

Curriculum Committee Meeting
Wednesday, April 11, 2007

Recommendations for Changes to Proposal 06-17 Electrical Technology AAS
Program Revisions

- 1.** If course is a lecture/lab course, state so in the course description
- 2.** Lecture hours and lab hours should be listed in course descriptions
- 3.** Complete sentences must be used in catalog descriptions
- 4.** Current catalog description needs to be what is currently in the catalog. If course description is being changed a New Course Description needs to be added onto course revision form.
- 5. Error in the catalog** needs corrected: There are 2 courses listed as ELEC 137: Electrical Drafting and Electric Code Study-Residential.
- 6.** A better explanation of the why some course credits are being changed.

ACADEMIC SENATE PROPOSAL TRACKING SHEET

(Document To Be Originated By Academic Senate Secretary On Canary Color Paper)

All proposals MUST have their originating college faculty body (Ex. Arts & Sciences, Education and Nursing; Technical Sciences) approval and must be signed by the submitter and the college dean before being submitted to the Academic Senate Secretary.

1. Submit all proposals (using the appropriate Academic Senate program/degree and/or course revision forms) to the Academic Senate Secretary.
2. The Academic Senate Secretary logs and numbers items and forwards them to the appropriate Academic Senate subcommittee(s): Teacher Education (if applicable), General Education (if applicable), or Curriculum.
3. The Academic Senate subcommittee(s) consider(s) the proposal. If approved, the proposal is forwarded to the next committee. If a committee disapproves the proposal, the originator may request that the item be forwarded to the next body for consideration. The committee will provide written rationale to the originator when a proposal is disapproved and the proposal is returned to the originator.
4. The Academic Senate considers the proposal and approves or disapproves. If approved, the proposal is forwarded to the Full Faculty for consideration. If the Academic Senate disapproves the proposal, the originator may request that the item be forwarded to the Full Faculty for consideration. The Academic Senate will provide written rationale to the originator when proposals are disapproved and the proposal is returned to the originator.
5. The Full Faculty considers Academic Senate approved proposals. If faculty approve, the proposal will then be forwarded to the Provost. The Provost approves or disapproves the proposal. If approved, the proposal is then forwarded to the Chancellor.
7. The Chancellor approves or disapproves the proposal.

Subcommittee and Academic Senate college representatives will notify their respective colleges' of the progress of submitted proposals or the proposal may be tracked via the web page --

<http://www.msun.edu/admin/provost/asproposals.htm>

Documentation and forms for the curriculum process is also available on the web page:

<http://www.msun.edu/admin/provost/asforms.htm>

******* (If a proposal is disapproved at any level, it is returned through the Academic Senate secretary to the Dean of the submitting college who then notifies the originator.)**

Proposal # <u>06-17</u>	Title: <u>Electrical Technology AAS Program Revisions</u>
(proposal explanation, submitter and college dean signatures on attached program/degree or course revision form)	

Received by ACAD Senate Forwarded to Teacher Ed Council	Date <u>3/21/07</u> <u>NA</u>	Approved _____ Disapproved _____	
Forwarded to Gen Ed Committee	<u>NA</u>	Signature _____ Date _____ Approved _____ Disapproved _____ Signature _____ Date _____	
Returned to ACAD Senate Forwarded to Curriculum Committee	<u>3/21/07</u>	Approved _____ Disapproved _____	
Returned to ACAD Senate for Vote	<u>4/17/07</u>	Signature _____ Date _____ Approved <u>[Signature]</u> Disapproved _____ Signature _____ Date <u>4/17/07</u>	
Sent to Provost's office for Full Faculty vote Voted on at Full Faculty meeting	<u>4/18/07</u> _____	Signature _____ Date _____ Approved <u>[Signature]</u> Disapproved <u>[Signature]</u> Signature _____ Date _____	
Forwarded to Provost for Approval/Disapproval	_____	Approved _____ Disapproved _____	
Forwarded to Chancellor for Approval/Disapproval	_____	Signature _____ Date _____ Approved _____ Disapproved _____ Signature _____ Date _____	
Copies sent to originating college and registrar's office Updated 09/29/05	_____		

ACADEMIC SENATE PROPOSAL TRACKING SHEET

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5. The Full Faculty considers Academic Senate approved proposals. If faculty approve, the proposal will then be forwarded to the Provost. The Provost approves or disapproves the proposal. If approved, the proposal is then forwarded to the Chancellor.
7. The Chancellor approves or disapproves the proposal.

Subcommittee and Academic Senate college representatives will notify their respective colleges' of the progress of submitted proposals or the proposal may be tracked via the web page --

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Proposal # 06-17	Title: Electrical Technology AAS Program Revisions
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(proposal explanation, submitter and college dean signatures on attached program/degree or course revision form)

Received by ACAD Senate Forwarded to Teacher Ed Council	Date 3/21/07 NA	Approved _____ Disapproved _____		Signature _____ Date _____
Forwarded to Gen Ed Committee	NA	Approved _____ Disapproved _____		Signature _____ Date _____
Returned to ACAD Senate Forwarded to Curriculum Committee	3/21/07	Approved _____ Disapproved _____		Signature _____ Date _____
Returned to ACAD Senate for Vote	_____	Approved _____ Disapproved _____		Signature _____ Date _____
Sent to Provost's office for Full Faculty vote Voted on at Full Faculty meeting	_____ _____	Approved _____ Disapproved _____		Signature _____ Date _____
Forwarded to Provost for Approval/Disapproval	_____	Approved _____ Disapproved _____		Signature _____ Date _____
Forwarded to Chancellor for Approval/Disapproval	_____	Approved _____ Disapproved _____		Signature _____ Date _____
Copies sent to originating college and registrar's office Updated 09/29/05	_____			

PROGRAM/DEGREE REVISION FORM

NEW _____ DROPPED _____ MAJOR REVISION _____ FOR INFORMATION ONLY
 College College of Technical Sciences Program Area Electrical Date Jan 07
 Submitter *Tracy Allgood* signature _____ Dean _____ Date _____
signature indicates college level approval of entire proposal

Please provide a brief explanation & rationale for the proposed revision (s)

Course credit and contact hour changes to lower number of credits required for degree> These changes are being made to be more towards industry standards and expectations within the industry

Please provide in the space below a "before & "after" picture of the program with the changes in the program noted. Attach appropriate Course Revision Forms. Please indicate changes by shading the appropriate cells

PROPOSAL TITLE: Electrical Technology AAS program revisions

Current Program Listed in 06-07 Catalog

Proposed Changes for 07-08 Catalog

Course Prefix, Number, and Title	Gen Ed Degree		Course Prefix, Number, and Title	Gen Ed Degree	
	Crs.	Crs.		Crs.	Crs.
CIS 110 Introduction to Computers		3	CIS 110 Introduction to Computers		3
ELEC 101 Electrical Fundamentals I		5	ELEC 101 Electrical Fundamentals I		3
ELEC 102 Electrical Fundamentals II		5	ELEC 102 Electrical Fundamentals II		3
ELEC 103 Electrical Code Study/Codeology		3	ELEC 103 Electrical Code Study/Codeology		3
ELEC 106 Electrical Formulas & Computations		3	ELEC 106 Electrical Formulas & Computations		3
ELEC 111 Electric Meters & Motors		3	ELEC 111 Electric Meters & Motors		3
ELEC 133 Basic Wiring		3	ELEC 133 Basic Wiring		5
ELEC 137 Electrical Drafting		2	ELEC 137 Electrical Drafting		2
ELEC 139 Electric Code Study-Residential		3	ELEC 139 Electric Code Study-Residential		3
ELEC 201 Alternating Current Theory		5	ELEC 201 Alternating Current Theory		3
ELEC 204 Electrical Planning & Estimating		3	ELEC 204 Electrical Planning & Estimating		3
ELEC 205 Electrical Design & Lighting		3	ELEC 205 Electrical Design & Lighting		3
ELEC 211 AC Measurements		3	ELEC 211 AC Measurements		3
ELEC 233 Commercial Wiring Lab		3	ELEC 233 Commercial Wiring Lab		3
ELEC 236 Conduit, Raceways & Code Cales Lab		3	ELEC 236 Conduit, Raceways & Code Cales Lab		3
ELEC 239 Grounding/Bonding Fundamentals		3	ELEC 239 Grounding/Bonding Fundamentals		3
ELEC 241 Electric Motor Controls		3	ELEC 241 Electric Motor Controls		3
ELEC 247 Medium & High Voltage		3	ELEC 247 Medium & High Voltage		3
ENGL 111 Written Comm I OR ENGL 112 Written Comm II	3		ENGL 111 Written Comm I OR ENGL 112 Written Comm II	3	
HPE 234 First Aid & CPR		2	HPE 234 First Aid & CPR		2
IT 111 Industrial Safety/Waste Management		2	IT 111 Industrial Safety/Waste Management		2
MAAS 106 Elementary Technical Math	3		MAAS 106 Elementary Technical Math	3	
SPCH 141 Fund of Speech (CAT I Gen Ed) OR	3		SPCH 141 Fund of Speech (CAT I Gen Ed) OR	3	
SPCH 142 Interpersonal Comm (CAT I Gen Ed)			SPCH 142 Interpersonal Comm (CAT I Gen Ed)		
	9	63			
Actual degree total should be 72	72			9	59
				68	

Additional instructional resources needed (including library materials, special equipment, and facilities.

Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 101
Course Title: Electrical Fundamentals I
Credits: 3

Required by: ELECTRICAL TECHNOLOGY
Selective in: N/A

Elective in: N/A
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 2
Contact hours lab: 2

Current Catalog Description (include all prerequisites):

This course will introduce the student to the various electrical properties and the equipment which produces those properties. Basic circuitry will be examined, utilizing algebraic skills to perform the calculations.

Course Outcome Objectives:

The student will have demonstrated the ability to:

- Define electricity and the basic electrical values
 - Voltage
 - Current
 - Resistance
 - Power
 - Inductance
 - Capacitance
- Calculate the electrical values and interpret the results of ohms law
- Calculate the electrical power of a DC and AC circuits and components
- Utilize basic electrical test equipment to measure voltage, current, and resistance using
 - Volt-Ohm meter (VOM)
 - Voltage indicator
 - Digital Multimeter (DMM)
- Make basic electrical circuits and connections.
- Read and interpret schematic symbols used in DC circuits and AC circuits

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

None

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 102

Course Title: Electrical Fundamentals II
Credits: 3
Required by:
Selective in:
Elective in:
General Education:
Lecture:
Lecture/Lab: x
Contact hours lecture: 2
Contact hours lab: 2

Current Catalog Description (include all prerequisites):

This course will introduce the student to the alternating current. The electrical properties and their affects on the circuit will be examined. Basic trigonometric skills will be utilized to perform calculations for analyzing various electrical circuits. Prerequisites: Elec 106

Course Outcome Objectives:

The student will be able to:

- Perform calculations with and understand AC quantities
 - Frequency/Period
 - Peak-to-peak voltage
 - Peak voltage
 - Effective voltage
 - Average voltage
 - True power
 - Apparent power
 - Power factor
 - Inductive reactance
 - Impedance/conductance
 - Capactance reactance
- Understand phase of AC voltage
- Perform voltage, current and power calculations for an AC circuit
- Understand commercial and industrial circuit requirements

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ____ DROPPED ____ MAJOR REVISION X FOR INFORMATION ONLY ____

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences

Program Area: Electrical Technology

Date:

Course Prefix & No.: ELEC 103

Course Title: Electric Code Study/Codeology

Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture: x

Lecture/Lab:

Contact hours lecture: 3

Contact hours lab:

Current Catalog Description (include all prerequisites):

This Course IS
a A preliminary study of the National Electrical Code (NEC). Wiring design and protection, wiring methods and materials, and equipment for general use are covered.

Course Outcome Objectives:

The student will be able to:

- Understand the origins and importance of the National Electrical Code (NEC)
- Locate and interpret the NEC requirements for basic electrical circuits and connections
- Evaluate electrical installations for compliance with basic NEC requirements
- Identify approved mechanical electrical connecting equipment and devices
- Understand the basic grounding and bonding requirements for residential electrical service connections
- Wiring Methods
- Specialty occupancy code

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

Elec103courserevisionform07

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 106

Course Title: Electrical Formulas and Calculations
Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a
General Education:

Lecture: x
Lecture/Lab:
Contact hours lecture: 3
Contact hours lab:

Current Catalog Description (include all prerequisites):

This course covers the basic formulas needed to determine electrical values in typical electrical installations including power, current, and voltage. Basic methods of calculation for both DC and AC quantities will be discussed and demonstrated as well as the use of modern calculators and computer software to determine necessary values.

Course Outcome Objectives:

The student will be able to:

- Articulate the basic electrical principles including ohms law and the basic power equation
- Identify the source of more complicated electrical formulae needed to calculate AC power, power factor and phase angle, voltage drop, conductor ampacity, etc.
- Utilize a general purpose calculator to compute necessary values
- Use modern computer hardware to perform detailed analysis of AC and DC electrical systems
- Math formulas applying to job invoicing & estimating cost

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 111
Course Title: Electric Meters & Motors
Credits: 3
Required by: Electrical Technology
Selective in:
Elective in:
General Education:
Lecture:
Lecture/Lab: X
Contact hours lecture: 1
Contact hours lab: 4

This course includes

This course is
Current Catalog Description (include all prerequisites):

a A practical hands-on course using ammeters, voltmeters, wattmeters, and multimeters in testing and troubleshooting electric motors, components and wiring systems. A study of single and three phase AC motors, their construction features and operating characteristics. This lecture/lab class emphasizes electric motor terminology, identification of motor types, enclosures, mounts, motor selection, connections, maintenance, testing and troubleshooting. Students are also introduced to motor loads, protection, controls, and devices used to connect motors to their loads such as pulleys, V-belts, gear boxes and couplings.

Course Outcome Objectives:

The student will become:

- Proficient in the use of basic hand-held electrical test equipment including
 - Ammeters
 - Voltmeters
 - Multimeters
 - Wattmeters
- Familiar with basic electrical rotating machinery including
 - Electric motors
 - Generators
 - Protective switching equipment
 - Thermal overloads
 - Magnetic motor starters
- Familiar with both single and three-phase electrical circuits including motors, switching equipment, electrical protection equipment and circuit fault interruptor circuits.
- Able to identify the various types of electric motors, starters and control circuits.
- Familiar with typical mechanical components of electric motor installations including
 - Fans
 - pulleys
 - V-belts
 - Gears
 - Mounting hardware
 - Conductor sizing
 - Overload sizing
 - Overcurrent protection sizing

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

College: College of Technical Sciences

Program Area: Electrical Technology

Date:

Course Prefix & No.: ELEC 133

Course Title: Basic Wiring

Credits: 5

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture:

Lecture/Lab: X

Contact hours lecture: 2

Contact hours lab: 6

This course
~~COTS~~
15

Current Catalog Description (include all prerequisites):

~~Consists of lectures~~ giving an introduction to basic wiring circuits, materials and tools used and wiring methods. Students also perform laboratory work with actual circuit layout and installation in accordance with the rules and regulations of the National Electrical Code (NEC). This course deals primarily with residential wiring methods.

Course Outcome Objectives:

The student will be able to:

- Demonstrate proper wiring technique and connections
- Utilize the basic hand and power tools required in the electrical profession
- Read and Interpret electrical wiring diagrams and complete electrical connections necessary to implement the electrical design.
- Understand basic residential wiring techniques and requirements as outlined in the NEC
- Perform load level calculations for residential electrical service connections
- Connect both 110 and 220 volt electrical connections as required by the NEC
- Perform a basic electrical safety inspection of a residential electrical service

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 137

Course Title: Electrical Drafting
Credits: 2

Required by: Electrical Technology

Selective in:

Elective in:
General Education:

Lecture: X
Lecture/Lab:
Contact hours lecture: 2
Contact hours lab:

Current Catalog Description (include all prerequisites):

This course includes
~~Developing~~ techniques of communicating through the use of mechanical drawings, electrical drawings, heating ventilation and air conditioning drawings. Basic blueprint reading and sketching are included as well as symbols and scales.

Course Outcome Objectives:

The student will be able to:

- Read and correctly interpret electrical and mechanical drawings as used in the electrical trade
- Read and interpret blue prints to understand the electrical requirements for residential and commercial construction.
- Prepare electrical drawings used in the electrical industry.

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

Elec137courserevisionform07

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences

Program Area: Electrical Technology

Date:

Course Prefix & No.: ELEC 139

Course Title: Electric Code Study-Residential

Credits: 3

Required by: Electrical Technology

Selective in:

Elective in:

General Education:

Lecture: X

Lecture/Lab:

Contact hours lecture: 3

Contact hours lab:

Current Catalog Description (include all prerequisites):

This course is an introductory study of National Electrical Code requirements for residential wiring, including protective ground circuits, service entry and electrical safety requirements for routine residential electrical installations.

Course Outcome Objectives:

The student will be able to:

- Clearly identify all NEC and Montana electrical regulation requirements for residential wiring including
 - Outlet placement and requirements
 - Ground Fault Circuit Interrupting devices
 - Lighting placement and controls
 - 120/208/240 volt outlet placement and safety considerations
 - Circuit breaker installation and loading
 - Ground system installation
 - Service entry bonding and electrical connections
 - Temporary power systems
 - Kitchen circuits
 - Dwelling unit layout
 - Service installation

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 201

Course Title: Alternating Current Theory
Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 2
Contact hours lab: 2

This course is a

Current Catalog Description (include all prerequisites):

A study of three phase alternating current circuits and single- and three-phase transformers and machines. The theory and operation of three-phase wye and delta circuits and the relationship of voltage, current and power in these circuits. The use of phasor algebra in the solution of alternating current problems is stressed as are the characteristics and use of electrical instruments such as voltmeters, ammeters, ohmmeters, and wattmeters. Students learn the theory and operation of transformers with single and three phase connections and are introduced to alternating current machines. Prerequisite: Elec 102

Course Outcome Objectives:

The student will be able to:

- Understand and describe three-phase circuits including
 - Transformer equipment
 - Motors and machines
- Use basic algebra to calculate wye and delta circuit equivalencies and the values of voltage, current and power in these circuits
- Use phasors in the calculation of AC circuit problems
- Understand power factor in the calculation of load for electrical machinery
- Use basic electrical test equipment to verify calculations.
- Understand transformer theory and operation for single- and three-phase electrical installations

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences

Program Area: Electrical Technology

Date:

Course Prefix & No.: ELEC 204

Course Title: Electrical Planning & Estimating

Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture:

Lecture/Lab: X

Contact hours lecture: 2

Contact hours lab: 2

This course **Current Catalog Description (include all prerequisites):**

~~This~~ is an applied course in the planning and cost estimation of electrical installations and rehabs for both commercial and residential applications. The course will use current catalog and electrical supply information to determine rough cost estimates based on blue print or electrical drawings, as well as using customer requirements to determine the plan and cost estimates for new and old work.

Course Outcome Objectives:

The student will be able to:

- Identify common electrical supply sources
- Interpret blue prints or electrical drawings to properly specify and cost electrical equipment
- Estimate time requirements for installation of common electrical equipment and wiring
- Verify specifications from prints are drawings are within code requirements
- Specify equipment or material substitutions for electrical installations

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ____ DROPPED ____ MAJOR REVISION X FOR INFORMATION ONLY ____

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 205
Course Title: Electrical Design and Lighting
Credits: 3

Required by: Electrical Technology
Selective in: n/a

Elective in: n/a
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 2
Contact hours lab: 2

This course is a class discussion

Current Catalog Description (include all prerequisites):

~~A class discussion~~ course dealing with electrical material and equipment sizing, layout and application, applicable wiring codes, regulations and rules, and characteristics of common electrical distribution systems as used in industrial plants and commercial building locations. Included is a study of short circuit current, current limiting and coordination, power factor correction and electrical rates. This course includes the study of modern illumination principles, calculation procedures and equipment for lighting installations. Also included are discussions of building construction, heat loss calculations and electric heating equipment selection, installation and control.

Course Outcome Objectives:

The student will be able to:

- Identify the characteristics needed to consider in designing a commercial electrical lighting system
- Articulate the rules and applicable codes applied to electrical distribution systems use in industrial applications and commercial installations
- Calculate lighting requirements for various commercial applications
- Understand considerations for building construction and materials, heat loss, and use of electrical heating equipment.

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ___ DROPPED ___ MAJOR REVISION X FOR INFORMATION ONLY ___

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 233

Course Title: Commercial Wiring Lab
Credits: 3

Required by: Electrical Technology
Selective in: n/a

Elective in: n/a
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 1
Contact hours lab: 4

This course is an
Current Catalog Description (include all prerequisites):

An extension of Elec 133 with lectures emphasizing commercial wiring methods. Students will perform laboratory work consisting of actual installation of various raceways, as well as connecting of special equipment used in commercial and industrial applications, all in accordance with the National Electrical Code. Prerequisite: Elec 133.

Course Outcome Objectives:

Students will be able to:

- Demonstrate proficiency in installing electrical equipment for commercial installations including;
 - Raceways
 - Conduit types
 - Lighting
 - Services
 - Wood & metal stud construction techniques
 - Hazardous locations
- Identify specialized equipment specified by the NEC for commercial installations
- Perform safety and NEC compliance inspections of commercial and residential electrical installations

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

COURSE REVISION FORM

NEW ____ DROPPED ____ MAJOR REVISION X FOR INFORMATION ONLY ____

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 236
Course Title: Conduit, Raceways & Code Calculations Lab
Credits: 3
Required by: Electrical Technology
Selective in: n/a
Elective in: n/a
General Education:
Lecture:
Lecture/Lab: X
Contact hours lecture: 1
Contact hours lab: 4

This Course includes → **Current Catalog Description (include all prerequisites):**

Laboratory work dealing with Code application relating to conduit bending as well as National Electrical Code calculations for wire and cable installation. Student will perform lab work consisting of actual installation of conduit, wire and cable.

Course Outcome Objectives:

The student will be able to:

- Demonstrate the ability to perform necessary calculations for thin wall Electrical Metallic Tubing (EMT), intermediate metal conduit (IMC), rigid metal conduit (RMT), and polyvinyl chloride (PVC) conduit.
- Identify proper wiring and load requirements based on the NEC for commercial installations
- Identify wire and cable identifying markings
- Demonstrate proficiency in the installation of conduit and raceway equipment
- Understand requirements for and demonstrate proper installation of low-voltage electrical circuits

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

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College COTS Program Area Electrical Technology Date 3/1/07

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College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 239

Course Title: Grounding & Bonding Fundamentals-Lab/Lec
Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 2
Contact hours lab: 2

This course is a

Current Catalog Description (include all prerequisites):

A combination lecture/lab series of grounding theory as well as characteristics of grounded and non-grounded systems. ~~Application in lab of~~ proper grounding practices, various grounding applications, tools and materials usage and methods of compressions and exothermic application and installations. *labs include*

Course Outcome Objectives:

The student will be able to:

- Demonstrate a working knowledge of grounding theory
- Articulate the characteristics of grounded and non-grounded systems
- Demonstrate the ability to properly use grounding techniques and applications, tools and materials
- Design and specify materials to implement an electrical protective ground installation
- Proper grounding & bonding of system as per National Electrical Code (NEC)

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.

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NEW ____ DROPPED ____ MAJOR REVISION X FOR INFORMATION ONLY ____

College COTS Program Area Electrical Technology Date 3/1/07

Submitter _____ Chair/Dean _____ Date _____
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
These changes are being made to be more towards industry standards and expectations within the industry.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 247

Course Title: Medium and High Voltage
Credits: 3

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a

General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 2
Contact hours lab: 2

This course is a
Current Catalog Description (include all prerequisites):

which
~~This~~ lecture/lab course covers medium and high voltage electrical theory, conductors, insulators, overcurrent devices, testing, termination, safety precautions and safety equipment.

Course Outcome Objectives:

The student will be able to:

- Identify the special safety hazards associated with medium and high voltage
- Articulate the proper procedures necessary to perform maintenance or installation of equipment with medium and high voltage systems
- Demonstrate proper connection techniques for medium voltage electrical systems
- Perform routine tests on high voltage electrical connections and equipment
- Demonstrate the proper use of safety equipment used in medium and high voltage electrical work

Additional instructional resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.