**Master Syllabus**

**Course:** ENGT 101 – Motor Control Fundamentals **Course Credits:** 3 – 3 - 4

**Course Prerequisite:** None  **ICCB Code: PCS # 1.2 150403**

**Mode of Delivery:** Traditional, Web Enhanced **IAI #:** N/A

**Instuctor: John Daum**

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**Course Description:**

* ENGT 101 – Motor Control Fundamentals (Formerly Eltrn109)
* This is a practical, hands-on class, centered on the study and application of controls and systems in the industrial environment. This course begins at the introductory level and progresses through advanced manual and automatic electromechanical and solid-state controls. Quizzes will be given regularly, and will include lab activities. Selected lab activities will be taken for grades. The course emphasizes the on-the-job knowledge and skills required to troubleshoot and maintain modern industrial control systems. Safe work habits are emphasized throughout the course.
* This course has been modified to meet the INAM standards and promote the MSSC Certified Production Technician (CPT) industry certification.

Applicable toward graduation where program structure permits:

Certificate or Degree: AAS, ALS

Group Requirement: Not Applicable

Area of Concentration: Not Applicable

**Course Objectives/Outcomes:**

|  |  |
| --- | --- |
| **Course Outcomes:** | **RCC Cross-Disciplinary Outcomes:** |
| The student will be able to perform basic and intermediate level electrical calculations of voltage, amperage, reactance, resistance, inductance, and impedance.. | Communicate effectively  Think critically and creatively  Manage technology and evaluate information in various research and applied contexts.  Act professionally and responsively |
| The student will be able to effectively and correctly communicate using the proper terminology. | Communicate effectively |
| The student will be able to interpret various types of line diagrams. | Think critically and creatively  Manage technology and evaluate information in various research and applied contexts. |
| The student will know OSHA safety regulations, demonstrate lock-out/tag-out procedures and practice safety procedures. | Think critically and creatively  Manage technology and evaluate information in various research and applied contexts.  Act professionally and responsively |
| The student will properly install and wire various types of circuits and motor controls devices. | Think critically and creatively  Manage technology and evaluate information in various research and applied contexts. |
| The student will be able to analyze a system and troubleshoot problems utilizing the proper test equipment and safety procedures. | Manage technology and evaluate information in various research and applied contexts.  Act professionally and responsively |
| Students will learn to work in teams in the design, installation, configuration, and testing of an electrical system. | Communicate effectively  Think critically and creatively  Manage technology and evaluate information in various research and applied contexts.  Act professionally and responsively |

**Cross-Disciplinary Outcomes**

1. *The degree-seeking student will be able to communicate effectively (read, write, speak and listen).*
2. *The degree-seeking student will think critically and creatively.*
3. *The degree-seeking student will manage technology and evaluate information in various research and applied contexts.*
4. *The degree-seeking student will act professionally and responsibly.*

**Topical Outline: Course Schedule**

Week 1 – Ohms’ Law, series and parallel circuits

Week 2 – Power, loads and logic

Week 3 – Inductance, capacitance, reactance and impedance

Week 4 – Line diagrams, symbols and control logic

Week 5 – Line diagrams, symbols and control logic

Week 6 - Relays and contactors

Week 7 – Three-phase power, transformers and motors

Week 8 – Motors and motor starters

Week 9 – Motors and motor starter applications

Week 10 – Timers and timing applications

Week 11 – Reversing starters

Week 12 – Motor braking

Week 13 – Group project

Week 14 - Group project

Week 15 – Intro to Programmable Logic Controllers

Week 16 – Final Exams

**Evaluation Methods and Weights:**

* + Unit Exams 20%
  + Mid-Term and Final Exams 30%
  + Group Project 15%
  + Lab Exercises 20%
  + Design Project 15%

**Grading Scale:**

**A = 100 – 93**

**B = 92 – 86**

**C = 85 – 78**

**D = 77 – 70**

**F = 69 or below**

**Texts:**

***Electrical Motor Controls , Second Edition***

Author(s): Rockis / Mazur

Publisher: American Technical Publishers; 2001

ISBN-10: 0-8269-1675-9

ISBN-13: 978-0826916754

**Attendance Policy:**

* + - * Include attendance policy; needs at minimum to match College Policy 4.6.6.

*Regular attendance is necessary for satisfactory completion of a course. An instructor may drop a student who has failed to attend the first two class sessions. At midterm the College will drop any student who has failed to meet the attendance standard or attain sufficient progress as certified by the instructor. During the allotted timeframe as determined by the President of the College or the President’s designee, an instructor may drop a student who has failed to meet attendance standards or attain sufficient progress in the course but is not required to do so. This report will be used to determine certain financial aid awards*

Attendance As an adult learner you most likely have multiple roles and commitments to juggle. In addition to being a student, you may be an employee, a parent, a community leader, or a caregiver to a family member. If you are a full-time student, you are working to learn a wide variety of new skills and to meet the expectations for multiple courses. As your teacher, I too have many responsibilities and multiple roles. Therefore, we need to work together to accomplish the intended learning outcomes for this course. Responsible attendance means that you will plan your schedule so that you can be present for scheduled class sessions and manage your time so that you can complete your assignments and assessments on or before the date they are due. For my part, I have provided learning plans and a syllabus with a schedule listing class sessions and due dates for assignments and assessments. I will work to keep the course on the published schedule. If I make adjustments in the schedule, I will provide written a notice explaining the change. If you miss a class session unexpectedly:

1. You are responsible for identifying what you have missed and for obtaining handouts or other learning materials that were distributed during your absence.
2. If the learning plan indicates that you missed interactive, applied, or group learning activities, discuss alternative learning activities with me. (I prefer that you propose an alternative.)
3. Contact me in person, via email, or via voicemail message, explaining how you intend to make up missed work.
4. In order to receive full credit for work missed during your absence, you must complete it within two weeks of your return. Late make-up work will be eligible for a maximum grade of "C" or the equivalent. If you know you will miss a class session:
5. Plan ahead to submit assignments or complete assessments that will be due during your absence prior to your absence. (Refer to the learning plans and the syllabus schedule.)

Notify me in person, via email, or via voicemail message prior to your absence, explaining how you intend to make up missed work. 3 Items 1, 2, and 4 above also apply.

In addition, any student failing to meet the attendance requirement for more than two consecutive weeks may be sent a “stopped attending” letter. At midterm the College will administratively drop any student who has failed to meet the attendance requirement as set forth by the instructor. After midterm, students who stop participating in a class without officially dropping a class and who are not administratively dropped may receive a grade of “F” for the course. This may also have an impact on certain financial aid awards. It is ultimately the responsibility of the student to drop a course.

Any student who can’t meet the attendance requirements for a given week should contact his or her instructor immediately.

**Classroom Procedures:**

**Human Relations Policy: (if applicable)**

* This course incorporates concepts regarding all races, creeds, sexes, and ethnic groupings and the belief that they must learn to live together.

**RCC Core Values:**

* Commitment - We are dedicated to meeting the needs of the communities we serve.
* Respect - We recognize the expertise of all members of the College community and encourage individual contributions.
* Excellence - We strive to develop and pursue higher standards.
* Accountability - We assume and demonstrate responsibility for our actions.
* Diversity/Inclusiveness - We believe that our similarities and differences are opportunities for establishing a common bond and strengthening the College.

**RCC Academic Integrity Policy:**

*All students are expected to maintain academic integrity in their academic work and honesty in all dealings with the College. A student who cheats, plagiarizes, or furnishes false, misleading information to the College is subject to disciplinary action up to and including failure of a class or suspension/expulsion from the College.*

**Safety & Labs/Clinicals**

To remain in the program, students must adhere to safety guidelines and treat the lab as they would an industrial worksite. Horseplay will not be tolerated. Cheating will not be tolerated. Work performed in the lab must be executed in accordance with the safety standards as set forth by instructor and the specific safety precautions for each task. Students are required to wear the appropriate personal protective equipment when in the lab area or working on activities that may pose a hazard to themselves or others. It is the duty of all students to watch out for safety throughout the area and bring any unsafe practices they might observe to the attention of the instructor. Students are required to know the location of all fire exits, fire extinguishers, emergency evacuation routes, and a procedure to obtain help in an emergency. Tools belong to Richland Community College and are not to be taken from the lab. All tools are to be used safely and with respect. Tools are to be returned to their proper storage space at the end of each class. Supplies are provided by Richland Community College and are to be used with discretion. Wasting supplies will not be tolerated. Good housekeeping is important to safety in any operation, and the RIchland Community College Electrical Lab is no exception. Students are expected to keep their work areas neat and orderly, minimizing potential safety hazards.

### Core Abilities/SCANS:

* Identifies, organizes, plans, and allocates resourcess
* Acquires and evaluates information
* Interprets and communicates information
* Exercises leadership
* Applies technology to task
* Maintain and troubleshoot technology
* Understands complex inter-relationships in systems
* Works well with others

**National/ State/ Local Skill Standards:**

* + - * If applicable, list appropriate Skill Standards.

**Learning Feedback System**

Students now have the opportunity to evaluate courses each semester through the Learning Feedback System available online. Faculty will announce when the Learning Feedback System is available for the course and explain the process for accessing the LFS. Some faculty may also use the LFS at midterm. Students are notified by e-mail when the LFS is available.

**my.richland.edu**

Richland uses my.richland.edu as the information portal for students. Users can access a wide variety of web-based services, including online registration, academic information, Richland e-mail, the Canvas Learning Management System, and the Library research databases. Academic information available includes current semester schedule, unofficial transcripts, grade point average projection, financial aid information review, online payment services, and degree auditing to determine degree completion progress. Student grades are posted only on the my.Richland.edu website. Grades will not be mailed to students unless requested.

Students with a “hold” placed on their records due to a financial obligation to the College or other unmet requirement will be unable to view academic records.

**Support Services**

**College Telephone Number: 217-875-7211**

*Faculty may add more information as applicable to specific courses.*

**Academic Success Center**

**Accommodations,** Room C148, Ext. 379

Responsibilities: Services for students with documented disabilities, including advisement, counseling, adaptive equipment and materials, instructional aids, tutors, note takers, interpreters, and testing accommodations

**Testing,** Room S116, Ext. 238

Responsibilities: Placement testing in English, mathematics, reading, health courses; make-up testing as arranged by instructor; testing for online courses

**Tutoring,** Room S118, Ext. 419

Responsibilities: Tutoring on walk-in or appointment basis, study groups, computers

**Student Success Center**

**Advising and Registration**, Room C129, ext 267

Responsibilities: Advisement, registration, general student services

**Career Services**, Room C129, Ext. 307, 205

Responsibilities: Career assessments, job placement information and transfer information and assistance

**Counseling Services**, Room C129, Ext. 252

Responsibilities: Academic advising, personal counseling

**Financial Aid and Veteran Affairs,** Room N136, Ext 274

Responsibilities: federal and state aid, veteran and entitlement benefits, scholarships

**Student Records**, Room C129, Ext. 257

Responsibilities: grades, transcripts, graduation

**Transfer Center**, Room C129, Ext. 222

Responsibilities: Transfer information, college visits, and campus representatives on campus

**Veteran Services**, Room C129, Ext. 307, 205

Responsibilities: assist veterans with comprehensive college services

**Learning Resources Center (Library), Room C152, Ext. 303**

Responsibilities: Manages print and electronic resources for students, faculty, and the broader College community. Offers research assistance, information literacy sessions, course reserves, and individual and group study areas.

**Online Learning Support,** [**ochelp@richland.edu**](mailto:ochelp@richland.edu) **Room W143, Ext. 376**

Responsibilities: Assists students with navigation in an online course, access and navigation in the student information system, and technical questions regarding personal computer system requirements and troubleshooting. Assistance is also given to students in hybrid and technology enhanced courses. Staff provide technical support through e-mail, telephone, and walk-in service.

The best way for students to contact the Online Help Desk:

From Canvas – click on the “Help” link in the upper right corner and choose Report a Problem.

Non-Canvas related issues: e-mail [ochelp@richland.edu](mailto:ochelp@richland.edu). The Request goes directly to the Help Desk e-mail and is checked regularly.

**Open Computer Labs**

Students may use computers in the Learning Resources Center and in the Academic Success Center.

**Perkins Program:**

The Perkins program is a federally-funded program designed to assist students in helping them become academically successful. For a student to be eligible for the Perkins Program they must be enrolled in an occupational program.

If a student is enrolled in an occupational area, they are automatically enrolled in the Perkins Program. Students may call the Perkins Program Coordinator for more information 875-7211, Ext. 223 or stop by E185.

All students should apply for financial aid (forms can be obtained from Student Development and Services on the first floor). Funding for the Carl Perkins Program is based on the number of students requesting financial aid.

**Student Engagement**

**Student Success**, Room C131, Ext. 314

Responsibilities: Passport workshops, academic success strategies and workshops, Success.net, (assist with early identification of academic need), and work with probation and suspension students.

**Student Support Services/TRiO Program, Room C143, Ext. 440.**

Responsibilities: Program designed for college students identified as first-generation, low-income, and/or with disabilities, offering academic and personal support.

This workforce solution was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timelines, usefulness, adequacy, continued availability, or ownership. This solution is copyrighted by the institution that created it. Internal use, by an organization and/or personal use by an individual for  non-commercial purposes, is permissible. All other uses require the prior authorization of the copyright holder.