

Brazosport College

Syllabus for INTC 1457 - AC/DC Motor Control

Instructor:
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I. COURSE DESCRIPTION:

INTC 1457 - AC/DC Motor Control CIP 1504040011

A study of electric motors and motor control devices common to a modern industrial environment. A presentation of motor characteristics with emphasis on starting, speed control, and stopping systems. A.C. theory including capacitive and inductive reactance. Impedance calculations as they relate to an industrial environment with motor control. Transformer, A.C. induction motors and motor control circuits will be emphasized. D.C. and synchronous motors will be touched on. Use of schematics and wiring diagrams to install and troubleshoot three phase motor starters will be emphasized. **Credit Hours: 4** (3 lecture, 2 lab)

A. Prerequisite: Grade of “C” or better in **INTC 1401**.

Required skill level: College level reading and writing. Beginning algebra level math (placement code 2).

II. COURSE OBJECTIVES

A. Safety in the Lab

1. General Principles of Motor Control
2. Symbols & Schematic Diagrams
3. Manual Starters
4. Overload Relays
5. Lab on Starters
6. Contactors & Motor Starters
7. The Control Transformer
8. Timing Relays
9. Pressure switches & Sensors
10. Float
11. Flow
12. Limit
13. Phase Failure Relays
14. Solenoid & Motor Operated Valves
15. Hall Effect sensors
16. Proximity Detectors
17. Photo Detectors
18. Basic Control Circuits
19. Schematics & wiring diagrams
20. Timed starting for three motors
21. Level switch control at a pump
22. Developing wiring diagrams
23. Reading large Schematic diagrams
24. Installing control systems
25. Hand off Auto controls
26. Multiple push button stations
27. Forward/Reverse Control
28. Jogging & Inching
29. Sequence Control
30. D.C Motors & Starting Methods
31. Variable frequency control
32. Motor Installation
33. Troubleshooting

III. STUDENT LEARNING OUTCOMES

1. Describe the types of electric motors and explain the operation and function of various motor control devices.
2. Wire Up Motor Control Circuits

IV. TEXTBOOK OR COURSE MATERIAL INFORMATION

A. Textbook

1. Industrial Motor Control, Stephen Herman, 7th Edition, Thompson Delmar, Publisher 2014. ISBN:978-11336918-0-8 (required)
2. Visorgogs - Safety goggles (required)
3. Calculator - TI-30XIIS (required)

Required course materials are available at the Brazosport College bookstore, on campus or online at <http://brazosport.edu/bookstore/home.html>. A student of this institution is not under any obligation to purchase a textbook from the college bookstore. The same textbook is/may also be available from an independent retailer, including an online retailer.”

For Distance Education Courses include the following: Contact the Brazosport College Bookstore with a credit card for course materials. Phone: 979-230-3651. Fax: 979-230-3653. Email: bookstore@brazosport.edu. Website <http://brazosport.edu/bookstore/home.html>.

B. Course Outline

This is a sample outline which may vary with individual instructors. It will also vary based on whether the course is a summer course or a fall/spring course. Students should contact their instructor for the outline of the course they are taking.

Week	Topics
1	Safety in the Lab. General principles of Motor Control Symbols & Schematic Diagrams
2	Manual Starters Overload Relays Lab on starters
3	Relays Contactors & Motor Starters The Control Transformer Timing Relays
4	Pressure switches & Sensors Float Flow Limit
6	Temp Sensing Devices Hall effect Sensors Proximity Detectors Photo Detectors
7	Test #1

Week	Topics
8	Basic control circuits Schematics & Wiring diagrams Timed starting for Three Motors Level Switch Control at a Pump
9	Test #2
10	Developing Wiring Diagrams Reading large Schematic Diagrams Installing Control Systems
11	Hand off Auto Controls Multiple push button stations
12	Forward/Reverse Control Jogging & Inching Sequence Control
13	D.C Motors & Starting Methods Variable Frequency Control
14	Motor Installation Troubleshooting
15	Test #3 & Review
16	Final

Important Semester Dates:

Last Day to Withdraw from Classes– Check BC Academic Calendar at
<http://catalog.brazosport.edu/index.php>

Office Hours:

For fulltime faculty, office hours may change from semester to semester. Current faculty office hours are included on the syllabus, see link: <https://brazosport.edu/faculty-and-staff/resources/course-syllabi-instructor-information/>

For an adjunct faculty, no office hours are required, and they are not assigned an office. To set up an appointment with an adjunct, contact the instructor as per the email address on the syllabus, see link: <https://brazosport.edu/faculty-and-staff/resources/course-syllabi-instructor-information/>

V. STUDENTS WITH DISABILITIES

Brazosport College is committed to providing equal education opportunities to every student. BC offers services for individuals with special needs and capabilities including counseling, tutoring, equipment, and software to assist students with special needs. For student to receive any accommodation, documentation must be completed in the Office of Disability Services. Please contact Phil Robertson, Special Populations Counselor at 979-230-3236 for further information.

VI. TITLE IX STATEMENT

Brazosport College faculty and staff are committed to supporting students and upholding the College District's non-discrimination policy. Under Title IX and Brazosport College's policy FFDA (Local), discrimination based on sex, gender, sexual orientation, gender identity, and

gender expression is prohibited. If you experience an incident of discrimination, we encourage you to report it. While you may talk to a faculty or staff member at BC, please understand that they are “Responsible Employees” and must report what you tell them to college officials. You can also contact the Title IX Coordinators directly by using the contact information below. Additional information is found on the Sexual Misconduct webpage at www.brazosport.edu/sexualmisconduct.

Alex Crouse, Director of Student Life and Title IX Coordinator
979-230-3355; alex.crouse@brazosport.edu

Mareille Rolon, HR Coordinator and Deputy Title IX Coordinator
979-230-3303; mareille.rolon@brazosport.edu

VII. ACADEMIC HONESTY

Brazosport College assumes that students eligible to perform on the college level are familiar with the ordinary rules governing proper conduct including academic honesty. The principle of academic honesty is that all work presented by you is yours alone. Academic dishonesty including, but not limited to, cheating, plagiarism, and collusion shall be treated appropriately.

Academic dishonesty violates both the policies of this course and the Student Code of Conduct. In this class, any occurrence of academic dishonesty will be referred to the Dean of Student Services for prompt adjudication, and may, at a minimum, result in F, in this course. Sanctions may be imposed beyond your grade in this course by the Dean of Student Services. Please refer to the Brazosport College Student Guide for more information. This is available online at <http://brazosport.edu/students/for-students/student-services/>.

VIII. ATTENDANCE AND WITHDRAWAL POLICIES

Class attendance contributes to your final grade, but you must attend class to successfully complete the course. If you are unable to complete this course, you must complete and submit a withdrawal form with the registrar’s office. If the student decides to drop out of the class, it is the responsibility of the student to initiate a withdrawal before the withdrawal deadline in order to get a “W” on their transcript. If this is not done the student will receive a grade based on test grades and class grades earned during their attendance and absence (i.e. zeros on all missed materials, exams, skills tests, and final exam).

IX. COURSE REQUIREMENTS AND GRADING POLICY TESTING MAKE-UP POLICY

A. Grading:

Labs, attendance & participation	20%
Test	40%
Final	40%

Grades are assigned as follows:

Grade	Final Average
A	90-100

B	80-89
C	70-79
D	60-69
F	Below 60

X. STUDENT CONDUCT STATEMENT

Students are expected to be aware of and follow the Brazosport College Student Code of Conduct. Students have violated the Code if they “fail to comply with any lawful directions, verbal or written, of any official at BC.” Lawful directions include precautions and requirements taken to prevent the spread of COVID-19 at Brazosport College. Students who do not follow safety requirements, including the wearing of a mask, may be removed from class by their instructor and referred to the Dean of Student Services.

XI. CAMPUS CLOSURE STATEMENT

Brazosport College is committed to the health and safety of all students, staff, and faculty and adheres to all federal and state guidelines. The College intends to stay open for the duration of the semester and provide access to classes and support services on campus in the safest way possible. The College will also comply with lawful orders given by applicable authorities, including the Governor of Texas, up to and including campus closure. It is possible that on campus activities may be moved online and/or postpone if such orders are given.

XII. STUDENT RESPONSIBILITIES

Students are expected to fully participate in this course. The following criteria are intended to assist you in being successful in this course:

1. Understand the syllabus requirements
2. Use appropriate time management skills
3. Communicate with the instructor
4. Complete course work on time, and
5. Utilize online components (such as Desire2Learn) as required.

XIII. OTHER STUDENT SERVICES INFORMATION

Information about the Library is available at <http://brazosport.edu/students/for-students/places-services/library/about-the-library/> or by calling 979-230-3310.

For assistance with online courses, an open computer lab, online and make-up testing, audio/visual services, and study skills, visit Learning Services next to the Library, call 979-230-3253, or visit <http://brazosport.edu/students/for-students/places-services/learning-services/>

For drop-in math tutoring, the writing center, supplemental instruction and other tutoring including e-tutoring, visit the Student Success Center, call 979-230-3527, or visit <http://brazosport.edu/students/for-students/student-success-center/>

To contact the Physical Sciences and Process Technology Department call 979-230-3618.

The Student Services provides assistance in the following:

Counseling and Advising	979-230-3040
Financial Aid	979-230-3294
Student Activities	979-230-3355

To reach the Information Technology Department for computer, email, or other technical assistance call the Helpdesk at 979-230-3266.



Get the information you need – when you need it. Click <http://geni.us/BRAZO> to install **BC Connect** on your mobile device to receive reminders, explore careers, map your educational plan, be in the know about events, find out about scholarships, achieve your goals and much more.