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. Nursing, Technical Sciences, Arts & Sciences, Education) **approval and must be signed by the submitter and the college chair/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 Chair/Dean of the submitting college who then notifies the originator.)**

Proposal # 04-20 | **Title:** Electrical Tech AAS (new degree)

(proposal explanation, submitter and college chair/dean signatures on attached program/degree or course revision form)

	Date				
Received by ACAD Senate	4-15-05				
Forwarded to Teacher Ed Council	N/A	Approved		Disapproved	
		Signature		Date	
Forwarded to Gen Ed Committee	N/A	Approved		Disapproved	
		Signature		Date	
Returned to ACAD Senate	N/A				
Forwarded to Curriculum Committee	4-15-05	Approved	✓	Disapproved	
		Signature	Wade E Bogum	Date	4-19-05
Returned to ACAD Senate for Vote	4-20-05	Approved	✓	Disapproved	
		Signature		Date	4-21-05
Sent to Provost's office for Full Faculty vote	4/22				
Voted on at Full Faculty meeting	4/26/05	Approved	✓	Disapproved	
Approved w/ addition of course fee information		Signature		Date	4/26/05
Forwarded to Provost for Approval/Disapproval	4/26/05	Approved	✓	Disapproved	
		Signature		Date	5/2/05
Forwarded to Chancellor for Approval/Disapproval	5/10/05	Approved		Disapproved	
		Signature		Date	5/10/05
Copies sent to originating college and registrar's office	5/10/05				

C/data/proposaltracking sheet ACAD 10 10 01

PROGRAM/DEGREE REVISION FORM

NEW _X_ DROPPED ____ MAJOR REVISION ___ FOR INFORMATION ONLY

College College of Technical Sciences **Program Area** **Date** 4-15 05

Submitter signature **Chair/Dean** Gregory D. Kegel signature **Date** 4-15-05

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

New program -- Electrical Technology Associate of Applied Science

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.

ELECTRICAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE

FRESHMAN YEAR

Course Prefix	Course #	Course Title	Gen Ed Credits	Degree Crs.
		FRESHMAN YEAR		
Courses to be taken Fall Semester				
CIS	110	Intro to Computers (TECH)	3	
ELEC	101	Electrical Fundamentals I		5
ELEC	103	Electrical Code Study/Codeology		3
HPE	234	First Aid & CPR		2
ELEC	137	Electrical Drafting		2
Courses to be taken Spring Semester				
MAAS	106	Elementary Technical Math (MATH)	3	
ELEC	106	Electrical Formulas & Computations		3
ELEC	111	Electric Meters & Motors		3
ELEC	102	Electrical Fundamentals II		5
ELEC	133	Basic Wiring		3
ELEC	139	Electric Code Study-Residential		3
		SOPHOMORE YEAR		
Courses to be taken Fall Semester				
ELEC	201	Alternating Current Theory		5
ELEC	205	Electrical Design & Lighting		3
ELEC	211	AC Measurements		3
ELEC	233	Commerical Wiring Lab		3
ENGL	112	Written Communication II (COMM)	3	
Courses to be taken Spring Semester				
ELEC	204	Electrical Planning & Estimating		3
ELEC	236	Conduit, Raceways & Code Calcs Lab		3
ELEC	239	Grounding/Bonding Fundamentals		3
ELEC	241	Electric Motor Controls		3
IT	111	Industrial Safety/Waste Mgmt.		2
ELEC	2XX	Medium & High Voltage		1
SPCH	141	Fund. Of Speech (COMM)	3	

Electric

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COURSE REVISION FORM

NEW _X_ DROPPED ___ MAJOR REVISION ____ FOR INFORMATION ONLY___

College ___COTS_____ Program Area Electrical Technology ___ Date _03/31/05__

Submitter _____ Chair/Dean Gregory D. Regel Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 101, for proposed electrical technology program.

College: College of Technical Sciences
Program Area: Electrical Technology
Date:
Course Prefix & No.: ELEC 101
Course Title: Electrical Fundamentals I
Credits: 5

Required by: ELECTRICAL TECHNOLOGY
Selective in: N/A

Elective in: N/A
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 3
Contact hours lab: 4

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
- Calculate the electrical values and interpret the results of ohms law
- Calculate the electrical power of a DC circuit and components
- Utilize basic electrical test equipment to measure voltage, current, and resistance using
  - Volt-Ohm meter (VOM)
  - Voltage indicator
  - Digital Multimeter
  - Oscilloscope
- Make basic electrical circuits and connections.
- Read and interpret schematic symbols used in DC 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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ____Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 102, for proposed electrical technology program.

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

Course Title: Electrical Fundamentals II
Credits: 5

Required by:

Selective in:

Elective in:
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 3
Contact hours lab: 4

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:

- Utilize an oscilloscope to observe and interpret an AC voltage
- Perform calculations with and understand AC quantities
  - Frequency/Period
  - Peak-to-peak voltage
  - Peak voltage
  - Effective voltage
  - Average voltage
- Understand phase of AC voltage
- Perform voltage, current and power calculations for an AC circuit

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ___COTS_____ Program Area ___Electrical Technology____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 103, for proposed electrical technology program.

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

Current Catalog Description (include all prerequisites):
This course is A preliminary study of the National Electrical Code. 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
- Perform basic circuit construction using approved techniques
- Evaluate electrical installations for compliance with basic NEC requirements
- Identify approved mechanical electrical connecting equipment and devices
- Utilize basic hand tools to perform routine tasks for electrical connections
- Lay out and construct basic circuitry to provide
    - A simple one-switch controlled lamp circuit
    - A standard appliance outlet (duplex) circuit
    - A three-way switch for lamp control at two locations
- Understand the basic ground requirements for residential electrical service connections

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 106, for proposed electrical technology program.

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

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
- Utilize a general purpose calculator to compute necessary values
- Use modern computer hardware to perform detailed analysis of AC and DC electrical systems

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 __X__ DROPPED ___ MAJOR REVISION ____ FOR INFORMATION ONLY___

College ___COTS_____ Program Area _Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean Gregory D. Reyes Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 111, for proposed electrical technology program.

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

Current Catalog Description (include all prerequisites): This course is a practical hands-on course using ammeters, voltmeters, wattmeters, and multimeters in testing and troubleshooting electric motors, components and wiring systems. This course includes 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
- 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

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ____Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05

Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 133, for proposed electrical technology program.

College:	College of Technical Sciences
Program Area:	Electrical Technology
Date:	
Course Prefix & No.:	ELEC 133
Course Title:	Basic Wiring
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 is ~~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. 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 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 _X_ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area Electrical Technology Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 137, for proposed electrical technology program.

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):
~~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 an introduction to CAD.

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 HVAC and lighting.
- Utilize a basic CAD software program to 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.

COURSE REVISION FORM

NEW __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area Electrical Technology Date _03/31/05__

Submitter _____ Chair/Dean Gregory D. Kegel Date 4-11-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 139, for proposed electrical technology program.

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
  - 220 volt outlet placement and safety considerations
  - Circuit breaker installation and loading
  - Ground Rod installation
  - Service entry bonding and electrical connections

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean Gregory O. Kegel Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 201, for proposed electrical technology program.

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

Course Title: Alternating Current Theory
Credits: 5

Required by: Electrical Technology

Selective in: n/a

Elective in: n/a
General Education:

Lecture:
Lecture/Lab: X
Contact hours lecture: 3
Contact hours lab: 4

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature — Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 204, for proposed electrical technology program.

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: 1
Contact hours lab: 4

This course is

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 205, for proposed electrical technology program.

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:	1
Contact hours lab:	4

Current Catalog Description (include all prerequisites):
This course deals with—
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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature Signature (indicates college level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 211, for proposed electrical technology program.

College:	College of Technical Sciences
Program Area:	Electrical Technology
Date:	
Course Prefix & No.:	ELEC 211
Course Title:	AC Measurements
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

Current Catalog Description (include all prerequisites):
This lecture/lab course consists of a series of experiments to investigate the characteristics of single-phase and three-phase electrical circuits. The connections and testing of transformers in both single-phase and three-phase configurations are stressed. Students also learn the operation of three phase motors from conventional sources and phase converters, with an emphasis on efficiency, operating characteristics and connections. Co-requisite: Elec 201

Course Outcome Objectives:
The student will be able to:

- Identify and measure electrical characteristics of single and three phase electrical circuits
- Perform installation and testing of transformers in both single phase and three phase installations
- Become familiar with the operation of three phase motors from conventional sources
- Understand and demonstrate familiarity with phase conversion equipment
- Perform the necessary calculations to identify equipment efficiency based on customer requirements for operating characteristics

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean Gregory D. Reyes Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 233, for proposed electrical technology program.

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 for

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
  - Electrical conduit
- 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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area __Electrical Technology_____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05
Signature — Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 236, for proposed electrical technology program.

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 lab

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 rigid conduit installations for commercial and residential electrical installations
- 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.

COURSE REVISION FORM

NEW __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ___COTS_____ Program Area __Electrical Technology____ Date _03/31/05__

Submitter _____ Chair/Dean Gregory O. Kegel Date 4-15-05
Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 239, for proposed electrical technology program.

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:	1
Contact hours lab:	4

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

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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ___COTS_____ Program Area ___Electrical Technology____ Date _03/31/05__

Submitter _____ Chair/Dean _____ Date 4-15-05

Signature Signature (indicates "college" level approval)

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 241, for proposed electrical technology program.

College:	College of Technical Sciences
Program Area:	Electrical Technology
Date:	
Course Prefix & No.:	ELEC 241
Course Title:	Electric Motor Controls
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 is A lecture and laboratory class oriented to the study of electromechanical control system concepts. Experiments are designed to illustrate the principles, applications, connection and installation procedures of electrical controllers. Special emphasis is placed on the analysis and development of control circuits.

Course Outcome Objectives:
The student will be able to:

- Identify and install electro-mechanical control systems used in residential and commercial wiring applications
- Demonstrate the proper installation of electrical control equipment
- Design, layout and specify equipment for electrical control equipment based on customer 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 __X__ DROPPED ____ MAJOR REVISION _____ FOR INFORMATION ONLY____

College ____COTS_____ Program Area ___Electrical Technology_____ Date _03/31/05__

Submitter _____ Signature Chair/Dean _____ Signature (indicates "college" level approval) Date 4-15-05

Please provide a brief explanation & rationale for the proposed revision(s):
New course, ELEC 247, for proposed electrical technology program.

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: 1
Contact hours lab: 4

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