ACADEMIC AFFAIRS COMMITTEE
February 29, 2008
Minutes

Present: Paul Matney, Bob Austin, LaVon Barrett, Robert Boyd, Diane Brice, Lynda Barksdale, Toni Gordy, Ann Hamblin, Judy Jackman, Michael Kopenits, Duane Lintner, Shawna Lopez, Courtney Milleson, Jerry Moller, Ed Nolte, Jim Powell, Carol Moore-Recorder

Absent: Rathna Prabhakar

Others: April Sessler, Preston Childress, Kim Hays

Announcements: Matney updated the Committee on the status of the E-Catalog. It will be presented to the Committee in a future meeting.

SCIENCES & ENGINEERING
Biology

Kopenits presented the recommended updated course descriptions for the Life Science courses. The Committee suggested re-wording the descriptions to read:

BIOL 1308: Life Science I (for non-science majors)
An overview of biological concepts and how they relate to the individual, the community and the world. Emphasis is placed on cell biology, genetics and evolution.
(3 sem hrs; 3 lec)

BIOL 1108: Life Science Lab I (for non-science majors)
Hands on, collaborative and interactive laboratory experiments in cell biology and genetics. Recommended to be taken with BIOL 1308.
(1 sem hr; 2 lab)

BIOL 1309: Life Science II (for non-science majors)
A continuation of biological concepts and how they relate to the individual, the community and the world. Emphasis is placed on ecology, behavior, human biology and evolution.
(3 sem hrs; 3 lec)

BIOL 1109: Life Science Lab II (for non-science majors)
Hands on, collaborative and interactive laboratory experiments in ecology, evolution and human biology. Recommended to be taken with BIOL 1309.
(1 sem hr; 2 lab)

Boyd moved, seconded by Powell to approve updated course descriptions for BIOL 1308: Life Science I, BIOL 1108: Life Science Lab I, BIOL 1309: Life Science II and BIOL 1109: Life Science Lab II. The motion carried.

Mortuary Science

Childress re-submitted his request to make the following changes to the Mortuary Science curricula:

Create **MRTS 1491: Special Topics in Funeral Service and Mortuary Science**
Prerequisites: MRTS 1211, MRTS 1301, MRTS 1310, MRTS 1342 or Program Coordinator consent
Identification of the specific role and scope of the funeral director. Discussion and presentation of scenarios where funeral directing and embalming reflect commonalities. Emphasis on incorporation of state regulation and recognition of preservation process.
(4 sem hrs; 4 lec)

Update **MRTS 1391: Special Topics in Funeral Service and Mortuary Science**
Prerequisites: MRTS 2335, MRTS 2360, MRTS 2445, MRTS 2447 or Program Coordinator consent
Emphasis on incorporation of state regulation and recognition of preservation process. Overview of the National Board Examination for Funeral Service. Practice examinations for both arts and sciences.
(3 sem hrs; 3 lec, 1 lab)

Remove **MRTS 1391: Special Topics in Funeral Service and Mortuary Science** and add **MRTS-1491: Special Topics in Funeral Service and Mortuary Science** in the Mortuary Science Certificate curriculum.

Add **MRTS 1391: Special Topics in Funeral Service and Mortuary Science** and remove **MRTS 2179: National Funeral Service Board Review** in the Mortuary Science AAS curriculum.

Remove the statement “All students of the Mortuary Science program must pass the NBE during MRTS 2179 with at least a 75 pass rate as required by the Mortuary Science Department as a requirement to graduate” from the MRTS.AAS catalog program description.

Milleson moved, seconded by to Powell to approve the Mortuary Science updates. The motion carried.

Course Prerequisites

Moore and Brice have re-worded course prerequisites to include Accuplacer scores in addition to THEA scores. A sample of the new prerequisite wording was distributed to the Committee.

Student Success

Sessler and Milleson presented a request to the Committee to add PSYC 1200: Learning Framework and EDUC 1200: Learning Framework as a part of the First Year Experience. The courses will add a more rigorous option to the already existing STSU 0211: Student Success available to students. The new courses require a college-level reading prerequisite.

Powell moved, seconded by Barksdale to approve the addition of PSYC 1200: Learning Framework and EDUC 1200: Learning Framework. Faculty must have a Master's degree with 18 graduate hours in psychology or education to teach these courses. The motion carried.

INDUSTRIAL & TRANSPORTATION TECHNOLOGY
Industrial Maintenance

Nolte and Hays presented a request to create a common "Manufacturing Core" that will comply with the mandate for Career Clusters. The courses included in the Manufacturing Core are:

DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

As a result of the implementation of the Manufacturing Core the following changes will made in the Industrial Maintenance Technology AAS (IMRT.AAS):

Add Manufacturing Core

Remove from the Major Course Requirements:
ENTC 1349: Reliability & Maintainability
EPCT 1307: Intro to Environmental Safety & Health
INMT 1305: Introduction to Industrial Maintenance
INMT 2301: Machinery Installation

Electromechanical Technician Major Option:
Remove **ENTC 2320: Thermography & Vibration Analysis**
Add **INMT 2301: Machinery Installation**

Heating, Air Conditioning and Refrigeration:
Remove **HART 1341: Residential Air Conditioning**
Add **HART 2336: Air Conditioning Troubleshooting**

As a result of the implementation of the Manufacturing Core the following changes will made in the Industrial Maintenance Technology Certificate (IMRT.CERT.IMC):

Add Manufacturing Core

Remove from the Major Course Requirements:
ENTC 1349: Reliability & Maintainability
EPCT 1307: Intro to Environmental Safety & Health
INMT 1305: Introduction to Industrial Maintenance

As a result of the implementation of the Manufacturing Core the following changes will made in the Electromechanical Certificate (IMRT.CERT.ELMT):

Add Manufacturing Core

Remove from the Major Course Requirements:
ENTC 1349: Reliability & Maintainability
EPCT 1307: Intro to Environmental Safety & Health
ENTC 2320: Thermography & Vibration Analysis
INMT 1305: Introduction to Industrial Maintenance

As a result of the implementation of the Manufacturing Core the following changes will made in the Heating, Air Conditioning and Refrigeration Certificate (IMRT.CERT.HART):

Add Manufacturing Core

Remove from the Major Course Requirements:
ENTC 1349: Reliability & Maintainability
EPCT 1307: Intro to Environmental Safety & Health
HART 1341: Residential Air Conditioning
INMT 1305: Introduction to Industrial Maintenance
INMT 2301: Machinery Installation

And add **HART 2336: Air Conditioning Troubleshooting**

Austin moved, seconded by Moller to approve all Industrial Maintenance changes. The motion carried.

Nondestructive Testing

Nolte and Hays presented a request to create a common “Manufacturing Core” that will accommodate the mandate for Career Clusters. Many changes move requirements from “Optional” to “Required”.

As a result of the implementation of the Manufacturing Core the following changes will made in the Nondestructive Testing AAS (NDTE.AAS):

Add Manufacturing Core

Remove all Recommended Courses

Add to the Major Course Requirements:
NDTE 1373: Electromagnetic Testing-Level 1
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers
WLDG 1337: Introduction to Welding Metallurgy

Remove from the Related Course Requirements:
DFTG 1425: Blueprint Reading and Sketching
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers
SCIT 1322: Technical Physics I
TECM 1343: Technical Algebra & Trigonometry

Add to the Related Course Requirements:
ELPT 1311: Basic Electrical Theory

As a result of the implementation of the Manufacturing Core the following changes will made in the Surface Testing Technician Certificate (NDTE.CERT.ST):

Add Manufacturing Core

Add to the Major Course Requirements
NDTE 2311: Preparation for Welding Inspection

Remove from the Related Course Requirements
DFTG 1425: Blueprint Reading and Sketching
NDTE 2311: Preparation for Welding Inspection

As a result of the implementation of the Manufacturing Core the following changes will made in the Volumetric Testing Technician (NDTE.CERT.VT):

Add Manufacturing Core

Add to the Major Course Requirements
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers

Remove from the Related Course Requirements
DFTG 1425: Blueprint Reading and Sketching
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers
SCIT 1322: Technical Physics I
TECM 1343: Technical Algebra & Trigonometry

As a result of the implementation of the Manufacturing Core the following changes will made in the Nondestructive Technician (NDTE.CERT):

Add Manufacturing Core

Remove all Recommended Courses

Add to the Major Course Requirements
NDTE 1373: Electromagnetic Testing-Level 1
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers
WLDG 1337: Introduction to Welding Metallurgy

Remove from the Related Course Requirements
DFTG 1425: Blueprint Reading and Sketching
NDTE 2311: Preparation for Welding Inspection
NUCP 1371: Radiation Safety for Industrial Radiographers
SCIT 1322: Technical Physics I
TECM 1343: Technical Algebra & Trigonometry

Add to the Related Course Requirements
ELPT 1311: Basic Electrical Theory

Powell moved, seconded by Hamblin to approve all Nondestructive Testing changes . The motion carried.

Welding

The Welding curriculum changes include the addition of **DFTG 1325: Blueprint Reading and Sketching** and **WLDG 1327: Welding Codes** and the deletion of **DFTG 1425: Blueprint Reading and Sketching.**

Brice moved, seconded by Barksdale to approve all Welding changes. The motion carried.

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ACADEMIC AFFAIRS COMMITTEE
Friday, February 15, 2008
Library 112, 9:30am

- SCIENCES & ENGINEERING
    - Biology
    - Mortuary Science
- COURSE PREREQUISITES AND TESTING
- STUDENT SUCCESS
- INDUSTRIAL & TRANSPORTATION TECHNOLOGY
    - Industrial Maintenance
    - Non-Destructive Testing
    - Welding

Attachments for

Academic Affairs Committee

Meeting:

February 29, 2008

Division: Sciences & Engineering

Department: Biological Science

Faculty and Chairman: Dan Porter and Michael Kopenits

Proposal: Change catalog descriptions for Life Science Courses and Labs

Rationale:

1. The course descriptions have not been updated in many years.
2. The new descriptions are more representative of the content that is actually taught in each course.
3. The new descriptions follow the framework of other universities.

Effects and Staff Requirement- none

Facilities – no effect

Support areas – no effect

Income Projections – no effect

Program promotions - none

Technical preparation – none

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(3 sem hrs; 3 lec)

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BIOL 1109: Life Science Lab II (for non-science majors)
Hands on, collaborative and interactive laboratory experiments in ecology, evolution and human biology. Recommended to be taken with BIOL 1309.
(1 sem hr; 2 lab)

Mortuary Science

Date: February 26, 2008
To: Academic Affairs
From: Preston Childress
Subject: Curriculum change request

The current curriculum for the certificate of completion in Mortuary Science (funeral director only) requires Special Topics MRTS 1391 class. The request is to change the credit hours from three to four by replacing it with Special Topics MRTS 1491.

Rationale: This will allow the Mortuary Science department to increase the Board Review class to 4 hours, while staying within the requirements of WECM.

MORTUARY SCIENCE – TEXAS FUNERAL DIRECTOR

Certificate of Completion
MAJOR CODE – MRTS.CERT
Program Advisor: Preston Childress, 356-3631 (childress-pr@actx.edu) or contact the Sciences & Engineering Division, 371-5092

Contact the Assessment Center or the Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

The Certificate of Completion for funeral directing is offered to meet specific state or professional needs. The program is directed at the student desiring licensure as a funeral director only in the state of Texas. It does not include instruction in embalming, restorative art, microbiology, pathology, chemistry or anatomy; therefore, it is not accredited by the American Board of Funeral Service Education. Students completing this program are eligible to sit for the Texas State Board Examination only. Prior conviction of a felony or a misdemeanor involving funeral directing and/or embalming may render the student ineligible to practice in the state of Texas.

	SEMESTER HOURS
MAJOR COURSE REQUIREMENTS:	24
MRTS 1211: History of Mortuary Science	
MRTS 1301: Contemporary Funeral Service Practices	
MRTS 1310: Funeral Service Clinical Orientation	
MRTS 1342: Mortuary Management I	
MRTS 2335: Mortuary Jurisprudence	
MRTS 2342: Mortuary Management II	
MRTS 1360: Funeral Service Clinical I	
MRTS 1491: Special Topics in Funeral Service & Mortuary Science	
~~MRTS 1391: Special Topics in Funeral Service & Mortuary Science~~	
RELATED REQUIRED COURSES:	12
ENGL 1301: Freshman Composition I	
SOCI 1371: Sociology of Death and Dying	
PSYC 2301: General Psychology	
SPCH*	
TOTAL	36

Faculty and staff requirements: None
Facilities: None
Support services: None
Income projections: Increase in contact hours for the departm
Program promotion and recruitment: No changes

Effective: Fall 2008

WORKFORCE EDUCATION COURSE MANUAL, 2007-2008

WECM Course

Special Topics in Funeral Service and Mortuary Science

CIP	Rubric	Number	Course Title	Status	Semester Credit Hrs	Min Cont Hrs	Max Cont Hrs
12.0301	MRTS	1191	Special Topics in Funeral Service and Mortuary Science	Active	1	16	64
12.0301	MRTS	1291	Special Topics in Funeral Service and Mortuary Science	Active	2	32	96
12.0301	MRTS	1391	Special Topics in Funeral Service and Mortuary Science	Active	3	48	96
12.0301	MRTS	1491	Special Topics in Funeral Service and Mortuary Science	Active	4	64	112

Course Level: Introductory, Intermediate, or Advanced

Course Description: Topics address recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

End-of-Course Outcomes: Learning outcomes/objectives are determined by local occupational need and business and industry trends.

Lab Recommended

CIP Code Description: 12.0301 (Funeral Service and Mortuary Science, General)

Year: 1999

Search WECM | WECM Comments | WECM (Old System)

Mortuary Science

Date: February 26, 2008
To: Academic Affairs
From: Preston Childress
Subject: Curriculum change request

The current curriculum for the Associate of Applied Science in Mortuary Science requires MRTS 2179 Board Review. This class is not sufficient in credit hours to justify the amount of time the Mortuary Science Department feels is necessary to prepare for the National Board Exam. In addition, this class is a special needs class that is not within the scope of WECM. The request is to replace MRTS 2179 with MRTS 1391 Special Topics/Board Review.

Rationale: Currently the class is required to for 50 minutes once a week. With the replacement of MRTS 1391, the class will meet for one (1) hour and fifteen (15) minutes, twice a week. This will give the instructor more time to review one-on-one with the class.

SEMESTER HOURS

GENERAL EDUCATION REQUIREMENT*: **19**

Communications
ENGL 1301: Freshman Composition I
SPCH 1321: *

Humanities/Fine Arts*

Mathematics/Natural Sciences
MATH 1333: Contemporary Mathematics (or any MATH*)
BIOL 2421: Microbiology

Social/Behavioral Sciences
PSYC 2301: General Psychology

MAJOR COURSE REQUIREMENTS:.....~~39~~ 41
MRTS 1211: History of Mortuary Science
MRTS 1301: Contemporary Funeral Service Practices
MRTS 1310: Funeral Service Clinical Orientation
MRTS 1342: Mortuary Management I
MRTS 2335: Mortuary Jurisprudence
MRTS 2342: Mortuary Management II
MRTS 1360: Funeral Service Clinical I
MRTS 2360: Funeral Service Clinical II
MRTS 2432: Human Anatomy
MRTS 2445: Technical Procedures I
MRTS 2447: Technical Procedures II
~~MRTS 2179: National Funeral Service Board Review~~
MRTS 1391: Special Topics in Funeral Service/Board Review
MRTS 1325: Thanatochemistry

RELATED REQUIRED COURSES:.....**6**
HPRS 2301: Pathophysiology
SOCI 1371: Sociology of Death and Dying

TOTAL.....**66**

Faculty and staff requirements: None
Facilities: None
Support services: None
Income projections: Increase in contact hours for the department and increased revenue for the college
Program promotion and recruitment: No changes
Effective: Fall 2008

WORKFORCE EDUCATION COURSE MANUAL, 2007-2008

WECM Course

Special Topics in Funeral Service and Mortuary Science

CIP	Rubric	Number	Course Title	Status	Semester Credit Hrs	Min Cont Hrs	Max Cont Hrs
12.0301	MRTS	1191	Special Topics in Funeral Service and Mortuary Science	Active	1	16	64
12.0301	MRTS	1291	Special Topics in Funeral Service and Mortuary Science	Active	2	32	96
12.0301	MRTS	1391	Special Topics in Funeral Service and Mortuary Science	Active	3	48	96
12.0301	MRTS	1491	Special Topics in Funeral Service and Mortuary Science	Active	4	64	112

Course Level: Introductory, Intermediate, or Advanced

Course Description: Topics address recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

End-of-Course Outcomes: Learning outcomes/objectives are determined by local occupational need and business and industry trends.

Lab Recommended

CIP Code Description: 12.0301 (Funeral Service and Mortuary Science, General)

Year: 1999

Search WECM | WECM Comments | WECM (Old System)

Course Descriptions for 2008-2009 Catalog

ACCT 2301: Accounting Principles I
Prerequisite: RDNG 0331-minimum grade C or a score on a state-approved test indicating college-level reading skills

BIOL 2401: Human Anatomy and Physiology I
Prerequisite: RDNG 0331-minimum grade C or a score on a state-approved test indicating college-level reading skills; SCIT 1307 recommended

COSC 1300: Introduction to Computing
Prerequisite: RDNG 0321-minimum grade C or a score on a state-approved test indicating readiness for RDNG 0331

MATH 0302: Beginning Algebra
Prerequisite: MATH 0301-minimum grade C, Accuplacer score of 41, THEA score of 180 or an equivalent score on a state approved test
Operations with real numbers with an introduction to the complex number system; exponents and polynomials; operations with algebraic expressions, linear equations in one and two variables; linear inequalities in one variable; basic geometry; introductory graphing; systems on linear equations in two variables; factoring polynomials; applications.
(3 sem hrs; 3 lec, 1 lab)
(This is a developmental course. It does not meet elective or graduation requirements.)

MATH 0303: Intermediate Algebra
Prerequisite: Math 0302-minimum grade C, Accuplacer score of 63, THEA score of 230, an equivalent score on a state approved test or department chair consent
A study of relations and functions; inequalities; factoring; polynomials, rational expressions; quadratics with an introduction to complex numbers; exponential and logarithmic functions; determinants and matrices; sequences and series.
(3 sem hrs; 3 lec, 1 lab)
(This is a developmental course. It does not meet elective or graduation requirements.)

Student Success Department
Curriculum Revision
PSYC 1200: Learning Framework/
EDUC 1200: Learning Framework

1. **Division:** Student Development
   Department: Student Success

2. **Prepared by:** Courtney Milleson

3. **Requests:**
   - ❑ Create new course - Learning Framework (PSYC 1200/EDUC 1200)
   - ❑ With college-level reading pre-requisite

4. **Rationale:**

The Amarillo College Strategic Plan supports the continued development of the First Year Experience program. Specifically, Strategy 3.2.1 of the Amarillo College Strategic Plan states:

> "Develop and implement a comprehensive 'first year experience' in which new students will receive a number of support and student life experiences intended to: help them 'bond' with to the College; foster good study and personal life habits; encourage interaction between faculty and students; help students make wise career decisions and understand the path required to reach their goals" (AC Strategic Plan, 2007).

Nationally, over 94% of all colleges and universities offer some type of foundational course or seminar designed to develop critical thinking skills. These courses at their core are designed to be intrusive supports for incoming students - challenging their overall academic abilities (Hunter & Linder, 2005, p. 275). This type of course is "frequently recognized by faculty, staff and administrators as a valid method of developing ... independent thinkers" (p. 281). Kulik, Kulik, and Schwalb found that foundational courses when used as an intervention strategy resulted in higher grade point averages – more so than developmental or remedial courses when used as interventions (Pascarella & Terenzini, 1991).

Researchers have found that the most successful foundational courses were offered for academic credit (Hunter & Linder, 2005, p. 277). Courses that offered students two or three hours per course were more successful than one-hour courses (p. 282). Increasingly this type of course is becoming more focused on academic rigor and moving away from traditional orientation curriculum. In fact, researchers have found that more academically rigorous courses tend to "positively affect retention, grade point averages, number of credit hours attempted and completed, graduation rates, [and] student involvement" (p. 288).

Many AC students have benefited from first-year experience courses in previous years (course previously offered as SPCH 1171). After his arrival at Amarillo College, Dr. Jones charged Dr. Renea Fike to develop a foundational first-year course that would enroll all incoming AC students. While working on this, Dr. Fike and April Sessler found that offering SPCH 1171 as a special needs course was out of compliance with the Texas Higher Education Coordinating Board. After further consultation with representatives from the Coordinating Board it seemed that there were no options available for offering this class as a credit course.

Based on the charge from Dr. Jones and in light of conversations with the Coordinating Board April Sessler (memo dated July 25, 2006) asked this committee to approve the creation of a two-hour, developmental course. Her request was granted – creating STUD 0211 (which was later changed to STSU 0211 by Dr. Jones). STSU 0211 has been in place since the spring of 2007.

While the STSU course academically remained the same as the SPCH 1171 course, enrollment for the course never fully developed. Interestingly, a one-hour course (PSYC 1171) covering the same information in a pilot situation has had strong enrollment. After consultation with campus advisors and students, we learned that because the course was not for credit students were less likely to enroll in the course (an issue previously discussed by the literature).

This information provided us with a unique opportunity to re-evaluate the course and the needs of students. While the original STSU 0211 was designed to teach basic college success techniques instructors found they were teaching higher level critical thinking skills (motivation, memory, language, etc.). Also, instructors found that students without college-level reading abilities were less successful in the course.

When the Learning Frameworks course was examined in the new edition of the ACGM last fall, it immediately seemed to be a good fit for our students. Our goal in seeking this change is to assist students with achieving greater academic success through the study of critical thinking skills. The new curriculum framework has developed in response to the comments students have shared regarding the development of critical thinking skills. A college-level reading pre-requisite should also be added to the course to ensure greater opportunities for students success. This class will focus on the development of students who are able to write more clearly, and think more independently. Students who enroll should have a strong grasp of what is means to be an academic and how that change is manifested through metacognition.

5. **Affected Curriculum/Course Descriptions:**

To continue with AC's strong tradition of assisting student academic success, we recommend that the following changes be made to the 2008-2009 Catalog in order to facilitate this process:

- Add PSYC 1200: Learning Framework to catalog
    - **PSYC 1200: Learning Framework** *Prerequisite: Scores on a state-approved test indicating college-level reading skills or a C or higher in RDNG 0331.* ~~Learning Frameworks is~~ designed to explore, discuss, and apply learning theory. Students who successfully complete the course will have a richer understanding of both the physiological and psychological processes of human learning. Students who successfully complete this course will understand their strengths and weaknesses in learning, motivation and thinking, and be able to apply these concepts to their own experiences. (Cross-listed as EDUC 1200) (2 sem hrs; 2 lec)
- Add EDUC 1200: Learning Framework to catalog
    - **EDUC 1200: Learning Framework** *Prerequisite: Scores on a state-approved test indicating college-level reading skills or a C or higher in RDNG 0331.* Learning Frameworks is designed to explore, discuss, and apply learning theory. Students who successfully complete the course will have a richer understanding of both the physiological and psychological processes of human learning. Students who successfully complete this course will understand their strengths and weaknesses in learning, motivation and thinking, and be able to apply these concepts to their own experiences. (Cross-listed as PSYC 1200) (2 sem hrs; 2 lec)

6. **Effects of Revision:**

A. Faculty and Staff – Existing faculty and staff with Master's Degrees and 18 graduate hours in psychology or education will teach the course.

B. Equipment Required – This course will not require additional library materials or audiovisual materials or AV equipment.

C. Facilities – This class will compete for classroom space just as any other course.

D. Income Projections – State-funding applies, plus tuition and fees

E. Program Promotion and recruitment – Students will be encouraged to take this course as a foundation for continued development of critical thinking skills.

Learning Frameworks
PSYC/EDUC 1200
Fall 2008

BASIC INFORMATION

Instructor:
Office:
Phone:
Email:
Web-site:
Office Hours:
Textbook:
Credit Hours: 2

PREREQUISITES

Scores on a state-approved test indicating college-level reading skills or a C or higher in RDNG 0331.

OVERVIEW OF COURSE

Learning Frameworks is designed to explore, discuss, and apply learning theory. Students who successfully complete the course will have a richer understanding of both the physiological and psychological processes of human learning. Students who successfully complete this course will understand their strengths and weaknesses in learning, motivation and thinking, and be able to apply these concepts to their own experiences.

LEARNING GOALS & OBJECTIVES

Upon successful completion of this course the student should be able satisfactorily complete all of the listed learning objectives with a minimum of 60 percent competency based on two major exams, research paper & presentation, and final exam.

1. List and illustrate the different theories of perception as related to learning techniques.
2. List and discuss the factors (environmental & physiological) influencing short-term memory.
3. List and discuss the factors (environmental & physiological) influencing long-term memory.
4. Explain and illustrate implicit and explicit memory functions as it relates to retrieving stored information.
5. Illustrate and apply appropriate metacognitive strategies/techniques.

6. Discuss how cognition and learning affect our communication patterns.

COURSE ORGANIZATION

This course is organized to provide the student with opportunities to reflect on learning theory while enhancing and developing new techniques. Specifically, this course will follow the outline set-forth by the text. Please see the chronology for more detailed information regarding weekly reading, writing, and critical thinking assignments.

COURSE FORMAT

This course involves discussion, active classroom participation, lectures, a research project, and group work. Each of these elements will serve to enhance the overall knowledge of the course and are required of each students enrolled.

ASSIGNMENTS, QUICK ASSESSMENTS, RESEARCH PAPER, PRESENTATION & EXAMS

The basis of this course is the idea of metacognition, or 'thinking about thinking'. In that same spirit, this course will require students to purposefully think about what it is we are discussing in class. To assist in this process and to accelerate a student's ability to master key concepts the following learning exercises will be used:

- Assignments
  - Written responses- prompts will be given to students throughout the semester to ellicit student thoughts on appropriate topics. Often the topics are related to student perception or experiences with the topic through the use of Bloom's Taxonomy of Educational Objectives. The responses should be at least 1 page, single-spaced, (12 point font) in length and appropriately cite any references used (using APA format).
  - Critical thinking is the idea of actively gathering and manipulating information. Throughout the semester, students will be asked to complete critical thinking exercises, either via email, message board posts, or worksheets to develop successful critical thinking skills. These critical thinking responses are informal communications and serve to engage the student in a continued learning process.
  - Other -These are elements that will enhance your classroom performance or serve as a tool to help you understand the material better. Typically these elements will not be a graded component of the class, just a resource for you to use.
- Quick Assessments
  - PEPS is a learning style inventory that will assist you in learning how you learn. The assessment is taken online and should be one of the first things students accomplish in the course. The results will showcase individual learning styles and situations.

- Understanding vocabulary is crucial to successful completion of any college course. To enhance students knowledge, and to encourage student application of key class concepts, students will be tested bi-weekly (roughly) on key vocabulary from the past week's work. Quizzes will be given online and should be completed by students without the aid of notes, friends, internet, etc.
- The instructor reserves the right to quiz students during class – as a tool to increase learning and to gauge student understanding of course content material.

- Research Paper & Poster-Board Presentation
  - Students will choose one aspect of the course and illustrate its practical application. Students are encouraged to apply the concept or theory into their chosen field of study. The paper should adequately explain the theory/concept, explain how the theory/concept has evolved into its present day form, and showcase how it can be seen in action in society. The paper should be 5-7 pages in length (double-spaced, 12 point font), include at least three journals (either from psychology or journals specific to the chosen field/area), and three other professional references. Please use APA to cite references.
    - For example: A student interested in majoring in Criminal Justice could choose to study the affects of memory on eye-witness accounts. The paper would outline each of the elements mentioned previously while also drawing logical conclusions about how the theory/concept is applicable to real life situations.
  - Students will present their findings to each other through a poster board session. Often used in professional settings, poster board presentations are a way to visually represent information while discussing your findings with faculty, staff and peers. Students should prepare a 'science fair' style presentation (available locally at Hobby Lobby) with a professional appearance. Examples of this type of visual aid will be shown and discussed in class.

- Exams
  - This class will rely on three exams to evaluate student learning. Exams will vary in type/style based on the information being evaluated. Make-up or late exams must be scheduled in advance. **It is important to make every arrangement possible to ensure you are in class on exam days.** Also stay in contact with your instructor regarding situations beyond your control.
  - Exams will cover material up to the point of the last lecture prior to the exam. The final exam will not be comprehensive, but will build upon information gleaned from the rest of the term.

GRADING

Standard grading procedures will be utilized for this course.

- Assignments
  - Written – 100 points each
  - Critical – 50 points each
- Quick Assessments
  - PEPS – 100 points
  - Vocabulary – 50 points
  - In-class quiz – 50 points
- Research Paper
  - Content – 100 points
  - Grammar – 75 points
  - Citation & References – 50 points
- Poster Board Session
  - Display – 50 points
  - Articulation – 50 points
- Exams
  - 100 points each

A = student has earned 90% of the points possible
B = student has earned 80% of the points possible
C = student has earned 70% of the points possible
D = student has earned 60% of the points possible
F = student has earned 50% or fewer of the points possible

ATTENDANCE

Students are highly encouraged to attend class each day. Students with excessive absences will be asked to speak privately with the instructor to determine possible solutions.

STUDY GROUPS

Students are highly encouraged to form study groups that meet outside of class time. Meeting spaces can be arranged through the instructor if student groups would like to meet on campus. Also, meeting online could be another tool that student groups use. Sharing notes, chapter outlines and other, student generated work for the purpose of studying is not only permitted – it's encouraged! Work smarter, not harder.

- Study Group Partners
  - _____ Phone:_____
  - _____ Phone:_____
  - _____ Phone:_____

FOOD/DRINK

As you will learn after taking the PEPS assessment, some of you learn best when you have snacks or drinks. You may bring food and drink into lecture (loud food is to be avoided - ☺). Please be courteous and clean up after yourself.

CELL PHONES/PAGERS/TEXTING

Technology is with us; however in this classroom, I would ask that you would be courteous of your fellow classmates and instructors time. Placing your cell phone/pager on 'silent' is acceptable; however, sending text messages during class time is just like making a phone call. **NO CELL PHONES IN VIEW OR 'ON'** during exams.

GRIEVANCE PROCEDURE

If a student is having a problem with the course policies or the instructor, she or he should first try to resolve any such problems with the instructor. If the problem is not resolved, the student may proceed to the Student Success department chair person (Courtney Milleson).

disAbility SERVICES STATEMENT

Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact disAbility Services (SSC 119, ph 371-5436) within the first two weeks of class.

AND LAST BUT NOT LEAST...

My job this semester is to give you the tools, resources and guidance necessary to succeed in this course. If you need additional information or explanation of a topic we discussed in class I will be happy to assist you. I will work with you to ensure that this semester is fruitful; however, you are expected to provide significant contributions (i.e., reading the text, attending class, participating, completing assignments, etc.) to your success.

The Manufacturing Department requests the enclosed changes in order achieve the following:

1. Bring all programs in compliance with Manufacturing Core.
Aid in class availability, scheduling, and substitution request.

2. Industrial Maintenance:
Correct name conflict of HART 1341 Residential Air Conditioning and HART 2345 Residential Air Conditioning Systems Design. Replace courses which have become obsolete because of software and equipment changes.

3. NonDestructive Testing:
Move courses under NDT inventory from Related Courses. Replace recommended course options to help students make decisions. Allow less specific requirements under general education. Return Metallurgy and Electromagnetic courses.

4. Welding:
Adjust to common drafting course and utilize WLDG 1327 for specific program needs.

3/14/08

CROSSWALK
Industrial Maintenance Technology
Effective Fall 2008

OLD		NEW - Created 2008 REQU for each	
ELMT 1301:	Programmable Logic Controllers		
ELMT 1305:	Basic Fluid Power		
ELMT 1391:	Special Topics in Electromechanical Technology		
ELMT 2337:	Electronic Troubleshooting, Service & Repair		
ELMT 2341:	Electromechanical Systems		
ELMT 2380:	Cooperative Education - Electromechanical Technology		
ELPT 1311:	Basic Electrical Theory		
ENTC 1349:	Reliability & Maintainability	QCTC 1341	Statistical Process Control
ENTC 2320:	Thermography & Vibration Analysis		Delete - no new replacement
HART 1307:	Refrigeration Principles		
HART 1341:	Residential Air Conditioning	HART 2336	Air Conditioning Troubleshooting
HART 1345:	Gas & Electric Heating		
HART 2342:	Commercial Refrigeration		
HART 2345:	Residential Air Conditioning Systems Design		
IEIR 1306:	Electric Motors		
IEIR 1310:	Motor Controls		
IEIR 1312:	Distribution Systems		
IEIR 1343:	Industrial Equipment Maintenance		
INMT 1305:	Introduction to Industrial Maintenance	TECM 1343	Technical Algebra & Trigonometry
INMT 2301:	Machinery Installation		
INMT 2303:	Pumps, Compressors & Mechanical Drives		
INMT 2345:	Industrial Troubleshooting		
SEST 1341:	Boilers-Operations; Installation & Maintenance		

INDUSTRIAL MAINTENANCE TECHNOLOGY

Program Advisor: ~~Kim Hays, 335-4366 (hays-kt@actx.edu)~~ **Bob Johnson, 335-4263 (johnson-rl@actx.edu)** or contact the ~~Industrial and~~ Manufacturing Technologies Department, 335-4390

ASSOCIATE IN APPLIED SCIENCE

Major Code - IMRT.AAS

Industrial Maintenance Technicians operate, troubleshoot, maintain, and service industrial and commercial equipment and facilities. Students choose an area of specialization which includes Electromechanical and Heating, Air Conditioning, & Refrigeration.

SEMESTER HOURS

GENERAL EDUCATION REQUIREMENTS* 15

Communications
ENGL 1301: Freshman Composition I
SPCH*

Social/Behavioral Science*

Humanities/Fine Arts

Mathematics/Natural Sciences
MATH 1332: Contemporary Mathematics 1
(or any MATH*)

MANUFACTURING CORE REQUIREMENTS 12
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS ..... ~~27~~ 15
ELPT 1311: Basic Electrical Theory
~~ENTC 1349: Reliability & Maintainability~~
~~EPCT 1307: Intro to Environmental Safety & Health~~
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
~~INMT 1305: Introduction to Industrial Maintenance~~
~~INMT 2301: Machinery Installation~~

MAJOR OPTIONS 21
The student must choose one of the following specialties.

Electromechanical Technician..... 21
This curriculum provides a specialized program of study to prepare an individual for entry level positions with the skills necessary to install, operate, troubleshoot and maintain electromechanical equipment and systems.

ELMT 1301: Programmable Logic Controllers
ELMT 1305: Basic Fluid Power
ELMT 2337: Electronic Troubleshooting, Service & Repair
ELMT 2341: Electromechanical Systems
~~ENTC 2320: Thermography & Vibration Analysis~~
INMT 2301: Machinery Installation
INMT 2303: Pumps, Compressors & Mechanical Drives
INMT 2345: Industrial Troubleshooting

Heating, Air Conditioning, and Refrigeration 21
This curriculum provides a specialized program of study to prepare an individual for entry level positions with the skills necessary to install, operate, troubleshoot and maintain commercial and industrial refrigeration and air conditioning systems.

O.M.IMRT.OPT, 2008

ELMT 1301: Programmable Logic Controllers
HART 1307: Refrigeration Principles
~~HART 1341: Residential Air Conditioning~~
HART 2336: Air Conditioning Troubleshooting
HART 1345: Gas & Electric Heating
HART 2342: Commercial Refrigeration
HART 2345: Residential Air Conditioning Systems Design
SEST 1341: Boilers-Operations; Installations & Maintenance
TOTAL 63

Optional Courses
ELMT 1391: Special Topics in Electromechanical Technology/Technician
ELMT 2380: Cooperative Education-Electromechanical Technology/Technician

INDUSTRIAL MAINTENANCE TECHNOLOGY

Program Advisor: ~~Kim Hays, 335-4366 (hays-kt@actx.edu)~~ **Bob Johnson, 335-4263 (johnson-rl@actx.edu)** or contact the ~~Industrial and~~ Manufacturing Technologies Department, 335-4390

CERTIFICATES OF COMPLETION

MAJOR CODE - BELOW

Contact the Testing Center or the Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

INDUSTRIAL MAINTENANCE CERTIFICATE

Major Code - IMRT.CERT.IMC

Prepares individuals with the basic skills necessary to assist the mechanical specialist in the installation, operation and maintenance of mechanical systems.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS 12
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS ..... ~~33~~ 24
ELMT 1301: Programmable Logic Controllers
ELPT 1311: Basic Electrical Theory
~~ENTC 1349: Reliability & Maintainability~~
~~EPCT 1307: Intro to Environmental Safety & Health~~
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
~~INMT 1305: Introduction to Industrial Maintenance~~
INMT 2301: Machinery Installation
SEST 1341: Boilers-Operations; Installation & Maintenance
TOTAL ..... ~~33~~ 36

ELECTROMECHANICAL

Major Code - IMRT.CERT.ELMT

Prepares individuals with the necessary skills to install, operate, troubleshoot and maintain electromechanical equipment and systems.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS 12
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS ..... ~~42~~ 30
ELMT 1301: Programmable Logic Controllers
ELMT 1305: Basic Fluid Power
ELMT 2341: Electromechanical Systems
ELPT 1311: Basic Electrical Theory
~~ENTC 1349: Reliability & Maintainability~~
~~ENTC 2320: Thermography & Vibration Analysis~~
~~EPCT 1307: Intro to Environmental Safety & Health~~

A5C

IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
~~INMT 1305: Introduction to Industrial Maintenance~~
INMT 2301: Machinery Installation
IMT 2303: Pumps, Compressors & Mechanical Drives

TOTAL 42

Heating, Air Conditioning, & Refrigeration
Major Code - IMRT.CERT.HART
Prepares individuals with the necessary skills to install, operate, troubleshoot and maintain commercial and industrial refrigeration and air conditioning systems.

MANUFACTURING CORE REQUIREMENTS 12
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS ..... ~~42~~ 30
ELPT 1311: Basic Electrical Theory
~~ENTC 1349: Reliability & Maintainability~~
~~EPCT 1307: Intro to Environmental Safety & Health~~
HART 1307: Refrigeration Principles
~~HART 1341: Residential Air Conditioning~~
HART 2336: Air Conditioning Troubleshooting
HART 1345: Gas & Electric Heating
HART 2342: Commercial Refrigeration
HART 2345: Residential Air Conditioning Systems Design
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
~~IMT 1305: Introduction to Industrial Maintenance~~
~~INMT 2301: Machinery Installation~~
TOTAL 42

Optional Courses
ELMT 1391: Special Topics in Electromechanical Technology/Technician
ELMT 2380: Cooperative Education-Electromechanical Technology/Technician

INDUSTRIAL MAINTENANCE TECHNOLOGY

Program Advisor: Bob Johnson, 335-4263 (johnson-rl@actx.edu) or contact the Manufacturing Technologies Department, 335-4390

SSOCIATE IN APPLIED SCIENCE
ajor Code - IMRT.AAS

Industrial Maintenance Technicians operate, troubleshoot, maintain, and service industrial and commercial equipment and facilities. Students choose an area of specialization which includes Electromechanical and Heating, Air Conditioning, & Refrigeration.

SEMESTER HOURS

GENERAL EDUCATION REQUIREMENTS* **15**
Communications
ENGL 1301: Freshman Composition I
SPCH*
Social/Behavioral Science*
Humanities/Fine Arts
Mathematics/Natural Sciences
MATH 1332: Contemporary Mathematics 1
(or any MATH*)

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **15**
ELPT 1311: Basic Electrical Theory
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance

MAJOR OPTIONS **21**
The student must choose one of the following specialties.

Electromechanical Technician **21**
This curriculum provides a specialized program of study to prepare an individual for entry level positions with the skills necessary to install, operate, troubleshoot and maintain electromechanical equipment and systems.

ELMT 1301: Programmable Logic Controllers
ELMT 1305: Basic Fluid Power
ELMT 2337: Electronic Troubleshooting, Service & Repair
ELMT 2341: Electromechanical Systems
INMT 2301: Machinery Installation
INMT 2303: Pumps, Compressors & Mechanical Drives
INMT 2345: Industrial Troubleshooting

Heating, Air Conditioning, and Refrigeration **21**
This curriculum provides a specialized program of study to prepare an individual for entry level positions with the skills necessary to install, operate, troubleshoot and maintain commercial and industrial refrigeration and air conditioning systems.

ELMT 1301: Programmable Logic Controllers
HART 1307: Refrigeration Principles
HART 1345: Gas & Electric Heating
HART 2336: Air Conditioning Troubleshooting
HART 2342: Commercial Refrigeration
ART 2345: Residential Air Conditioning Systems Design
SEST 1341: Boilers-Operations; Installations & Maintenance
TOTAL **63**

Optional Courses
ELMT 1391: Special Topics in Electromechanical Technology/Technician
ELMT 2380: Cooperative Education-Electromechanical Technology/Technician

INDUSTRIAL MAINTENANCE TECHNOLOGY

Program Advisor: Bob Johnson, 335-4263 (johnson-rl@actx.edu) or contact the Manufacturing Technologies Department, 335-4390

CERTIFICATES OF COMPLETION
MAJOR CODE - BELOW
Contact the Testing Center or the Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

INDUSTRIAL MAINTENANCE CERTIFICATE
Major Code - IMRT.CERT.IMC

Prepares individuals with the basic skills necessary to assist the mechanical specialist in the installation, operation and maintenance of mechanical systems.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **24**
ELMT 1301: Programmable Logic Controllers
ELPT 1311: Basic Electrical Theory
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
INMT 2301: Machinery Installation
SEST 1341: Boilers-Operations; Installation & Maintenance
TOTAL **36**

ELECTROMECHANICAL
Major Code - IMRT.CERT.ELMT

Prepares individuals with the necessary skills to install, operate, troubleshoot and maintain electromechanical equipment and systems.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **30**
ELMT 1301: Programmable Logic Controllers
ELMT 1305: Basic Fluid Power
ELMT 2341: Electromechanical Systems
ELPT 1311: Basic Electrical Theory
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
INMT 2301: Machinery Installation
INMT 2303: Pumps, Compressors & Mechanical Drives
TOTAL **42**

Heating, Air Conditioning, & Refrigeration
Major Code - IMRT.CERT.HART

Prepares individuals with the necessary skills to install, operate, troubleshoot and maintain commercial and industrial refrigeration and air conditioning systems.

MANUFACTURING CORE REQUIREMENTS 12
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS 30
ELPT 1311: Basic Electrical Theory
HART 1307: Refrigeration Principles
HART 1345: Gas & Electric Heating
HART 2336: Air Conditioning Troubleshooting
HART 2342: Commercial Refrigeration
HART 2345: Residential Air Conditioning Systems Design
IEIR 1306: Electric Motors
IEIR 1310: Motor Controls
IEIR 1312: Distribution Systems
IEIR 1343: Industrial Equipment Maintenance
TOTAL 42

Optional Courses
ELMT 1391: Special Topics in Electromechanical Technology/Technician
ELMT 2380: Cooperative Education-Electromechanical Technology/Technician

INDUSTRIAL MAINTENANCE TECHNOLOGY

ELMT 1301: Programmable Logic Controllers
An introduction to programmable logic controllers as used in industrial environments including basic concepts, programming, application, troubleshooting of ladder logic, and interfacing of equipment.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 1305: Basic Fluid Power
Basic fluid power course including pneumatics, vacuum and hydraulics; symbols, theory, components, and basic electrical controls.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 1391: Special Topics in Electromechanical Technology/Technician
Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 2337: Electronic Troubleshooting, Service, & Repair
In-depth coverage of electronic systems, maintenance, troubleshooting, and repair. Topics include symptom identification, proper repair procedures, repair check-out, and preventive maintenance. Emphasis on safety and proper use test equipment.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 2341: Electromechanical Systems
Covers the application of electromechanical systems, including linear and rotational positioning systems, and their associated control systems, and the methods employed to operate them. Students will devise open and closed loop control solutions for a variety of positioning and power transformation problems. Emphasis is placed on programmable control devices and solid state systems.
(3 Sem Hrs, 2 Lec, 2 Lab)

ELMT 2380: Cooperative Education - Electromechanical Technology/Technician
Career related activities encountered in the student(s area of specialization offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.
(3 Sem Hrs; 1 Lec; 20 Lab)

ELPT 1311: Basic Electrical Theory
Basic theory and practice of electrical circuits to include concepts of resistance, inductance, capacitance, impedance, power factors, and Ohm's Law. Also includes schematics, wiring diagrams, and calculations as applied to alternating and direct current.
(3 Sem Hrs, 2 Lec, 2 Lab)

~~**ENTC 1349: Reliability & Maintainability**~~
~~A study of equipment reliability and maintainability to improve the efficiency of operations including utilizing the latest equipment and techniques to implement effective prevention and predictive maintenance programs. Fundamentals of computer maintenance management systems, maintenance scheduling, work orders, inventory control, report evaluations, and methods of analysis.~~
~~(3 Sem Hrs; 2 Lec; 2 Lab)~~

~~**ENTC 2320: Thermography & Vibration Analysis**~~
~~Thermography (infrared/thermal imaging) and vibration analysis used in non-destructive testing (NDT). Performed independently or collectively to determine equipment condition, identify equipment deficiencies, and determine corrective action.~~
~~(3 Sem Hrs; 2 Lec; 2 Lab)~~

HART 1307: Refrigeration Principles
An introduction to the refrigeration cycle, basic thermodynamics, heat transfer, temperature/pressure relationship, safety, refrigeration containment, and refrigeration components.
(3 Sem Hrs; 2 Lec; 2 Lab)

~~**HART 1341: Residential Air Conditioning**~~
~~A study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems.~~
~~(3 Sem Hrs; 2 Lec; 2 Lab)~~

HART 2336: Air Conditioning Troubleshooting
An advanced course in application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 1345: Gas & Electric Heating
A study of the procedures and principles used in servicing heating systems including gas-fired and electric furnaces.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 2342: Commercial Refrigeration
Theory of and practical application in the maintenance of commercial refrigeration; high, medium, and low temperature applications and ice machines.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 2345: Residential Air Conditioning Systems Design
A study of the properties of air and results of cooling, heating, humidifying or dehumidifying; heat gain and heat loss calculations including equipment selection and balancing the air system.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1306: Electric Motors
Fundamentals of single phase and three phase alternating current motors and direct current motors including operating principles, characteristics, application, selection, installation, maintenance, and troubleshooting.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1310: Motor Controls
Principles and fundamentals of electrical controls and control components including magnetic motor starters, overload protection, relay logic, troubleshooting techniques, schematics, and diagrams.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1312: Distribution Systems
Fundamentals of distribution systems including single-phase and poly-phase systems. Grounding, circuit breakers, ground fault protection devices and the National Electric Code.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1343: Industrial Equipment Maintenance
Maintenance and repair of power transmission systems involving gear, V-belt, and chair drives with emphasis on both plain and anti-friction bearings. Introduces theory of various types of pumps and compressors. Laboratory activities include maintenance, repair, lubrication, and overhaul procedures used on common process pumps, gear boxes and compressors.
(3 Sem Hrs, 2 Lec, 2 Lab)

~~**INMT 1305: Introduction to Industrial Maintenance**~~
~~Basic mechanical skills and repair techniques common to most fields of industrial maintenance. Topics include precision measuring and basic applied math, blueprint reading, codes and general safety rules common in industry, including lock-out/tag-out.~~
~~(3 Sem Hrs, 2 Lec, 2 Lab)~~

INMT 2301: Machinery Installation
Students utilize skills acquired in previous studies. Machinery foundation, location and layout for machine footprint, installation, and alignment activities are practiced and tested **as well as implementation of prevention and predictive maintenance programs**. Emphasis is on the various methods of shaft alignment including laser shaft alignment and shaft straightening.
(3 Sem Hrs, 2 Lec, 2 Lab)

INMT 2303: Pumps, Compressors & Mechanical Drives
A study of the theory and operations of various types of pumps and compressors. Topics include mechanical power transmission systems including gears, valves, V-belts, meters, fluids, and chain drives. Standards relating to flanges, hoses, and piping are also reviewed.
(3 Sem Hrs, 2 Lec, 2 Lab)

INMT 2345: Industrial Troubleshooting
An advanced study of the techniques used in troubleshooting various types of industrial equipment to include mechanical, electrical, hydraulic, and pneumatic systems and their control devices. Emphasis will be placed on the use of schematics and diagrams in conjunction with proper troubleshooting procedures.
(3 Sem Hrs, 2 Lec, 2 Lab)

SEST 1341: Boilers-Operations, Installation, & Maintenance
Safe installation, operation, and maintenance procedures for boilers including total boiler analysis for maximum performance and efficiency of each system.
(3 Sem Hrs; 2 Lec; 2 Lab)

INDUSTRIAL MAINTENANCE TECHNOLOGY

ELMT 1301: Programmable Logic Controllers
An introduction to programmable logic controllers as used in industrial environments including basic concepts, programming, application, troubleshooting of ladder logic, and interfacing of equipment.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 1305: Basic Fluid Power
Basic fluid power course including pneumatics, vacuum and hydraulics; symbols, theory, components, and basic electrical controls.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 1391: Special Topics in Electromechanical Technology/Technician
Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 2337: Electronic Troubleshooting, Service, & Repair
In-depth coverage of electronic systems, maintenance, troubleshooting, and repair. Topics include symptom identification, proper repair procedures, repair check-out, and preventive maintenance. Emphasis on safety and proper use test equipment.
(3 Sem Hrs; 2 Lec; 2 Lab)

ELMT 2341: Electromechanical Systems
Covers the application of electromechanical systems, including linear and rotational positioning systems, and their associated control systems, and the methods employed to operate them. Students will devise open and closed loop control solutions for a variety of positioning and power transformation problems. Emphasis is placed on programmable control devices and solid state systems.
(3 Sem Hrs, 2 Lec, 2 Lab)

ELMT 2380: Cooperative Education - Electromechanical Technology/Technician
Career related activities encountered in the student(s area of specialization offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.
(3 Sem Hrs; 1 Lec; 20 Lab)

ELPT 1311: Basic Electrical Theory
Basic theory and practice of electrical circuits to include concepts of resistance, inductance, capacitance, impedance, power factors, and Ohm's Law. Also includes schematics, wiring diagrams, and calculations as applied to alternating and direct current.
(3 Sem Hrs, 2 Lec, 2 Lab)

HART 1307: Refrigeration Principles
An introduction to the refrigeration cycle, basic thermodynamics, heat transfer, temperature/pressure relationship, safety, refrigeration containment, and refrigeration components.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 2336: Air Conditioning Troubleshooting
An advanced course in application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 1345: Gas & Electric Heating
A study of the procedures and principles used in servicing heating systems including gas-fired and electric furnaces.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 2342: Commercial Refrigeration
Theory of and practical application in the maintenance of commercial refrigeration; high, medium, and low temperature applications and ice machines.
(3 Sem Hrs; 2 Lec; 2 Lab)

HART 2345: Residential Air Conditioning Systems Design
A study of the properties of air and results of cooling, heating, humidifying or dehumidifying; heat gain and heat loss calculations including equipment selection and balancing the air system.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1306: Electric Motors
Fundamentals of single phase and three phase alternating current motors and direct current motors including operating principles, characteristics, application, selection, installation, maintenance, and troubleshooting.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1310: Motor Controls
Principles and fundamentals of electrical controls and control components including magnetic motor starters, overload protection, relay logic, troubleshooting techniques, schematics, and diagrams.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1312: Distribution Systems
Fundamentals of distribution systems including single-phase and poly-phase systems. Grounding, circuit breakers, ground fault protection devices and the National Electric Code.
(3 Sem Hrs; 2 Lec; 2 Lab)

IEIR 1343: Industrial Equipment Maintenance
Maintenance and repair of power transmission systems involving gear, V-belt, and chair drives with emphasis on both plain and anti-friction bearings. Introduces theory of various types of pumps and compressors. Laboratory activities include maintenance, repair, lubrication, and overhaul procedures used on common process pumps, gear boxes and compressors.
(3 Sem Hrs, 2 Lec, 2 Lab)

INMT 2301: Machinery Installation
Students utilize skills acquired in previous studies. Machinery foundation, location and layout for machine footprint, installation, and alignment activities are practiced and tested as well as implementation of prevention and predictive maintenance programs. Emphasis is on the various methods of shaft alignment including laser shaft alignment and shaft straightening.
(3 Sem Hrs, 2 Lec, 2 Lab)

INMT 2303: Pumps, Compressors & Mechanical Drives
A study of the theory and operations of various types of pumps and compressors. Topics include mechanical power transmission systems including gears, valves, V-belts, meters, fluids, and chain drives. Standards relating to flanges, hoses, and piping are also reviewed.
(3 Sem Hrs, 2 Lec, 2 Lab)

INMT 2345: Industrial Troubleshooting
An advanced study of the techniques used in troubleshooting various types of industrial equipment to include mechanical, electrical, hydraulic, and pneumatic systems and their control devices. Emphasis will be placed on the use of schematics and diagrams in conjunction with proper troubleshooting procedures.
(3 Sem Hrs, 2 Lec, 2 Lab)

SEST 1341: Boilers-Operations, Installation, & Maintenance
Safe installation, operation, and maintenance procedures for boilers including total boiler analysis for maximum performance and efficiency of each system.
(3 Sem Hrs; 2 Lec; 2 Lab)

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
Program location: In district X Out-of-district ____ Correctional facility ___
FICE Code: 003540
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Associate in Applied Science
Code: IMRT.AAS
Hours: 63

PROPOSED CURRICULUM **Electromechanical Technician Option**		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
ENGL 1301	Freshman Composition I	3	1		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
~~INMT 1305~~	~~Introduction to Industrial Maintenance~~	~~2~~	~~2~~		~~64~~	~~3~~
TECM 1343	**Technical Algebra & Trigonometry**	**3**	**0**		**48**	**3**
	Total Hours	**12**	**7**	**0**	**304**	**15**
Semester 2:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
MATH 1332	Contemporary Mathmatics 1(or any MATH)	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
Semester 3:						
ELMT 2341	Electromechanical Systems	2	2		64	3
~~ENTC 1349~~	~~Reliability and Maintainability~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
~~ENTC 2320~~	~~Thermography and Vibration Analysis~~	~~2~~	~~2~~		~~64~~	~~3~~
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
INMT 2303	Pumps, Compressors and Mechanical Drives	2	2		64	3
INMT 2345	Industrial Troubleshooting	2	2		64	3
SPCH	Speech Requirement	3	0		48	3
	Total Hours	**14**	**8**	**0**	**352**	**18**
Semester 4:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
ELMT 1305	Basic Fluid Power	2	2		64	3
ELMT 2337	Electronic Troubleshooting, Service, and Repair	2	2		64	3
	Social/Behavioral Science Requirement	3	0		48	3
	Humanities/Fine Arts Requirement	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
	GRAND TOTAL	**50**	**27**	**0**	**1232**	**63**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
Program location: In district X Out-of-district ____ Correctional facility ___
FICE Code: 003540
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Associate in Applied Science Code: IMRT.AAS Hours: **63**

PROPOSED CURRICULUM **HVAC Option**		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
ENGL 1301	Freshman Composition I	3	1		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
~~INMT 1305~~	~~Introduction to Industrial Maintenance~~	~~2~~	~~2~~		~~64~~	~~3~~
TECM 1343	**Technical Algebra & Trigonometry**	**3**	**0**		**48**	**3**
	Total Hours	**12**	**7**	**0**	**304**	**15**
Semester 2:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
~~INMT 2301~~	~~Machinery Installation~~	~~2~~	~~2~~		~~64~~	~~3~~
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
MATH 1332	Contemporary Mathmatics 1(or any MATH)	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
Semester 3:						
~~ENTC 1349~~	~~Reliability and Maintainability~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
HART 1307	Refrigeration Principles	2	2		64	3
HART 1345	Gas and Electric Heating	2	2		64	3
HART 2345	Residential Air Conditioning Systems Design	2	2		64	3
SEST 1341	Boilers-Operations, Installation and Maintenance	2	2		64	3
SPCH	Speech Requirement	3	0		48	3
	Total Hours	**14**	**8**	**0**	**352**	**18**
Semester 4:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
~~HART 1341~~	~~Residential Air Conditioning~~	~~2~~	~~2~~		~~64~~	~~3~~
HART 2336	**Air Conditioning Troubleshooting**	**2**	**2**		**64**	**3**
HART 2342	Commercial Refrigeration	2	2		64	3
	Social/Behavioral Science Requirement	3	0		48	3
	Humanities/Fine Arts Requirement	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
	GRAND TOTAL	**50**	**27**	**0**	**1232**	**63**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technicia	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540

Program location: In district X Out-of-district ____ Correctional facility ___ — CIP Code: 15.0403

HEGIS Code: 8821

Program: Industrial Maintenance Technology

Award Title: Industrial Maintenance Certificate — Code: IMRT.CERT.IMC — Hours: **36**

PROPOSED CURRICULUM		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
~~INMT 1305~~	~~Introduction to Industrial Maintenance~~	~~2~~	~~2~~		~~64~~	~~3~~
TECM 1343	**Technical Algebra & Trigonometry**	**3**	**0**		**48**	**3**
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 2:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 3:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
~~ENTC 1349~~	~~Reliability and Maintainability~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
SEST 1341	Boilers-Operations, Installation, and Maintenance	2	2		64	3
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
	Total Hours	**9**	**6**	**0**	**240**	**12**
	GRAND TOTAL	**27**	**18**	**0**	**720**	**36**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
FICE Code: 003540

Program location: In district X Out-of-district ____ Correctional facility ___
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Electromechanical Certificate
Code: IMRT.CERT.ELMT
Hours: **42**

PROPOSED CURRICULUM		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
~~INMT 1305~~	~~Introduction to Industrial Maintenance~~	~~2~~	~~2~~		~~64~~	~~3~~
TECM 1343	**Technical Algebra & Trigonometry**	**3**	**0**		**48**	**3**
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 2:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
	Total Hours	**11**	**8**	**0**	**304**	**15**
Semester 3:						
ELMT 1305	Basic Fluid Power	2	2		64	3
ELMT 2341	Electromechanical Systems	2	2		64	3
~~ENTC 1349~~	~~Reliability and Maintainability~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
~~ENTC 2320~~	~~Thermography and Vibration Analysis~~	~~2~~	~~2~~		~~64~~	~~3~~
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
INMT 2303	Pumps, Compressors and Mechanical Drives	2	2		64	3
	Total Hours	**11**	**8**	**0**	**304**	**15**
	GRAND TOTAL	**31**	**22**	**0**	**848**	**42**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540

Program location: In district X Out-of-district ____ Correctional facility ___ — CIP Code: 15.0403

HEGIS Code: 8821

Program: Industrial Maintenance Technology

Award Title: Heating, Air Conditioning & Refrigeration Certificate — Code: IMRT.CERT.HART — Hours: **42**

PROPOSED CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
HART 1307	Refrigeration Principles	2	2		64	3
HART 1345	Gas and Electric Heating	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
~~INMT 1305~~	~~Introduction to Industrial Maintenance~~	~~2~~	~~2~~		~~64~~	~~3~~
TECM 1343	**Technical Algebra & Trigonometry**	**3**	**0**		**48**	**3**
	Total Hours	**11**	**8**	**0**	**304**	**15**
Semester 2:						
~~HART 1341~~	~~Residential Air Conditioning~~	~~2~~	~~2~~		~~64~~	~~3~~
HART 2336	**Air Conditioning Troubleshooting**	**2**	**2**		**64**	**3**
HART 2342	Commercial Refrigeration	2	2		64	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
~~INMT 2301~~	~~Machinery Installation~~	~~2~~	~~2~~		~~64~~	~~3~~
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
	Total Hours	**10**	**10**	**0**	**320**	**15**
Semester 3:						
~~ENTC 1349~~	~~Reliability and Maintainability~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
HART 2345	Residential Air Conditioning Systems Design	2	2		64	3
	Total Hours	**10**	**4**	**0**	**224**	**12**
	GRAND TOTAL	**31**	**22**	**0**	**848**	**42**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
Program location: In district X Out-of-district ____ Correctional facility ___
FICE Code: 003540
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Associate in Applied Science
Code: IMRT.AAS
Hours: 63

2008 CURRICULUM **Electromechanical Technician Option**		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
ENGL 1301	Freshman Composition I	3	1		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
TECM 1343	Technical Algebra & Trigonometry	3	0		48	3
	Total Hours	**12**	**7**	**0**	**304**	**15**
Semester 2:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
MATH 1332	Contemporary Mathmatics 1(or any MATH)	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
Semester 3:						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
ELMT 2341	Electromechanical Systems	2	2		64	3
INMT 2303	Pumps, Compressors and Mechanical Drives	2	2		64	3
INMT 2345	Industrial Troubleshooting	2	2		64	3
QCTC 1341	Statistical Process Control	3	0		48	3
SPCH	Speech Requirement	3	0		48	3
	Total Hours	**14**	**8**	**0**	**352**	**18**
Semester 4:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
ELMT 1305	Basic Fluid Power	2	2		64	3
ELMT 2337	Electronic Troubleshooting, Service, and Repair	2	2		64	3
	Social/Behavioral Science Requirement	3	0		48	3
	Humanities/Fine Arts Requirement	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
	GRAND TOTAL	**50**	**27**	**0**	**1232**	**63**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540
Program location: In district X Out-of-district ____ Correctional facility ___ — CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Associate in Applied Science — Code: IMRT.AAS — Hours: 63

PROPOSED CURRICULUM HVAC Option		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
ENGL 1301	Freshman Composition I	3	1		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
TECM 1343	Technical Algebra & Trigonometry	3	0		48	3
	Total Hours	**12**	**7**	**0**	**304**	**15**
Semester 2:						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
MATH 1332	Contemporary Mathmatics 1(or any MATH)	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
Semester 3:						
HART 1307	Refrigeration Principles	2	2		64	3
HART 1345	Gas and Electric Heating	2	2		64	3
HART 2345	Residential Air Conditioning Systems Design	2	2		64	3
QCTC 1341	Statistical Process Control	3	0		48	3
SEST 1341	Boilers-Operations, Installation and Maintenance	2	2		64	3
SPCH	Speech Requirement	3	0		48	3
	Total Hours	**14**	**8**	**0**	**352**	**18**
Semester 4:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
HART 2336	Air Conditioning Troubleshooting	2	2		64	3
HART 2342	Commercial Refrigeration	2	2		64	3
	Social/Behavioral Science Requirement	3	0		48	3
	Humanities/Fine Arts Requirement	3	0		48	3
	Total Hours	**12**	**6**	**0**	**288**	**15**
	GRAND TOTAL	**50**	**27**	**0**	**1232**	**63**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
Program location: In district X Out-of-district ____ Correctional facility ___
FICE Code: 003540
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Industrial Maintenance Certificate Code: IMRT.CERT.IMC Hours: **36**

PROPOSED CURRICULUM		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
TECM 1343	Technical Algebra & Trigonometry	3	0		48	3
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 2:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 3:						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
ELMT 1301	Programmable Logic Controllers	2	2		64	3
QCTC 1341	Statistical Process Control	3	0		48	3
SEST 1341	Boilers-Operations, Installation, and Maintenance	2	2		64	3
	Total Hours	**9**	**6**	**0**	**240**	**12**
	GRAND TOTAL	**27**	**18**	**0**	**720**	**36**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
Program location: In district X Out-of-district ____ Correctional facility ___
FICE Code: 003540
CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Electromechanical Certificate
Code: IMRT.CERT.ELMT
Hours: **42**

PROPOSED CURRICULUM		**Lec Hrs**	**Lab Hrs**	**Ext Hrs**	**Cont Hrs**	**Cred Hrs**
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
TECM 1343	Technical Algebra & Trigonometry	3	0		48	3
	Total Hours	**9**	**6**	**0**	**240**	**12**
Semester 2:						
ELMT 1301	Programmable Logic Controllers	2	2		64	3
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
INMT 2301	Machinery Installation	2	2		64	3
	Total Hours	**11**	**8**	**0**	**304**	**15**
Semester 3:						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
ELMT 1305	Basic Fluid Power	2	2		64	3
ELMT 2341	Electromechanical Systems	2	2		64	3
INMT 2303	Pumps, Compressors and Mechanical Drives	2	2		64	3
QCTC 1341	Statistical Process Control	3	0		48	3
	Total Hours	**11**	**8**	**0**	**304**	**15**
	GRAND TOTAL	**31**	**22**	**0**	**848**	**42**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

TEXAS HIGHER EDUCATION COORDINATING BOARD
PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540
Program location: In district X Out-of-district ____ Correctional facility ___ — CIP Code: 15.0403
HEGIS Code: 8821

Program: Industrial Maintenance Technology
Award Title: Heating, Air Conditioning & Refrigeration Certificate — Code: IMRT.CERT.HART — Hours: 42

PROPOSED CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
ELPT 1311	Basic Electrical Theory	2	2		64	3
HART 1307	Refrigeration Principles	2	2		64	3
HART 1345	Gas and Electric Heating	2	2		64	3
IEIR 1310	Motor Controls	2	2		64	3
TECM 1343	Technical Algebra & Trigonometry	3	0		48	3
	Total Hours	**11**	**8**	**0**	**304**	**15**
Semester 2:						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
HART 2336	Air Conditioning Troubleshooting	2	2		64	3
HART 2342	Commercial Refrigeration	2	2		64	3
IEIR 1306	Electric Motors	2	2		64	3
IEIR 1312	Distribution Systems	2	2		64	3
	Total Hours	**10**	**10**	**0**	**320**	**15**
Semester 3:						
EPCT 1307	Introduction to Environmental Safety and Health	3	0		48	3
HART 2345	Residential Air Conditioning Systems Design	2	2		64	3
IEIR 1343	Industrial Equipment Maintenance	2	2		64	3
QCTC 1341	Statistical Process Control	3	0		48	3
	Total Hours	**10**	**4**	**0**	**224**	**12**
	GRAND TOTAL	**31**	**22**	**0**	**848**	**42**
Optional Courses:						
ELMT 1391	Special Topics in Electromechanical Technology/Technician	2	2		64	3
ELMT 2380	Cooperative Education-Electromechanical Technology/Technician	1	0	20	336	3

CROSSWALK
Nondestructive Testing and Evaluation
Effective Fall 2008

OLD		NEW	
NDTE 1171:	Introduction to NDT		
NDTE 1272:	Magnetic Particle Testing - Level 1 & 2		
NDTE 1273:	Liquid Penetrant Testing - Level 1 & 2		
NDTE 1274:	Visual Testing - Level 1 & 2		
NDTE 1371:	Ultrasonic Testing - Level 1		
NDTE 1372:	Radiographic Testing - Level 1		
NDTE 1373:	Electromagnetic Testing - Level 1		
NDTE 2311:	Preparation for Welding Inspection		
NDTE 2371:	Ultrasonic Testing - Level 2		
NDTE 2372:	Radiographic Testing - Level 2		
NDTE 2373:	Electromagnetic Testing - Level 2		
NUCP 1371:	Radiation Safety for Industrial Radiographers		
SCIT 1322:	Technical Physics I		Deleted Class - no new replacement
TECM 1343:	Technical Algebra and Trigonometry		
		WLDG 1337	Introduction to Welding Metallurgy

NONDESTRUCTIVE TESTING & EVALUATION

Program Advisor: Dr. Kim Hays, 335-4366, (hays-kt@actx.edu) or contact the Manufacturing Technologies Department, 335-4390.

ASSOCIATE IN APPLIED SCIENCE
Major Code - NDTE.AAS

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. The A.A.S. program prepares the student for entry level through advanced levels (Level 3) of employment in a broad range of NDT testing methods.

	SEMESTER HOURS
GENERAL EDUCATION REQUIREMENTS*	**15**
Communication	
ENGL 1301: Freshman Composition I	
~~SPCH 1321: Business and Professional Speaking~~ **SPCH***	
Humanities/Fine Arts*	
Mathematics/Natural Sciences	
MATH 1332: Contemporary Mathematics 1 (or any MATH*)	
Social/Behavioral Science*	
MANUFACTURING CORE REQUIREMENTS	**12**
DFTG 1325: Blueprint Reading & Sketching	
EPCT 1307: Intro to Environmental Safety & Health	
QCTC 1341: Statistical Process Control	
TECM 1343: Technical Algebra & Trigonometry	
MAJOR COURSE REQUIREMENTS	~~19~~ **31**
NDTE 1171: Introduction to NDT	
NDTE 1272: Magnetic Particle Testing - Level 1 & 2	
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2	
NDTE 1274: Visual Testing - Level 1 & 2	
NDTE 1371: Ultrasonic Testing - Level 1	
NDTE 1372: Radiographic Testing - Level 1	
NDTE 1373: Electromagnetic Testing - Level 1	
NDTE 2311: Preparation for Welding Inspection	
NDTE 2371: Ultrasonic Testing - Level 2	
NDTE 2372: Radiographic Testing - Level 2	
NUCP 1371: Radiation Safety for Industrial Radiographers	
WLDG 1337: Introduction to Welding Metallurgy	
RELATED COURSE REQUIREMENTS	~~26~~ **13**
BCIS 1305: Business Computer Applications	
~~DFTG 1425: Blueprint Reading and Sketching~~	
ELPT 1311: Basic Electrical Theory	
ENGL 2311: Technical Writing	
~~NDTE 2311: Preparation for Welding Inspection~~	
~~NUCP 1371: Radiation Safety for Industrial Radiographers~~	
~~SCIT 1322: Technical Physics I~~	
~~TECM 1343: Technical Algebra & Trigonometry~~	
WLDG 1407: Introduction to Welding Using Multiple Processes	
~~**RECOMMENDED COURSES**~~	~~**6-9**~~
~~Students shall complete 6-9 hrs of appropriate technical courses as approved by the academic advisor which may include the following.~~	
~~ENTC 1349: Reliability & Maintainability~~	
~~ENTC 2320: Thermography & Vibration Analysis~~	
~~QCTC 1341: Statistical Process Control~~	
~~NDTE 1373: Electromagnetic Testing - Level 1~~	
~~NDTE 2373: Electromagnetic Testing - Level 2~~	
TOTAL	~~66-69~~ **71**

NONDESTRUCTIVE TESTING & EVALUATION

Program Advisor: Dr. Kim Hays, 335-4366, (hays-kt@actx.edu) or contact the Manufacturing Technologies Dept., 335-4390

CERTIFICATES OF COMPLETION
Major Code - Below

Contact the Assessment Center or the Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

SURFACE TESTING TECHNICIAN
Major Code - NDTE.CERT.ST

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) in the surface testing NDT methods.

	SEMESTER HOURS
MANUFACTURING CORE REQUIREMENTS	**12**
DFTG 1325: Blueprint Reading & Sketching	
EPCT 1307: Intro to Environmental Safety & Health	
QCTC 1341: Statistical Process Control	
TECM 1343: Technical Algebra & Trigonometry	
MAJOR COURSE REQUIREMENTS	~~7~~ **10**
NDTE 1171: Introduction to NDT	
NDTE 1272: Magnetic Particle Testing - Level 1 & 2	
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2	
NDTE 1274: Visual Testing - Level 1 & 2	
NDTE 2311: Preparation for Welding Inspection	
RELATED COURSE REQUIREMENTS	~~11~~ **4**
~~DFTG 1425: Blueprint Reading & Sketching~~	
~~NDTE 2311: Preparation for Welding Inspection~~	
WLDG 1407 Introduction to Welding Using Multiple Processes	
TOTAL	~~18~~ **26**

VOLUMETRIC TESTING TECHNICIAN
Major Code - NDTE.CERT.VT

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) in the volumetric testing NDT methods.

	SEMESTER HOURS
MANUFACTURING CORE REQUIREMENTS	**12**
DFTG 1325: Blueprint Reading & Sketching	
EPCT 1307: Intro to Environmental Safety & Health	
QCTC 1341: Statistical Process Control	
TECM 1343: Technical Algebra & Trigonometry	
MAJOR COURSE REQUIREMENTS	~~13~~ **19**
NDTE 1171: Introduction to NDT	
NDTE 1371: Ultrasonic Testing - Level 1	
NDTE 1372: Radiographic Testing - Level 1	
NDTE 2311: Preparation for Welding Inspection	
NDTE 2371: Ultrasonic Testing - Level 2	
NDTE 2372: Radiographic Testing - Level 2	
NUCP 1371: Radiation Safety for Industrial Radiographers	
RELATED COURSE REQUIREMENTS	~~20~~ **4**
~~DFTG 1425: Blueprint Reading & Sketching~~	
~~NDTE 2311: Preparation for Welding Inspection~~	
~~NUCP 1371: Radiation Safety for Industrial Radiographers~~	

~~SCIT 1322: Technical Physics I~~
~~TECM 1343: Technical Algebra and Trigonometry~~
WLDG 1407 Introduction to Welding Using Multiple Processes
TOTAL ..... ~~33~~ **35**

'ONDESTRUCTIVE TECHNICIAN
Major Code - NDTE.CERT

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) a broad range of NDT methods.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS ..... ~~19~~ **31**
NDTE 1171: Introduction to NDT
NDTE 1272: Magnetic Particle Testing - Level 1 & 2
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
NDTE 1274: Visual Testing - Level 1 & 2
NDTE 1371: Ultrasonic Testing - Level 1
NDTE 1372: Radiographic Testing - Level 1
NDTE 1373: Electromagnetic Testing - Level 1
NDTE 2311: Preparation for Welding Inspection
NDTE 2371: Ultrasonic Testing - Level 2
NDTE 2372: Radiographic Testing - Level 2
NUCP 1371: Radiation Safety for Industrial Radiographers
WLDG 1337: Introduction to Welding Metallurgy

'ELATED COURSE REQUIREMENTS..... ~~29~~ **16**
BCIS 1305: Business Computer Applications
~~DFTG 1425: Blueprint Reading & Sketching~~
ELPT 1311: Basic Electrical Theory
ENGL 1301: Freshman Composition I
ENGL 2311: Technical Writing
~~NDTE 2311: Preparation for Welding Inspection~~
~~NUCP 1371: Radiation Safety for Industrial Radiographers~~
~~SCIT 1322: Technical Physics I~~
~~TECM 1343: Technical Algebra & Trigonometry~~
WLDG 1407 Introduction to Welding Using Multiple Processes

~~**RECOMMENDED COURSES**~~..... ~~6~~
~~Students shall complete 6 hours of appropriate technical courses as approved by the academic advisor which may include the following.~~
~~ENTC 1349: Reliability & Maintainability~~
~~ENTC 2320: Thermography & Vibration Analysis~~
~~QCTC 1341: Statistical Process Control~~
~~NDTE 1373: Electromagnetic Testing - Level 1~~
~~NDTE 2373: Electromagnetic Testing - Level 2~~
TOTAL ..... ~~54~~ **59**

NONDESTRUCTIVE TESTING & EVALUATION

Program Advisor: Dr. Kim Hays, 335-4366, (hays-kt@actx.edu) or contact the Manufacturing Technologies Department, 335-4390.

ASSOCIATE IN APPLIED SCIENCE
Major Code - NDTE.AAS

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. The A.A.S. program prepares the student for entry level through advanced levels (Level 3) of employment in a broad range of NDT testing methods.

SEMESTER HOURS

GENERAL EDUCATION REQUIREMENTS* **15**
Communication
ENGL 1301: Freshman Composition I
SPCH*
Humanities/Fine Arts*
Mathematics/Natural Sciences
MATH 1332: Contemporary Mathematics 1 (or any MATH*)
Social/Behavioral Science*

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **31**
NDTE 1171: Introduction to NDT
NDTE 1272: Magnetic Particle Testing - Level 1 & 2
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
NDTE 1274: Visual Testing - Level 1 & 2
NDTE 1371: Ultrasonic Testing - Level 1
NDTE 1372: Radiographic Testing - Level 1
NDTE 1373: Electromagnetic Testing - Level 1
NDTE 2311: Preparation for Welding Inspection
NDTE 2371: Ultrasonic Testing - Level 2
NDTE 2372: Radiographic Testing - Level 2
NUCP 1371: Radiation Safety for Industrial Radiographers
WLDG 1337: Introduction to Welding Metallurgy

RELATED COURSE REQUIREMENTS..... **13**
BCIS 1305: Business Computer Applications
ELPT 1311: Basic Electrical Theory
ENGL 2311: Technical Writing
WLDG 1407: Introduction to Welding Using Multiple Processes
TOTAL **71**

NONDESTRUCTIVE TESTING & EVALUATION

Program Advisor: Dr. Kim Hays, 335-4366, (hays-kt@actx.edu) or contact the Manufacturing Technologies Dept., 335-4390

CERTIFICATES OF COMPLETION
Major Code - Below

Contact the Assessment Center or the Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

SURFACE TESTING TECHNICIAN
Major Code - NDTE.CERT.ST

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) in the surface testing NDT methods.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **10**
NDTE 1171: Introduction to NDT
NDTE 1272: Magnetic Particle Testing - Level 1 & 2
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
NDTE 1274: Visual Testing - Level 1 & 2
NDTE 2311: Preparation for Welding Inspection

RELATED COURSE REQUIREMENTS..... **4**
WLDG 1407 Introduction to Welding Using Multiple Processes
TOTAL **26**

VOLUMETRIC TESTING TECHNICIAN
Major Code - NDTE.CERT.VT

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) in the volumetric testing NDT methods.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **19**
NDTE 1171: Introduction to NDT
NDTE 1371: Ultrasonic Testing - Level 1
NDTE 1372: Radiographic Testing - Level 1
NDTE 2311: Preparation for Welding Inspection
NDTE 2371: Ultrasonic Testing - Level 2
NDTE 2372: Radiographic Testing - Level 2
NUCP 1371: Radiation Safety for Industrial Radiographers

RELATED COURSE REQUIREMENTS..... **4**
WLDG 1407 Introduction to Welding Using Multiple Processes
TOTAL **35**

NONDESTRUCTIVE TECHNICIAN
Major Code - NDTE.CERT

Prepares students for employment and certification in Nondestructive Testing. NDTE courses meet and exceed the minimum requirements of the American Society for Nondestructive Testing. This certificate program prepares the student for entry level through intermediate levels of employment (Level 2) a broad range of NDT methods.

SEMESTER HOURS

MANUFACTURING CORE REQUIREMENTS **12**
DFTG 1325: Blueprint Reading & Sketching
EPCT 1307: Intro to Environmental Safety & Health
QCTC 1341: Statistical Process Control
TECM 1343: Technical Algebra & Trigonometry

MAJOR COURSE REQUIREMENTS **31**
NDTE 1171: Introduction to NDT

NDTE 1272: Magnetic Particle Testing - Level 1 & 2
NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
NDTE 1274: Visual Testing - Level 1 & 2
NDTE 1371: Ultrasonic Testing - Level 1
NDTE 1372: Radiographic Testing - Level 1
NDTE 1373: Electromagnetic Testing - Level 1
IDTE 2311: Preparation for Welding Inspection
NDTE 2371: Ultrasonic Testing - Level 2
NDTE 2372: Radiographic Testing - Level 2
NUCP 1371: Radiation Safety for Industrial Radiographers
WLDG 1337: Introduction to Welding Metallurgy

RELATED COURSE REQUIREMENTS.....16
BCIS 1305: Business Computer Applications
ELPT 1311: Basic Electrical Theory
ENGL 1301: Freshman Composition I
ENGL 2311: Technical Writing
WLDG 1407 Introduction to Welding Using Multiple Processes
TOTAL 59

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540
Location: In district _X_ Out of district _____ Correctional facility ___ — CIP Code: 48.0508
HEGIS Code: _____

Program: Nondestructive Testing and Evaluation
Award Title: ASSOCIATE IN APPLIED SCIENCE — Code: NDTE.AAS — Hours: **71**

PROPOSED CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
ENGL	1301	Freshman Composition	3	1		64	3
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1274	Visual Testing - Level 1 & 2	1	2		48	2
BCIS	1305	Business Computer Applications	2	3		80	3
TECM	1343	Technical Algebra and Trigonometry	3	0		48	3
~~SCIT~~	~~1322~~	~~Technical Physics 1~~	~~3~~	~~0~~		~~48~~	~~3~~
ELPT	**1311**	**Basic Electrical Theory**	**2**	**2**		**64**	**3**
		Total Hours	**12**	**8**	**0**	**320**	**15**
Semester 2							
EPCT	**1307**	**Intro to Environmental Safety & Health**	**3**	**0**		**48**	**3**
NDTE	1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE	1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
[illegible]CP	1371	Radiation Safety for Industrial Radiographers	3	0		48	3
[illegible]DG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
		Total Hours	**13**	**8**	**0**	**336**	**17**
Summer							
		Social / Behavioral Sciences	3	0		48	3
		Humanities/Fine Arts	3	0		48	3
		~~Elective~~	~~2~~	~~2~~		~~64~~	~~3~~
QCTC	**1341**	**Statistical Process Control**	**3**	**0**		**48**	**3**
		Total Hours	**9**	**0**		**144**	**9**
Semester 3							
~~SPCH~~	~~1321~~	~~Business and Professional Speaking~~	~~3~~	~~0~~		~~48~~	~~3~~
SPCH	**XXXX**	**Speech Elective**	**3**	**0**		**48**	**3**
NDTE	1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE	1372	Radiographic Testing - Level 1	2	2		64	3
ENGL	2311	Technical Writing	3	0		48	3
		~~Elective~~	~~2~~	~~2~~		~~64~~	~~3~~
NDTE	**1373**	**Electromagnetic Testing - Level I**	**2**	**2**		**64**	**3**
		Total Hours	**12**	**6**		**288**	**15**
Semester 4							
[illegible]TH	XXXX	Contemporary Math or any MATH elective	3	0		48	3
[illegible]E	2371	Ultrasonic Testing - Level 2	2	2		64	3
NDTE	2372	Radiographic Testing - Level 2	2	2		64	3
~~DFTG~~	~~1425~~	~~Blueprint Reading & Sketching~~	~~2~~	4		~~96~~	4
DFTG	**1325**	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**

	~~Elective~~	~~2~~	~~2~~	~~64~~	~~3~~
WLDG 1337	**Introduction to Welding Metallurgy**	**2**	**2**	**64**	**3**
	Total Hours	**11**	**12**	**304**	**15**
	GRAND TOTAL	**57**	**34**	**1392**	**71**

~~Recommended (Elective) Courses~~

~~ENTC~~	~~1349~~	~~Reliability and Maintainability~~
~~ENTC~~	~~2320~~	~~Thermography and Vibration Analysis~~
~~ENTC~~	~~1341~~	~~Statistical Process Control~~
~~[illegible]~~	~~1373~~	~~Electromagnetic Testing - Level 1~~
~~NDTE~~	~~2373~~	~~Electromagnetic Testing - Level 2~~

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540

Location: In district _X_ Out of district _____ — Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: _____

Program: Nondestructive Testing and Evaluation

Award Title: NONDESTRUCTIVE TECHNICIAN — Code: NDTE.CERT — Hours: **59**

PROPOSED CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1						
ENGL 1301	Freshman Composition I	3	1		64	3
NDTE 1171	Introduction to NDT	1	0		16	1
NDTE 1274	Visual Testing - Level 1 & 2	1	2		48	2
NDTE 1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE 1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
TECM 1343	Technical Algebra and Trigonometry	3	0		48	3
~~SCIT 1322~~	~~Technical Physics 1~~	~~3~~	~~0~~		~~48~~	~~3~~
ELPT 1311	**Basic Electrical Theory**	**2**	**2**		**64**	**3**
	Total Hours	**12**	**9**	**0**	**336**	**16**
Semester 2						
NDTE 1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE 1372	Radiographic Testing - Level 1	2	2		64	3
NUCP 1371	Radiation Safety for Industrial Radiographers	3	0		48	3
WLDG 1407	Introduction to Welding Using Multiple Processes	2	4		96	4
	~~Elective~~	~~2~~	~~2~~		~~64~~	~~3~~
NDTE 2311	Preparation for Welding Inspection	3	0		48	3
	Total Hours	**12**	**8**	**0**	**320**	**16**
Summer 1						
BCIS 1305	Business Computer Applications	2	3		80	3
ENGL 2311	Technical Writing	3	0		48	3
EPCT 1307	**Intro to Environmental Safety & Health**	**3**	**0**		**48**	**3**
QCTC 1341	**Statistical Process Control**	**3**	**0**		**48**	**3**
	Total Hours	**11**	**3**	**0**	**224**	**12**
Semester 3						
NDTE 2371	Ultrasonic Testing - Level 2	2	2		64	3
NDTE 2372	Radiographic Testing - Level 2	2	2		64	3
NDTE 1373	**Electromagnetic Testing - Level I**	**2**	**2**		**64**	**3**
~~DFTG 1425~~	~~Blueprint Reading & Sketching~~	~~2~~	4		~~96~~	4
DFTG 1325	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
	~~Elective~~	~~2~~	~~2~~		~~64~~	~~3~~
WLDG 1337	**Introduction to Welding Metallurgy**	**2**	**2**		**64**	**3**
	Total Hours	**10**	**10**	**0**	**320**	**15**
	GRAND TOTAL	**45**	**30**		**1200**	**59**

~~Recommended (Elective) Courses~~

~~ENTC 1349 Reliability and Maintainability~~
~~ENTC 2320 Thermography and Vibration Analysis~~
~~QCTC 1341 Statistical Process Control~~
~~NDTE 1373 Electromagnetic Testing - Level 1~~
~~NDTE 2373 Electromagnetic Testing - Level 2~~

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540

Location: In district X Out of district ____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: ____

Program: Nondestructive Testing and Evaluation

Award Title: VOLUMETRIC TESTING TECHNICIAN — Code: NDTE.CERT.VT — Hours: **35**

PROPOSED CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE	2371	Ultrasonic Testing - Level 2	2	2		64	3
NUCP	1371	Radiation Safety for Industrial Radiographers	3	0		48	3
TECM	1343	Technical Algebra and Trigonometry	3	0		48	3
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
~~SCIT~~	~~1322~~	~~Technical Physics 1~~	~~3~~	~~0~~		~~48~~	~~3~~
		Total Hours	**14**	**4**	**0**	**288**	**16**
Semester 2							
~~DFTG~~	~~1425~~	~~Blueprint Reading & Sketching~~	~~2~~	~~4~~		~~96~~	~~4~~
DFTG	**1325**	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
EPCT	**1307**	**Intro to Environmental Safety & Health**	**3**	**0**		**48**	**3**
NDTE	1372	Radiographic Testing - Level 1	2	2		64	3
NDTE	2372	Radiographic Testing - Level 2	2	2		64	3
QCTC	**1341**	**Statistical Process Control**	**3**	**0**		**48**	**3**
WLDG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
		Total Hours	**14**	**10**	**0**	**384**	**19**
		GRAND TOTAL	**28**	**14**	**0**	**672**	**35**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540

Location: In district X Out of district ____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: ____

Program: Nondestructive Testing and Evaluation

Award Title: SURFACE TESTING TECHNICIAN — Code: NDTE.CERT.ST — Hours: **26**

PROPOSED CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1274	Visual Testing - Level 1 & 2	1	2		48	2
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
WLDG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
~~DFTG~~	~~1425~~	~~Blueprint Reading & Sketching~~	~~2~~	4		~~96~~	4
DFTG	**1325**	**Blueprint Reading & Sketching**	**2**	**2**		**64**	**3**
		Total Hours	**9**	**8**	**0**	**272**	**13**
Semester 2							
EPCT	**1307**	**Intro to Environmental Safety & Health**	**3**	**0**		**48**	**3**
NDTE	1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE	1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
QCTC	**1341**	**Statistical Process Control**	**3**	**0**		**48**	**3**
TECM	**1343**	**Technical Algebra & Trigonmetry**	**3**	**0**		**48**	**3**
		Total Hours	**11**	**4**	**0**	**240**	**13**
		GRAND TOTAL	**20**	**12**	**0**	**512**	**26**

NONDESTRUCTIVE TESTING AND EVALUATION

NDTE 1171: Introduction to NDT
Introduction to the historical development and demand for nondestructive testing and evaluation methods. Emphasis on the different methods of nondestructive testing, their function and application.
(1 Sem Hrs; 1 Lec)

NDTE 1272: Magnetic Particle Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Magnetic Particle Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Liquid Penetrant Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1274: Visual Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Visual Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1371: Ultrasonic Testing - Level 1
Prerequisite: ~~SCIT 1322 and~~ TECM 1343 or Concurrent Enrollment
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Ultrasonic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 1372: Radiographic Testing - Level 1
Prerequisite: ~~SCIT 1322 and~~ TECM 1343 or Concurrent Enrollment
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Radiographic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 1373: Electromagnetic Testing - Level 1
Prerequisite: ELPT 1311 or Concurrent Enrollment
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Electromagnetic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2311: Preparation for Welding Inspection
General principles of welding inspection including welding processes, terms and definitions, welding discontinuities, duties and responsibilities of inspectors, destructive and nondestructive testing, quality assurance/quality control, welding codes and blueprints, procedures, and case studies. An overview of welding tools and equipment, metallurgy, chemistry, and joint design.
(3 Sem Hrs; 3 Lec)

NDTE 2371: Ultrasonic Testing - Level 2
Prerequisite: NDTE 1371
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Ultrasonic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2372: Radiographic Testing - Level 2
Prerequisite: NDTE 1372
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Radiographic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2373: Electromagnetic Testing - Level 2
Prerequisite: NDTE 1373
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Electromagnetic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NUCP 1371: Radiation Safety for Industrial Radiographers
Introduction to the field of radiation protection: protection of human beings from injury by radiation. Topics include dose and exposure measurements and units, permissible exposure limits, and internal exposure evaluations. This course qualifies the student, upon successful completion, to become a radiographer trainee under a radioactive materials license or certificate of registration for industrial radiation machines.
(3 Sem Hrs; 3 Lec)

~~**SCIT 1322: Technical Physics I**~~
~~A study of the fundamentals of physics as related to wave motion, optics, electricity, and magnetism, including general principles of selected topics of modern physics.~~
~~(3 Sem Hrs; 2 Lec, 2 Lab)~~

TECM 1343: Technical Algebra and Trigonometry
Application of algebra and trigonometry to technical occupations. Topics include linear equations, simultaneous equations, quadratic equations, manipulation of powers and roots, trigonometry ratios, solutions of right triangles, oblique triangles, and vector analysis. Emphasis on stated work problems relevant to technical and vocational occupations.
(3 Sem Hrs; 3 Lec)

WLDG 1337: Introduction to Welding Metallurgy
A study of ferrous and nonferrous metals from the ore to the finished product. Emphasis on metal alloys, heat treating, hard surfacing, welding techniques, forging, foundry processes, and mechanical properties of metal including hardness, machinability, and ductility.
(3 Sem Hrs, 2 Lec, 2 Lab)

NONDESTRUCTIVE TESTING AND EVALUATION

NDTE 1171: Introduction to NDT
Introduction to the historical development and demand for nondestructive testing and evaluation methods. Emphasis on the different methods of nondestructive testing, their function and application.
(1 Sem Hrs; 1 Lec)

NDTE 1272: Magnetic Particle Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Magnetic Particle Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1273: Liquid Penetrant Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Liquid Penetrant Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1274: Visual Testing - Level 1 & 2
An introductory to intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1 & 2. Preparation for successful employment and certification in the Visual Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(2 Sem Hrs; 1 Lec, 2 Lab)

NDTE 1371: Ultrasonic Testing - Level 1
Prerequisite: TECM 1343 or Concurrent Enrollment
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Ultrasonic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 1372: Radiographic Testing - Level 1
Prerequisite: TECM 1343 or Concurrent Enrollment
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Radiographic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 1373: Electromagnetic Testing - Level 1
An introductory level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 1. Preparation for successful employment and certification in the Electromagnetic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2311: Preparation for Welding Inspection
General principles of welding inspection including welding processes, terms and definitions, welding discontinuities, duties and responsibilities of inspectors, destructive and nondestructive testing, quality assurance/quality control, welding codes and blueprints, procedures, and case studies. An overview of welding tools and equipment, metallurgy, chemistry, and joint design.
(3 Sem Hrs; 3 Lec)

NDTE 2371: Ultrasonic Testing - Level 2
Prerequisite: NDTE 1371
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Ultrasonic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2372: Radiographic Testing - Level 2
Prerequisite: NDTE 1372
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Radiographic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NDTE 2373: Electromagnetic Testing - Level 2
Prerequisite: NDTE 1373
An intermediate level course meeting the requirements of the American Society for Nondestructive Testing training outline for Level 2. Preparation for successful employment and certification in the Electromagnetic Testing method. A theoretical study and practical application with emphasis on industry standards, equipment calibration, process capability and limitations, indication interpretation and evaluation, and data reporting.
(3 Sem Hrs; 2 Lec, 2 Lab)

NUCP 1371: Radiation Safety for Industrial Radiographers
Introduction to the field of radiation protection: protection of human beings from injury by radiation. Topics include dose and exposure measurements and units, permissible exposure limits, and internal exposure evaluations. This course qualifies the student, upon successful completion, to become a radiographer trainee under a radioactive materials license or certificate of registration for industrial radiation machines.
(3 Sem Hrs; 3 Lec)

TECM 1343: Technical Algebra and Trigonometry
Application of algebra and trigonometry to technical occupations. Topics include linear equations, simultaneous equations, quadratic equations, manipulation of powers and roots, trigonometry ratios, solutions of right triangles, oblique triangles, and vector analysis. Emphasis on stated work problems relevant to technical and vocational occupations.
(3 Sem Hrs; 3 Lec)

WLDG 1337: Introduction to Welding Metallurgy
A study of ferrous and nonferrous metals from the ore to the finished product. Emphasis on metal alloys, heat treating, hard surfacing, welding techniques, forging, foundry processes, and mechanical properties of metal including hardness, machinability, and ductility.
(3 Sem Hrs, 2 Lec, 2 Lab)

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540
Location: In district X Out of district ____ Correctional facility ___ — CIP Code: 48.0508
HEGIS Code:

Program: Nondestructive Testing and Evaluation
Award Title: ASSOCIATE IN APPLIED SCIENCE — Code: NDTE.AAS — Hours: 71

2008 CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
BCIS	1305	Business Computer Applications	2	3		80	3
ELPT	1311	Basic Electrical Theory	2	2		64	3
ENGL	1301	Freshman Composition	3	1		64	3
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1274	Visual Testing - Level 1 & 2	1	2		48	2
TECM	1343	Technical Algebra and Trigonometry	3	0		48	3
		Total Hours	**12**	**8**	**0**	**320**	**15**
Semester 2							
EPCT	1307	Intro to Environmental Safety & Health	3	0		48	3
NDTE	1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE	1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
[illegible]CP	1371	Radiation Safety for Industrial Radiographers	3	0		48	3
[illegible]DG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
		Total Hours	**13**	**8**	**0**	**336**	**17**
Summer							
		Social / Behavioral Sciences	3	0		48	3
		Humanities/Fine Arts	3	0		48	3
QCTC	1341	Statistical Process Control	3	0		48	3
		Total Hours	**9**	**0**	**0**	**144**	**9**
Semester 3							
ENGL	2311	Technical Writing	3	0		48	3
NDTE	1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE	1372	Radiographic Testing - Level 1	2	2		64	3
NDTE	1373	Electromagnetic Testing - Level I	2	2		64	3
SPCH	XXXX	Speech Elective	3	0		48	3
		Total Hours	**12**	**6**	**0**	**288**	**15**
Semester 4							
DFTG	1325	Blueprint Reading & Sketching	2	2		64	3
NDTE	2371	Ultrasonic Testing - Level 2	2	2		64	3
NDTE	2372	Radiographic Testing - Level 2	2	2		64	3
MATH	XXXX	Contemporary Math or any MATH elective	3	0		48	3
[illegible]DG	1337	Introduction to Welding Metallurgy	2	2		64	3
		Total Hours	**11**	**8**	**0**	**304**	**15**
		GRAND TOTAL	**57**	**30**		**1392**	**71**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540

Location: In district X Out of district ____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: ____

Program: Nondestructive Testing and Evaluation

Award Title: NONDESTRUCTIVE TECHNICIAN — Code: NDTE.CERT — Hours: 59

2008 CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1						
ELPT 1311	Basic Electrical Theory	2	2		64	3
ENGL 1301	Freshman Composition I	3	1		64	3
NDTE 1171	Introduction to NDT	1	0		16	1
NDTE 1274	Visual Testing - Level 1 & 2	1	2		48	2
NDTE 1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE 1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
TECM 1343	Technical Algebra and Trigonometry	3	0		48	3
	Total Hours	**12**	**9**	**0**	**336**	**16**
Semester 2						
NDTE 1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE 1372	Radiographic Testing - Level 1	2	2		64	3
NUCP 1371	Radiation Safety for Industrial Radiographers	3	0		48	3
NDTE 2311	Preparation for Welding Inspection	3	0		48	3
WLDG 1407	Introduction to Welding Using Multiple Processes	2	4		96	4
	Total Hours	**12**	**8**	**0**	**320**	**16**
Summer 1						
BCIS 1305	Business Computer Applications	2	3		80	3
ENGL 2311	Technical Writing	3	0		48	3
EPCT 1307	Intro to Environmental Safety & Health	3	0		48	3
QCTC 1341	Statistical Process Control	3	0		48	3
	Total Hours	**11**	**3**	**0**	**224**	**12**
Semester 3						
DFTG 1325	Blueprint Reading & Sketching	2	2		64	3
NDTE 1373	Electromagnetic Testing - Level I	2	2		64	3
NDTE 2371	Ultrasonic Testing - Level 2	2	2		64	3
NDTE 2372	Radiographic Testing - Level 2	2	2		64	3
WLDG 1337	Introduction to Welding Metallurgy	2	2		64	3
	Total Hours	**10**	**10**	**0**	**320**	**15**
	GRAND TOTAL	**45**	**30**		**1200**	**59**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 3540

Location: In district X Out of district ____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: ____

Program: Nondestructive Testing and Evaluation

Award Title: VOLUMETRIC TESTING TECHNICIAN — Code: NDTE.CERT.VT — Hours: **35**

2008 CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1371	Ultrasonic Testing - Level 1	2	2		64	3
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
NDTE	2371	Ultrasonic Testing - Level 2	2	2		64	3
NUCP	1371	Radiation Safety for Industrial Radiographers	3	0		48	3
TECM	1343	Technical Algebra and Trigonometry	3	0		48	3
		Total Hours	**14**	**4**	**0**	**288**	**16**
Semester 2							
DFTG	1325	Blueprint Reading & Sketching	2	2		64	3
EPCT	1307	Intro to Environmental Safety & Health	3	0		48	3
NDTE	1372	Radiographic Testing - Level 1	2	2		64	3
NDTE	2372	Radiographic Testing - Level 2	2	2		64	3
QCTC	1341	Statistical Process Control	3	0		48	3
WLDG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
		Total Hours	**14**	**10**	**0**	**384**	**19**
		GRAND TOTAL	**28**	**14**	**0**	**672**	**35**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College
FICE Code: 3540

Location: In district X Out of district ____ Correctional facility ___
CIP Code: 48.0508
HEGIS Code: ____

Program: Nondestructive Testing and Evaluation

Award Title: SURFACE TESTING TECHNICIAN Code: NDTE.CERT.ST Hours: **26**

2008 CURRICULUM			Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1							
DFTG	1325	Blueprint Reading & Sketching	2	2		64	3
NDTE	1171	Introduction to NDT	1	0		16	1
NDTE	1274	Visual Testing - Level 1 & 2	1	2		48	2
NDTE	2311	Preparation for Welding Inspection	3	0		48	3
WLDG	1407	Introduction to Welding Using Multiple Processes	2	4		96	4
		Total Hours	**9**	**8**	**0**	**272**	**13**
Semester 2							
EPCT	1307	Intro to Environmental Safety & Health	3	0		48	3
NDTE	1272	Magnetic Particle Testing - Level 1 & 2	1	2		48	2
NDTE	1273	Liquid Penetrant Testing - Level 1 & 2	1	2		48	2
QCTC	1341	Statistical Process Control	3	0		48	3
TECM	1343	Technical Algebra & Trigonmetry	3	0		48	3
		Total Hours	**11**	**4**	**0**	**240**	**13**
		GRAND TOTAL	**20**	**12**	**0**	**512**	**26**

CROSSWALK
Welding Technology
Effective Fall 2008

OLD		NEW	
DFTG 1425:	Blueprint Reading & Sketching	DFTG 1325:	Blueprint Reading & Sketching
WLDG 1327:	Welding Codes		
WLDG 1407:	Intro. to Welding Using Multiple Processes		
WLDG 1417:	Intro. to Layout & Fabrication		
WLDG 1428:	Intro. to Shielded Metal Arc Welding		
WLDG 1457:	Intermediate Shielded Metal Arc Welding		
WLDG 1491:	Special Topics (Instructor Approved)		
WLDG 2406:	Intermediate Pipe Welding		
WLDG 2439:	Advanced Oxy-Fuel Welding & Cutting		
WLDG 2447:	Advanced Gas Metal Arc Welding		
WLDG 2451:	Advanced Gas Tungsten Arc Welding		
WLDG 2480:	Cooperative Education - Welding Technology		

WELDING TECHNOLOGY

Program advisor: Jay Anders, 335-4398, (anders-jc@actx.edu) or contact the Manufacturing Technologies Department, 335-4390.

Certificates of Completion
Major Code - BELOW

Contact the Testing Center or Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

BASIC WELDING
Major Code – WELD.CERT.BAS

Prepares students for entry level positions in fabrication and general repair shops.

MAJOR COURSE REQUIREMENTS .....~~16~~ 18
~~DFTG 1425: Blueprint Reading and Sketching~~
DFTG 1325: Blueprint Reading and Sketching
WLDG 1327: Welding Codes
WLDG 1417: Introduction to Layout and Fabrication
WLDG 1428: Introduction to Shielded Metal Arc Welding (SMAW)
WLDG 2439: Advanced Oxy-Fuel Welding and Cutting

TOTAL .....~~16~~ 18

ADVANCED WELDING
Major Code – WELD.CERT.ADV

Prepares students for work in production and maintenance facilities.

Basic Welding Certificate .....~~16~~ 18

MAJOR COURSE REQUIREMENTS 16
WLDG 1457: Intermediate Shielded Metal Arc Welding (SMAW)
WLDG 2406: Intermediate Pipe Welding
WLDG 2447: Advanced Gas Metal Arc Welding (GMAW) (MIG)
WLDG 2451: Advanced Gas Tungsten Arc Welding (GTAW) (TIG)

TOTAL .....~~32~~ 34

WELDING TECHNOLOGY

Program advisor: Jay Anders, 335-4398, (anders-jc@actx.edu) or contact the Manufacturing Technologies Department, 335-4390.

Certificates of Completion
Major Code – BELOW

Contact the Testing Center or Program Advisor for testing requirements. Testing requirements are based on the unique needs of the certificate program.

BASIC WELDING
Major Code – WELD.CERT.BAS

Prepares students for entry level positions in fabrication and general repair shops.

MAJOR COURSE REQUIREMENTS 18
DFTG 1325: Blueprint Reading and Sketching
WLDG 1327: Welding Codes
WLDG 1417: Introduction to Layout and Fabrication
WLDG 1428: Introduction to Shielded Metal Arc Welding (SMAW)
WLDG 2439: Advanced Oxy-Fuel Welding and Cutting

TOTAL 18

ADVANCED WELDING
Major Code – WELD.CERT.ADV

Prepares students for work in production and maintenance facilities.

Basic Welding Certificate 18

MAJOR COURSE REQUIREMENTS 16
WLDG 1457: Intermediate Shielded Metal Arc Welding (SMAW)
WLDG 2406: Intermediate Pipe Welding
WLDG 2447: Advanced Gas Metal Arc Welding (GMAW) (MIG)
WLDG 2451: Advanced Gas Tungsten Arc Welding (GTAW) (TIG)

TOTAL 34

WELDING TECHNOLOGY

~~**DFTG 1425: Blueprint Reading and Sketching**~~
~~An introduction to reading and interpreting working drawings for fabrication processes and associated trades. Use of sketching techniques to create pictorial and multiple-view drawings. (4 sem hrs, 2 lec, 4 lab)~~

DFTG 1325: Blueprint Reading and Sketching
An introduction to reading and interpreting working drawings for fabrication processes and associated trades. Use of sketching techniques to create pictorial and multiple-view drawings. (3 sem hrs, 2 lec, 2 lab)

WLDG 1327: Welding Codes
An in-depth study of welding codes and their development in accordance with structural standards, welding processes, destructive and nondestructive test methods. (3 sem hrs, 2 lec, 2 lab)

WLDG 1407: Introduction to Welding Using Multiple Processes
An overview of the basic welding processes, including oxy-fuel welding and cutting, shielded metal arc (SMAW), gas metal arc (GMAW), and gas tungsten arc welding (GTAW). (4 sem hrs, 2 lec, 4 lab)

WLDG 1417: Introduction to Layout and Fabrication
A fundamental course in layout and fabrication related to the welding industry. Major emphasis on structural shapes and use in construction. (4 sem hrs, 2 lec, 6 lab)

WLDG 1428: Introduction to Shielded Metal Arc Welding (SMAW)
An introduction to shielded metal arc welding process. Emphasis placed on power sources, electrode selection, oxy-fuel cutting, and various joint designs. Instruction provided in SMAW fillet welds in various positions. (4 sem hrs, 2 lec, 6 lab)

WLDG 1457: Intermediate Shielded Metal Arc Welding (SMAW)
Prerequisite: WLDG 1428
A study of the production of various fillets and groove welds. Preparation of specimens for testing in all test positions. (4 sem hrs, 2 lec, 6 lab)

WLDG 1491: Special Topics in Welder/Welding Technologist
Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. (4 sem hrs, 3 lec, 4 lab)

WLDG 2406: Intermediate Pipe Welding
Prerequisite: WLDG 1457
A comprehensive course on the welding of pipe using the shielded metal arc welding (SMAW) process. Position of welds will be 1G, 2G, 5G, and 6G using various electrodes. Topics covered include electrode selection, equipment setup, and safe shop practices. (4 sem hrs, 2 lec, 6 lab)

WLDG 2439: Advanced Oxy-Fuel Welding and Cutting
A study of all position welding on ferrous and nonferrous metals using oxy-fuel welding process, including welding and cutting, brazing, and soldering operations. (4 sem hrs, 2 lec, 6 lab)

WLDG 2447: Advanced Gas Metal Arc Welding (GMAW) (MIG)
Prerequisite: WLDG 1457
Advanced topics in GMAW welding, including welding in various positions and directions. (4 sem hrs, 2 lec, 6 lab)

WLDG 2451: Advanced Gas Tungsten Arc Welding (GTAW) (TIG)
Prerequisite: WLDG 2439
Advanced topics in GTAW welding, including welding in various positions and directions. (4 sem hrs, 2 lec, 6 lab)

WLDG 2480: Cooperative Education – Welding Technology/Welder
Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. (4 sem hrs, 1 lec, 20 lab)

WELDING TECHNOLOGY

DFTG 1325: Blueprint Reading and Sketching
An introduction to reading and interpreting working drawings for fabrication processes and associated trades. Use of sketching techniques to create pictorial and multiple-view drawings. (3 sem hrs, 2 lec, 2 lab)

WLDG 1327: Welding Codes
An in-depth study of welding codes and their development in accordance with structural standards, welding processes, destructive and nondestructive test methods. (3 sem hrs, 2 lec, 2 lab)

WLDG 1407: Introduction to Welding Using Multiple Processes
An overview of the basic welding processes, including oxy-fuel welding and cutting, shielded metal arc (SMAW), gas metal arc (GMAW), and gas tungsten arc welding (GTAW). (4 sem hrs, 2 lec, 4 lab)

WLDG 1417: Introduction to Layout and Fabrication
A fundamental course in layout and fabrication related to the welding industry. Major emphasis on structural shapes and use in construction. (4 sem hrs, 2 lec, 6 lab)

WLDG 1428: Introduction to Shielded Metal Arc Welding (SMAW)
An introduction to shielded metal arc welding process. Emphasis placed on power sources, electrode selection, oxy-fuel cutting, and various joint designs. Instruction provided in SMAW fillet welds in various positions. (4 sem hrs, 2 lec, 6 lab)

WLDG 1457: Intermediate Shielded Metal Arc Welding (SMAW)
Prerequisite: WLDG 1428
A study of the production of various fillets and groove welds. Preparation of specimens for testing in all test positions. (4 sem hrs, 2 lec, 6 lab)

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Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. (4 sem hrs, 3 lec, 4 lab)

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Prerequisite: WLDG 1457
A comprehensive course on the welding of pipe using the shielded metal arc welding (SMAW) process. Position of welds will be 1G, 2G, 5G, and 6G using various electrodes. Topics covered include electrode selection, equipment setup, and safe shop practices. (4 sem hrs, 2 lec, 6 lab)

WLDG 2439: Advanced Oxy-Fuel Welding and Cutting
A study of all position welding on ferrous and nonferrous metals using oxy-fuel welding process, including welding and cutting, brazing, and soldering operations. (4 sem hrs, 2 lec, 6 lab)

WLDG 2447: Advanced Gas Metal Arc Welding (GMAW) (MIG)
Prerequisite: WLDG 1457
Advanced topics in GMAW welding, including welding in various positions and directions. (4 sem hrs, 2 lec, 6 lab)

WLDG 2451: Advanced Gas Tungsten Arc Welding (GTAW) (TIG)
Prerequisite: WLDG 2439
Advanced topics in GTAW welding, including welding in various positions and directions. (4 sem hrs, 2 lec, 6 lab)

WLDG 2480: Cooperative Education – Welding Technology/Welder
Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. (4 sem hrs, 1 lec, 20 lab)

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College

Program location: In district X Out-of-district ____ Correctional facility ___

FICE Code: 003540
CIP Code: 48.0508
HEGIS Code: 6245

Program: Welding Technology

Award Title: Basic Welding Certificate Code: WELD.CERT.BAS Hours: 18

PROPOSED CURRICULUM	Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:					
~~DFTG 1425:Blueprint Reading & Sketching~~	~~2~~	~~4~~		~~96~~	4
DFTG 1325:Blueprint Reading & Sketching	**2**	**2**		**64**	**3**
WLDG 1327: Welding Codes	**2**	**2**		**64**	**3**
WLDG 2439:Advanced Oxy-Fuel Welding & Cutting	2	6		128	4
Total Hours	**6**	**10**	**0**	**256**	**10**
Semester 2:					
WLDG 1417:Introduction to Layout & Fabrication	2	6		128	4
WLDG 1428:Introduction to Shielded Metal Arc Welding (SMAW)	2	6		128	4
Total Hours	**4**	**12**	**0**	**256**	**8**
GRAND TOTAL	**10**	**22**	**0**	**512**	**18**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540

Program location: In district _X_ Out-of-district _____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: 6245

Program: Welding Technology

Award Title: Advanced Welding Certificate — Code: WELD.CERT.ADV Hours: 34

PROPOSED CURRICULUM	Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:					
~~DFTG 1425:Blueprint Reading & Sketching~~	~~2~~	4		~~96~~	4
DFTG 1325:Blueprint Reading & Sketching	**2**	**2**		**64**	**3**
WLDG 1327: Welding Codes	**2**	**2**		**64**	**3**
WLDG 2439:Advanced Oxy-Fuel Welding & Cutting	2	6		128	4
Total Hours	**6**	**10**	**0**	**256**	**10**
Semester 2:					
WLDG 1417:Introduction to Layout & Fabrication	2	6		128	4
WLDG 1428:Introduction to Shielded Metal Arc Welding (SMAW)	2	6		128	4
Total Hours	**4**	**12**	**0**	**256**	**8**
Semester 3:					
WLDG 1457:Intermediate Shielded Metal Arc Welding (SMAW)	2	6		128	4
WLDG 2447:Advanced Gas Metal Arc Welding (GMAW) (MIG)	2	6		128	4
Total Hours	**4**	**12**	**0**	**256**	**8**
Semester 4:					
WLDG 2406:Intermediate Pipe Welding	2	6		128	4
WLDG 2451:Advanced Gas Tungsten Arc Welding (GTAW) (TIG)	2	6		128	4
Total Hours	**4**	**12**	**0**	**256**	**8**
GRAND TOTAL	**14**	**42**	**0**	**896**	**34**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College — FICE Code: 003540

Program location: In district X Out-of-district ____ Correctional facility ___ — CIP Code: 48.0508

HEGIS Code: 6245

Program: Welding Technology

Award Title: Basic Welding Certificate — Code: WELD.CERT.BAS — Hours: **18**

2008 CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
DFTG 1325: Blueprint Reading and Sketching		2	2		64	3
WLDG 1327: Welding Codes		2	2		64	3
WLDG 2439:Advanced Oxy-Fuel Welding & Cutting		2	6		128	4
	Total Hours	**6**	**10**	**0**	**256**	**10**
Semester 2:						
WLDG 1417:Introduction to Layout & Fabrication		2	6		128	4
WLDG 1428:Introduction to Shielded Metal Arc Welding (SMAW)		2	6		128	4
	Total Hours	**4**	**12**	**0**	**256**	**8**
	GRAND TOTAL	**10**	**22**	**0**	**512**	**18**

TEXAS HIGHER EDUCATION COORDINATING BOARD

PROGRAM REVISION FORM TO IMPLEMENT WECM COURSES

Institution: Amarillo College FICE Code: 003540

Program location: In district X Out-of-district ____ Correctional facility ___ CIP Code: 48.0508

HEGIS Code: 6245

Program: Welding Technology

Award Title: Advanced Welding Certificate Code: WELD.CERT.BAS Hours: **34**

2008 CURRICULUM		Lec Hrs	Lab Hrs	Ext Hrs	Cont Hrs	Cred Hrs
Semester 1:						
DFTG 1325: Blueprint Reading and Sketching		2	2		64	3
WLDG 1327: Welding Codes		2	2		64	3
WLDG 2439:Advanced Oxy-Fuel Welding & Cutting		2	6		128	4
	Total Hours	**6**	**10**	**0**	**256**	**10**
Semester 2:						
WLDG 1417:Introduction to Layout & Fabrication		2	6		128	4
WLDG 1428:Introduction to Shielded Metal Arc Welding (SMAW)		2	6		128	4
	Total Hours	**4**	**12**	**0**	**256**	**8**
Semester 3:						
WLDG 1457:Intermediate Shielded Metal Arc Welding (SMAW)		2	6		128	4
WLDG 2447:Advanced Gas Metal Arc Welding (GMAW) (MIG)		2	6		128	4
	Total Hours	**4**	**12**	**0**	**256**	**8**
Semester 4:						
WLDG 2406:Intermediate Pipe Welding		2	6		128	4
WLDG 2451:Advanced Gas Tungsten Arc Welding (GTAW) (TIG)		2	6		128	4
	Total Hours	4	12	0	256	8
	GRAND TOTAL	**18**	**46**	**0**	**1024**	**34**