COURSE INFORMATION FORM

DISCIPLINE
INTE

COURSE TITLE
Variable Speed Motors and Drives

CR.HR  3       LECT HR.  2       LAB HR.  2       CLIN/INTERN HR.  _______   CLOCK HR.  _______

CATALOG DESCRIPTION

The course will cover the theory and application of AC and DC Motors and their uses in industry. Theory and
application of the various methods to control the speed of AC and DC electric motors using solid state devices will also
be covered including thyristor and transistor controlled circuits, three phase triggered circuits, variable phase,
frequency and voltage circuits.

PREREQUISITES
INTE 175 and INTE 271

EXPECTED STUDENT OUTCOMES IN THE COURSE

Upon completion of this course, the student will be able to:
1. Describe the function and application of AC motors.
2. Describe the function and application of DC motors.
3. Describe the function and application of the variable speed drive.
4. Describe the differences between AC and DC variable speed drives.
5. Describe the operation of the variable phase timer.
6. Describe the operation of three phase variable speed drive controls.
7. Evaluate the condition of variable speed drives.
8. Install variable speed drives.
9. Interface the variable speed drive with the programmable logic controller.
10. Troubleshoot and repair variable speed drives.
CLASS-LEVEL ASSESSMENT MEASURES

Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

Written examinations (1-4)
Project (5-10)

PROGRAM-LEVEL OUTCOMES ADDRESSED

General Education Outcomes
Specify which general education outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes and assessment measures.

Occupational Program Outcomes
Specify which occupational program outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes to assessment measures.
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Overview of motors and their applications
   A. AC motors
      1. Three phase
      2. Single phase
   B. DC motors
      1. Series
      2. Parallel
      3. Compound

II. Overview of the variable speed drive function and application

III. Review of switching devices
    A. SCR
    B. Triac

IV. DC variable speed drives
    A. DC motor characteristics
    B. Transistor switching

V. AC variable speed drives
    A. Frequency hysteresys considerations
    B. Single phase
    C. Three phase

VI. Interface of variable speed drives with programmable controllers
    A. Voltage interface standards
    B. Current interface standards
    C. Open-loop controls
    D. Closed-loop controls

VII. Self-contained variable speed drives

VIII. Variable speed drive installations
     A. Matching variable speed drives to motors
     B. Power quality issues