Automation of Industrial Machines Track Year 1

Semester 1

Class Number	Class Name	Class Description	Credit Hours
INTE 112	Industrial Electrical DC Principles	This course is an introductory course for the individual who is moving into an industrial maintenance or related activity. Behavior of electricity, sources of electricity, Ohms' and Watt's laws in DC circuits. The student will learn basic concepts in direct current circuits and applications.	3
INTE 140	Fundamentals of Industrial Maintenance	This course is designed to present the fundamentals of the care and maintenance on a wide range of industrial equipment, including chain and gear drives, couplings and fluid power equipment. Lubricants and lubrication will be covered. The replacement of seals and bearings will be covered. Correct application and selection of hand and power tools. Basic motor alignment including laser alignment will be introduced.	4
INTE 107	Industrial Electrical Safety	This course will introduce the student to electrical safety rules and procedures in the industrial arena. The student will learn the NFPA 70E requirements, meter safety and how to safely work around electrical circuitry in the workplace. Student will complete CPR certification.	2
WELD 105	Welding for the Trades	This course provides an introduction to the flame cutting and plasma cutting processes, brazing, stick (arc) welding and MIG welding. This is not a code welding course but students will learn to identify and correct welding problems.	3

Semester 2

Class Number	Class Name	Class Description	Credit Hours
INTE 113	Industrial Electrical AC Principles	This course is an introductory course for the individual who is moving into an industrial maintenance or related activity. This course will build on the concepts learned in INTE 112 and expand into alternating circuit concepts including introduction to transformers and 3 phase power distribution.	3
INTE 115	Electrical Print Reading	This course is designed to teach the student to read and interpret electrical blueprints commonly found in residential, commercial and industrial maintenance settings. Topics include blueprint layout, symbols, projections, dimensions, tolerances, clearances, assembly and bill of material.	3
INTE 185	Solar/Photovoltaic Systems	Solar radiation as applied to photovoltaic technology, photovoltaic system component selection, and introduction to safe design and installation of photovoltaic systems.	3
COLL 100	First-Year Seminar	The course is designed to help students adjust to the MCC community, develop a better understanding of the learning process, and acquire essential academic survival skills.	1
EHSS 112	Introduction to Health and Safety for General Industry	This course provides the participants with an overview of the Occupational Safety and Health Administration (OSHA) standards relevant to general industry. Among the subjects covered in the program are: an introduction to OSHA, fire protection, electrical safety, hazard communication, bloodborne pathogens, walking and working surfaces, personal protective equipment, machine guarding and safety and health programs. Students will receive a 10-hr General Industry Safety and Health Outreach Card.	1
CIMM 101	Machine Shop Safety	his course covers the safe use of basic shop power equipment and hand tools. The student will learn precision measurement methods. This course is designed for students in engineering disciplines.	1
CIMM 102	Basic Lathe Operation	This course covers the safe use and proper operation of a manual lathe. This course is designed for students in engineering disciplines.	1
CIMM 103	Basic Mill Operation	This course covers the safe use and proper operation of a manual mill. This course is designed for students in engineering disciplines.	1

Automation of Industrial Machines Track Year 2

Semester 3

Class Number	Class Name	Class Description	Credit Hours
INTE 175	Electric Motor Controls I	The course is designed to present the fundamentals of electrical motor control components, circuits and systems. Topics include electrical control symbols, power distribution, control transformers, solenoids and relays, motor starters, pilot devices, timers and sequencers, dc and ac motor principles, proximity sensors and troubleshooting.	3
INTE 150	Fundamentals of Hydraulics and Pneumatics	An introduction to fluid power and pneumatic concepts. Topics include the physics of fluid power, safety, hydraulic pumps, air compressors, actuators, pressure and flow measurement and regulation, basic maintenance, motors, coolers, and operation of hydraulic and pneumatic systems.	4
INTE 271	Programmable Logic Controller I	The course is designed to provide the individual with an ability to understand the various output methods, programming and troubleshooting techniques using the programmable controllers (PLC). I-O methods for dc and ac and analog, ladder programming and analysis, logical functions, timers and counters, forcing and troubleshooting techniques are among the specific topics covered. The student will be able to correlate motor control systems to PLC systems.	4

Semester 4

Class Number	Class Name	Class Description	Credit Hours
INTE 240	Advanced Industrial Machine Repair	This course is designed to present advanced principles of the industrial maintenance on a wide range of industrial equipment and procedures, including proper selection of bearings, seals, gears. Topics include replacement of seals, bearings, proper installation and setup. Correct application and selection of tools. This course will also cover alignment and vibration analysis.	3
INTE 273	Variable Speed Motors and Drives	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.	3
INTE 281	Industrial Robotics	This course is an introduction to various types of robot anatomy. Topics include drive systems, control systems and components, motion analysis, end-effectors, sensors and machine vision. The course also covers robot classifications, geometry and path control techniques, end-of-arm tooling, gripper selection system intelligence and compliance, programming, safety and safeguarding considerations and operator training, acceptance and problems. Laboratory experiments focus on interfacing lab robots to I/O devices using industrial grade PLCs of the major manufacturers and programming the lab robots to perform basic tasks.	4
INTE 124	Employment Strategies for Technical Careers	This course prepares the student to use strategies for successful career goal setting, job seeking, obtaining, maintaining and terminating employment in technical areas. Topics include conducting a job search, preparing a resume and cover letter, and participating in job interviews.	2