastfield College Catalogue, or on the internet at http://dcccd.edu.

Ringing cell phones during the class period are a distraction. Unless it is an emergency call from a family member, all other cell phone calls are to be avoided. Family members and friends should be advised not to call during class time. If a student continues to receive numerous cell phone calls during the class period, the instructor may request the cell phone be turned OFF.

A student that is on call by his/her company may answer cell phones in the classroom. The student will then remove themselves from the classroom for the conversation. All other calls are to be avoided. The instructor may amend this rule as he sees fit.

Voice mail and text messages can be retrieved during the break between class lecture and lab.

**WRITING EXPECTATIONS:**
In completing homework assignments, you must write out the question in a complete legible sentence. The answer must also be written in a complete legible sentence. No abbreviations or short words. Turning in a homework paper that does not meet these standards will result in the paper being returned to you with a comment to “Redo”.

**COURSE EVALUATION:**
Your final grade will be made up of Three (3) parts:

- **Daily work:** 100 points possible
  Homework, quizzes, and other daily work.

- **Lab work:**
  Lab assignments: 100 points possible
  (Part of the lab grade will be how well you work as a team member in the lab, and selection of tools to perform the lab)

- **Exams, Quizzes & Notebook:**
  Lab Exam: 100 points
  Major Exams: 300 points (three separate exams)
  Final Exam: 300 points
  Final exam consists of two parts. A written final exam and a lab final exam. You must average 70% on the written final and the lab final in order to receive a passing grade in this course.
  Notebook: 100 points
  Notebook will be graded on organization and neatness.
Exams:
The exams will cover material from the assigned chapters in your textbook, quizzes, handouts and other assigned material. The exam can include multiple choice questions, true/false questions, fill-in-the-blank, and short essay questions.

There will be no make-up exam unless arrangements have been made with the instructor before the exam date. All assignments will be given a due date and will not be accepted late without a penalty.

Final:
It is comprehensive, covering some material from the first three exams. The final can include multiple choice questions, true/false questions, fill-in-the-blank, and short essay questions.

Quizzes:
There will be quizzes and in-class assignments throughout the semester, covering material from your textbook, lecture and handouts. These quizzes and assignments may be announced or unannounced. There will NOT be any make-up for these quizzes.

Notebook:
The notebook will be a binder with tabbed sections (name of the section on the tab). There will be a cover sheet at the front. The notebook will contain – all class work – all class notes – all handouts – all tests – and any project papers. The notebook will be turned in at the beginning of class on the final exam day.

GRADE BREAKDOWN:
A  900 to 1000 of total possible points
B  800 to 899 of total possible points
C  700 to 799 of total possible points
D  600 to 699 of total possible points
F  599 or less of total possible points

COURSE POLICIES:
Attendance:
You are expected to attend EACH CLASS MEETING, and you are expected to be here on time, prepared, with your book and materials. Please consult with your instructor whenever an absence is necessary. If you miss a class, you are responsible to cover the missed material on your own. Have a classmate share notes with you and make sure you know about homework or other assignments due during the next class period

Preparation:
You are expected to do the reading assignment before you get to class. There are several advantages to this effort. You will have read the material, therefore the class will not have to spend time bringing you up to where the rest of the class is.
**Pop Quizzes:**
You must be present in class when a pop quiz is given. You cannot makeup an in-class quiz.

**Major Tests:**
You are expected to be here for each exam. You cannot "make up" exams unless you have made specific arrangements with your instructor before the scheduled exam. You MUST be present at the scheduled time for the final exam.

**Laboratory Work:**
You cannot work in the lab if you do not have your required tools. The list of required laboratory tools is included in this syllabus. You are to work with your laboratory partner(s), working on the assignment until the group has completed the assignment.

**Homework:**
You are expected to turn in the written assignment on time. All home work is due at the beginning of the next scheduled class and will not be accepted if it is late.

**ACADEMIC HONESTY:**
Scholastic dishonesty is a violation of the Code of Student Conduct. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.

As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the DCCCD Code of Student Conduct published in the DCCCD Catalog at http://www1.dcccd.edu/cat0506/ss/code.cfm

**PLAGIARISM:**
Do not plagiarize. You become guilty of plagiarism, when you submit somebody else’s work as your own. Plagiarism is a serious violation of the Student Ethical code and will result in measures reaching from a grade of “F: for the assignment in question to being dropped from or failed in this class.

Do not cheat. If you copy another student’s work then this will be treated in the same way as plagiarism.

**Family Educational Rights and Privacy Act of 1974 (FERPA)**
In compliance with the Family Educational Rights and Privacy Act of 1974 (FERPA), the College may release information classified as “directory information” to the general public without the written consent of the student. Directory information includes: (1) student name, (2) student address, (3) telephone numbers, (4) date and place of birth, (5) weight and height of members of athletic teams, (6) participation in officially recognized activities and sports, (7) dates of attendance, (8) educational institution most recently attended, and (9)other similar information, including major field of student and degrees and awards received. Students may protect their directory information at any time during the academic year. If no request if filed, directory information is released upon written inquiry. No telephone inquiries are acknowledged. No transcript or academic record is released without written consent from the student, except as specified by law.
FINANCIAL AID STUDENTS: If you are receiving Financial Aid, grants or loans, you must begin attendance in all classes. Do not drop or stop attending any class without consulting the Financial Aid Office. Changes in your enrollment level and failing grades may require that you repay financial aid funds. Failure to contact the instructor will result in your name being submitted to the Financial Aid Office as a “non-attendee”. All students receiving financial aid must open an Email account through NetMail. See directions in this syllabus for opening an Email account.

ABSENCE FOR OBSERVATION OF HOLY DAYS:
Please notify your instructor during the first days of the class of any days you expect to be absent for religious observances. You will be allowed to make up work missed on these days. See your instructor for the necessary forms.

AMERICANS WITH DISABILITIES ACT COMPLIANCE:
It is the policy of Eastfield College to provide reasonable accommodations for qualified individuals who are student with disabilities. This college will adhere to all Federal, State and Local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to contact Eastfield College Disability Services Office at 972-860-8348 in a timely manner to arrange for appropriate accommodations.

EMERGENCY/INCLEMENT WEATHER PROCEDURE:
In case of emergency or inclement weather conditions, Eastfield students should listen to KEOM-FM Radio Station (88.5) as the primary media source. In partnership with the Mesquite Independent School District, Eastfield College Administration will notify KEOM immediately after a decision is made to cancel classes on any given day of inclement weather or for emergency purposes. Students may also monitor other local radio and television stations. The earliest an announcement may be broadcast on KEOM Radio is 6 a.m. Students may also refer to the Eastfield College web page www.eastfieldcollege.com for the inclement Weather announcement under the News/Features area of the front page. The announcement will be posted immediately following the decision to close the college.

*Emergencies may include utility outages, campus emergencies, etc.

REPEATABILITY ISSUE:
Pending legislative action and DCCCD Board approval, effective for fall semester 2005, the Dallas County Community Colleges will charge a higher tuition rate to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in higher tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 semester. For complete information and updates, go to: http://www.dcccd.edu/ThirdCourseAttempt/.
STOP BEFORE YOU DROP:
For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/coursedrops

If you consider dropping this class, please talk to your instructor immediately. Many times there might be a better alternative than dropping a class, and your Instructor will be glad to help you in any way he/she can, or put you in touch with someone who can. If we cannot find a more satisfying solution than dropping a class, then it is your RESPONSIBILITY to withdraw formally from the course or courses. Withdrawing from a course is a formal procedure which YOU must initiate, your Instructor cannot do it for you. You may do this in Admissions or Counseling. If you stop attending and do not withdraw, you will receive a performance grade, usually an “F”.

WITHDRAWAL POLICY
If you are unable to complete this course, it is your responsibility to formally withdraw. Each course has a specific drop date. For this class, the drop/withdrawal request must be received in the Registrar’s Office by April 17, 2015.

If you drop a class or withdraw from the college on or before the official drop/withdrawal deadline, you will receive a “W” (Withdraw) in each class dropped. Failure to complete and official withdrawal by the assigned date will result in your receiving a performance grade, usually an “F.”

For complete information on the drop requirements, policies and procedures, refer to the current online college catalog at www.dcccd.edu at the following link; https://www1.dcccd.edu/catalog/ss/oep/dw.cfm?use_nav=acad_info&loc=econ

STUDENT E-MAIL:
Legal privacy issues prevent your instructor from discussing your work or your grades on commercial e-mail accounts. If you wish to send your papers as attachments to an e-mail (and the instructor permits it), or if you have a question about your grade, you must open a student e-mail account. The account is free. You may set it up by going to http://www.dcccd.edu and click on Student Services, Online Services, and Student NetMail. All students receiving financial aid must open a student NetMail account. Https://www1.dcccd.edu/netmail/input_ssn.cfm

OBTAINING YOUR GRADES AT THE END OF THE SEMESTER:
Grade reports are no longer mailed. Convenient access is available online. Just use your student identification number when you log in to e-Connect. Web site address: http://econnect.dcccd.edu/
WITHDRAWL POLICY
If you are unable to complete this course, it is your responsibility to formally withdraw. Each course has a specific drop date. For this class, the drop/withdrawal request must be received in the Registrar’s Office by April 17, 2015.

If you drop a class or withdraw from the college on or before the official drop/withdrawal deadline, you will receive a “W” (Withdraw) in each class dropped. Failure to complete and official withdrawal by the assigned date will result in your receiving a performance grade, usually an “F.”

For complete information on the drop requirements, policies and procedures, refer to the current online college catalog at www.dcccd.edu at the following link https://www1.dcccd.edu/catalog/ss/oep/dw.cfm?use_nav=acad_info&loc=econ.

Six Drop Issue: STOP BEFORE YOU DROP – For students who enrolled in college level courses for the first time in the fall of 2007 or thereafter, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than six (6) courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated six (6) non-exempt drops, you cannot drop any other courses with “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/coursedrops.

INCOMPLETES:
An incomplete grade of “I” may be given when an unforeseen emergency prevents you from completing the work in a course. The “I” must be converted to a performance grade (A-F) within 90 days after the first day in the subsequent regular semester. If the work is not completed after 90 days, the “I” is converted to a performance grade, usually an “F”.

PRINTING ON CAMPUS:
Printing in the Computer Lab (L-108), Library, and Learning Assistance Center will cost 5 cents a page. Students must bring a $1.00, $5.00, $10.00, or $20.00 bill to the lab to create an account. Accounts must be created before attempting to print. No change is made in the lab. Once the money is in the bill acceptor, it cannot be retrieved. Cash refunds are not possible. Accounts stay active as long as the account has value.

HAZARDOUS MATERIALS:
All students in this class have the right to know that they may be working with, or in the presence of, Hazardous Materials. A list of specific materials is posted on the "Green" Safety Bulletin Boards. Safety Data Sheets from the manufacturers are available in the Tool room or Tech room. Students will be trained and tested on the safe handling of these materials.

SEXUAL HARRASSMENT:
Eastfield College has a zero tolerance policy on sexual harassment. All students shall report complaints of sexual harassment informally to the college Human Resources Director or formally to the Vice Chancellor of Educational Affairs.
This syllabus is intended as a set of guidelines for this course. Eastfield College and your instructor reserve the right to make modifications in content, schedule and requirements as necessary to promote the best education possible within prevailing conditions affecting the course.

FOOD AND DRINK POLICY STATEMENT
We the undersigned understand that bringing drinks and food into the college classroom is a privilege and a responsibility. Out of respect for other members of the Eastfield College community, we agree to take full responsibility for our actions. This includes but is not limited to removing cans, bottles, trash, etc. from the classroom when we leave, and depositing our trash in appropriate receptacles outside the classrooms. Also, we agree to clean up spills and, if special cleaning is needed, to contact the appropriate college personnel immediately.

The right and responsibility for setting classroom food and drink policy does not extend to classrooms or other areas where students and faculty are working directly with or around college property such as computers, lab materials, equipment, and/or college-owned books. Classroom and other spaces such as these will be restricted from the use of food and drink at all times for students and college personnel. In addition, the right and responsibility for setting classroom food and drink policy does not extend to items that are generally prohibited from the campus (e.g. alcohol, tobacco products, etc.).

E-CIGARETTES
Although e-cigarettes may not be considered “tobacco products”, they will be prohibited for use in classrooms, because the scented vapors they produce during use could be offensive to others in the class.

Instructor reserves the right to amend this syllabus.