

DMT 241L

Chassis Lab

2:0:6

Pre- or Corequisite(s): DMT 2410

For third and fourth semester students. Gives hands-on experience in dealing with the operation of, and troubleshooting and repair of modern truck and equipment air brake systems, ABS brakes, foundation brakes and wheel ends, front end and tandem alignments, steering and load carrying suspensions and frame maintenance.

DMT 2420

Power Trains Theory

4:4:0

F, Sp

• Corequisite(s): DMT 242L Recommended

For third and fourth semester students. Provides theory in maintenance and repair of heavy duty power trains systems. Covers clutches, single and multiple counter shaft transmission, computer controlled transmissions, drive line geometry, differentials and DOT safety requirements. Emphasizes troubleshooting, highway safety, and preventative maintenance.

DMT 242L

Power Trains Lab

2:0:6

Pre- or Corequisite(s): DMT 2420

For third and fourth semester students. Provides hands-on experience in maintenance and repair of heavy duty power trains systems. Covers clutches, single and multiple counter shaft transmission, computer-controlled transmissions, drive line geometry, differentials and DOT safety requirements. Emphasizes troubleshooting, highway safety, and preventative maintenance.

DMT 281R

Cooperative Work Experience

1 to 8:0:5 to 40

F, Sp

• Corequisite(s): DMT 285R

Designed for Diesel Mechanics Technology majors. Provides paid, on-the-job work experience in the student's major. Work experience, the correlated class, and enrollment are coordinated by the Cooperative Coordinator. Includes student, employer, and coordinator evaluations, on-site work visits, written assignments, and oral presentations. Provides experience in writing and completing individualized work objectives that improve present work performance.

DMT 285R

Cooperative Correlated Class

1:1:0

F, Sp

• Corequisite(s): DMT 281R

Designed for Diesel Mechanics Technology majors. Identifies on-the-job problems through in-class discussion and study. Includes the study of identifying and maximizing service opportunities. Students register for this class with approval of the Cooperative Coordinator. Includes lecture,

guest speakers, video tapes, role playing, case analysis, oral presentations, and written assignments. Completers should be better able to perform in their field of work or study.

DMT 291R

Special Projects

1 to 5:0:3 to 15

F, Sp

• Prerequisite(s): Advisor and Instructor Approval

For students majoring in diesel technology. Involves special projects. Allows independent projects that are designed to enhance beginning or advanced abilities. Repeatable for as many times as desired.

DMT 298R

Technical Workshop

1 to 4:0 to 4:0 to 12

F, Sp

For Diesel Technology students and other interested community members. Tailored to a specific topic, product, component, or vehicle related to the diesel service industry. Its purpose is to update technician training by addressing changes in products or equipment. Topics will vary. May be presented by an OEM, a dealer representative, or faculty member. Repeatable.

DMT 299R

VICA

1:1:0

F, Sp

Designed for Diesel Mechanics Technology majors. Supports and facilitates the goals and objectives of Vocational Industrial Clubs of America (VICA). VICA is a pre-professional student organization that develops social awareness, civic, recreational, and social activities. Students may participate in local, state, and national contests.

EART—ELECTRICAL AUTOMATION AND ROBOTICS TECHNOLOGY

EART 1000

Survey of Electrical Automation and Robotics Technology

2:2:0

On Sufficient Demand

An introductory course for those interested in exploring the electrical and robotics field. Familiarizes students with the fundamentals of electricity. Includes career exploration, consumer awareness, manipulative skills, and craftsmanship.

EART 1010

Industrial Maintenance 2A

5:5:0

On Sufficient Demand

• Prerequisite(s): Departmental written approval

An electricity course for Industrial Maintenance apprentices. Teaches fundamentals of electricity and electrical safety, electric motor fundamentals, transformers, rectifiers and inverters. Introduces circuit breakers, wiring diagrams and electronic and computer controls.

EART 1020

Industrial Maintenance 4A

5:5:0

On Sufficient Demand

• Prerequisite(s): Departmental written approval

A basic computers, PLC logic and variable speed drives course for Industrial Maintenance apprentices to troubleshoot, adjust, and repair AC electric motors, motor controls, PLC controls and variable speed drives.

EART 1050

Applied Electrical Math

5:5:0

F

Studies algebra as it applies to the electrical trade. Includes basic operations used in the solution of Ohm's law, series, parallel and combination circuits. Solves basic circuits by finding missing values. Covers the mathematics used to solve problems in series and parallel circuits made up of transformers, inductance, capacitance and resistors. Teaches the use of a calculator in solving problems pertaining to transformers and the right triangle, as it describes the current-voltage relationship in series and parallel circuits made up of inductors, capacitors and resistors. Emphasizes power factor correction. Completers should be able to understand mathematics as applied to DC or AC theory. Includes lecture and demonstrations.

EART 1110

Electrical Apprentice IA

5:5:0

F

For electrical apprentices. Teaches the theory of and includes an introduction to electricity, basic DC theory, voltage, current, resistance, batteries, and magnetism. Covers principles, formulas and math for simple electrical circuits, series, parallel, combination circuits, and power problems.

EART 1120

Electrical Apprentice IB

5:5:0

Sp

• Prerequisite(s): EART 1110 or departmental written approval

For electrical apprentices. Introduces measuring instruments, magnetism, circuits, devices, National Electrical Code, blueprint reading, DC motors, low voltage circuits, DC motor control, DC generators, 3 and 4 way switches, and conduit bending.

EART 1130

Basic Electrical

4:4:0

F

Includes basic DC theory such as voltage, current, resistance, batteries, magnetism, and meters. Emphasizes lectures and films. Covers principles of DC circuits and troubleshooting of these circuits. Studies the application of AC theory to industrial and commercial applications in the electric field. Explains the basic construction and theory of inductance, capacitance and resistors dealing with L.C.R. circuits

EART

Course Descriptions

as they are used in the electrical or electronic fields. Includes lectures and demonstrations.

EART 1180

Basic Electrical Lab

5:0:15

F

Teaches basic DC theory such as voltage, current, resistance, batteries, magnetism, meters, wire sizing, splicing, soldering, and conduit bending. Includes observing and following safety procedures. Emphasizes lab experiences in all the above areas. Covers principles of DC circuits and troubleshooting of these circuits. Includes basic operations used in the solution of Ohm's law, series, parallel and combination circuits. Studies the application of AC theory to industrial applications in the electrical field. Covers the basic construction and theory of inductance, capacitance and resistors dealing with L.C.R. circuits as they are used in the electrical or electronic fields. Includes transformer connections for single phase and three phase devices. Includes theory and practical conduit bending. Emphasizes hands-on lab experiments with all the above circuits as well as power in inductors, capacitors and resistors as well as shaping circuits and passive filters. Completers should be able to wire circuits, size wire, solder, trouble shoot, correct power factor, and bend conduit.

EART 1210

Electrical Apprentice 2A

5:5:0

F

• Prerequisite(s): EART 1120 or departmental written approval
For electrical apprentices. Teaches application of AC theory as it applies to industrial applications in the electrical field. Covers the basic construction and theory of inductance, capacitance, and resistors dealing with L.C.R. circuits as they are used in the electrical field. Covers the mathematics used to solve problems in series and parallel circuits made up of transformers, inductance, capacitance, and resistors. Emphasizes the use of a calculator in solving problems pertaining to the right triangle, as it describes the current-voltage relationship in series and parallel circuits made up of inductors, capacitors, and resistors. Includes hands-on experiences in correcting power factor in motors, comparing true power, apparent power and reactive power in inductor, capacitors and resistors.

EART 1220

Electrical Apprentice 2B

5:5:0

Sp

• Prerequisite(s): EART 1210 or departmental written approval
For electrical apprentices. Covers installation, troubleshooting, preventive maintenance and repair of AC motors, motor control, and transformers. Teaches proper use of tools and test equipment

needed in maintaining AC motors, motor control, and transformers. Includes hands-on experiences on AC motors, motor control, and transformers.

EART 1250

Electrical Wiring and Code

2:1:3

Sp

• Prerequisite(s): EART 1130, EART 1050, and EART 1180; or departmental approval
Covers the National Electrical Code using theory, specifications, blueprints and installation methods pertaining to residential, commercial, and industrial applications. Includes lectures and lab experiences.

EART 1260

Logic

2:1:3

Sp

• Prerequisite(s): EART 1130, EART 1050, and EART 1180; or departmental approval
For students who desire a basic understanding of Digital Logic systems. Covers the basic logic levels, the 1's and 2's complement. Studies binary, decimal, octal, and hexadecimal numbers. Includes propagational delay, power lost, and noise. Solves problems using Boolean Algebra and DeMorgan's theorems. Students should also be able to minimize combinational gate circuits and troubleshoot. Includes lecture, demonstrations, and lab work emphasizing hands-on lab experiments with gate circuits.

EART 1270

DC and AC Machines

9:5:12

Sp

• Prerequisite(s): EART 1130, EART 1050, and EART 1180; or departmental approval
Covers installation, troubleshooting, preventive maintenance and repairs on DC and AC motors, generators and controllers. Trains students in the proper use of tools and test equipment needed in maintaining motors and controllers. Emphasizes hands-on lab experiences. Includes lecture, lab, and demonstrations. Completers should be able to work at entry-level skills maintaining motors and controllers in industrial and commercial settings. Includes lecture, demonstrations, and lab work.

EART 1300

Electrical Union Apprentice IA

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches installation and use of fastening devices, hoisting loads, wire connectors, fabricating and installation of conduit. Covers principles, formulas and math, safety, history of IBEW/NECS's structure, and tools of the trade. Introduces resistance in a DC series circuit.

EART 1310

Electrical Union Apprentice IB

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches voltage functions, resistance, how current reacts, current dividers, and how to calculate power in a DC parallel circuit and DC combination circuits. Covers principles of magnetism and electromagnetism, electrical generators, superposition to circuit calculations, DC theory principles and aluminum conductors. Introduces the National Electric Code, blue prints.

EART 1320

Electrical Union Apprentice 2A

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches NEC code book skills, Local union by-laws, AC/DC theory, three phase systems, AC resistive circuits, capacitors, diodes, and rectifiers. Covers electrical test instruments, multimeters, oscilloscope, inductance, vectors, RL circuits.

EART 1330

Electrical Union Apprentice 2B

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches LC circuits, LCR circuits, transformers, three-phase systems. Covers benders, wiring methods, conductor ampacity, branch circuits and feeders, lighting and receptacles, cable assemblies, boxes and fittings. Reviews blueprints and NEC.

EART 1440

DC Motors

3:3:0

On Sufficient Demand

• Prerequisite(s): ECT 1010 or equivalent
Course addresses installation, troubleshooting, preventive maintenance and repairs of DC generators and controllers and in the proper use of tools and test equipment needed in maintaining motors and controllers. Includes lecture and demonstrations.

EART 144L

DC Motors Lab

1:0:3

On Sufficient Demand

• Prerequisite(s): ECT 1010
Course focus is on actual installation, troubleshooting, preventive maintenance and repairs on DC generators and controllers, as well as the proper use of tools and test equipment needed in maintaining motors and controllers. Emphasizes hands-on lab experiences. Includes labs and demonstrations.

EART 1450

AC Motors

3:3:0

On Sufficient Demand

• Prerequisite(s): EART 1440 or equivalent
Course addresses installation, troubleshooting, preventive maintenance and repairs of AC motors, generators, and controllers. Concepts are developed which

are associated with the proper use of tools and test equipment needed for maintaining motors and controllers. Course approach includes lecture and demonstrations.

EART 145L

AC Motors Laboratory

1:0:3

On Sufficient Demand

- Prerequisite(s): EART 144L
- Corequisite(s): EART 1450

A laboratory-based course which addresses the hands-on aspects of installation, troubleshooting, preventive maintenance and repairs of AC motors, generators, and controllers. Emphasis is the proper use of tools and test equipment needed for maintaining motors and controllers. Course approach includes laboratory activities augmented with demonstrations.

EART 2020

Electricity for Mechanics

5:3:6

F, Sp

Studies basic principles of electricity, industrial wiring, electrical codes, motors, relays, controllers, and electrical safety. Covers the use of electrical components in conjunction with machines. Emphasizes the diagnosis and replacement of electrical components in mechanical systems. Uses conventional and electronic tests equipment. Completers should have entry-level skills to work with modern electro/mechanical machinery.

EART 2030

Electronics for Mechanics

5:3:6

F, Sp

- Prerequisite(s): Completion of EART 2020 or departmental approval

Studies principles of digital electronics, circuit wiring, PLC, electronic and computer controllers, integrated circuits, and safety. Covers the use of electronic components in conjunction with machines. Emphasizes the diagnosis and replacement of electrical components mechanical systems. Uses conventional and electronic test equipment. Completers should have entry-level skills to work with modern electro/mechanical machinery.

EART 2110

Semiconductors Devices

6:5:3

F

- Prerequisite(s): EART 1250, EART 1260, and EART 1270; or departmental approval

Introduces basic semiconductor theory. Examines the concept of the pn junction. Covers various diodes and their applications. Presents bipolar junction transistors (BJTs). Studies field-effect transistors (FETs). Covers power amplifiers. Introduces thyristors and other special semiconductor devices. Includes lecture, demonstrations, and lab work.

EART 2150

Hydraulics and Pneumatics

3:2:3

F

- Prerequisite(s): EART 1250, EART 1260, and EART 1270; or departmental approval

Covers the fundamentals of hydraulic and pneumatic components and systems used in industrial applications. Studies pumps, motors, directional and flow control valves, cylinders, transmission, and fluids. Emphasizes maintenance, safety, and environmental problems. Examines troubleshooting techniques and blueprint/print reading. Completers should be able to work with hydraulic and pneumatic systems in correlation with related industrial electrical applications at entry-level jobs in the electrical maintenance field. Includes lecture, demonstration, and lab work.

EART 2160

Industrial Solid State Circuit

5:3:6

F

- Prerequisite(s): EART 1250, EART 1260, and EART 1270; or departmental approval

Covers theory and operation of industrial solid state power circuits, integrated circuit operational amplifiers, and AC/DC motor drives. Completers should have job entry-level competence in advanced industrial control with solid state control circuits, amplifiers, and variable speed drives. Includes lecture, demonstrations, and lab work.

EART 2250

Programmable Logic Controllers I

5:3:6

Sp

- Prerequisite(s): EART 2110, EART 2150, and EART 2160; or departmental approval

Covers the theory, programming and industrial control system applications of small and medium sized programmable logic controllers (PLCs). Studies basic maintenance and troubleshooting techniques for programmable logic controllers. Includes lecture, demonstration, print reading, and lab projects with hands-on experience. Completers should be able to work in industry in related work at entry-level positions with safety and environmental awareness.

EART 2260

Advanced Logic

3:2:3

Sp

- Prerequisite(s): EART 2110, EART 2150, and EART 2160; or departmental approval

Covers theory and industrial applications of Comparators, Decoders, Encoders, Multiplexers, Demultiplexers, Latches (SR and D), Flip Flops (SR, D, and JK), One-shots, Timers, Counters, and Shift Registers. Includes lecture, demonstrations, and lab projects with hands-on experience. Emphasizes implementation and troubleshooting of logic circuits. Completers should be able to work in industry in related work at entry-level positions with safety and environmental awareness.

EART 2270

Programmable Logic Controllers 2

6:4:6

Sp

- Prerequisite(s): EART 2110, EART 2150, and EART 2160; or departmental approval

Covers the theory, implementation, and application of advanced Programmable Logic Controller instructions, functions, programming techniques, and data communications. Studies basic programming language and industrial control applications. Includes lecture, demonstration, and lab projects with hands-on experience. Completers should be able to work in industry at entry-level positions with safety and environmental awareness.

EART 2310

Electrical Apprentice 3A

5:5:0

F

- Prerequisite(s): Departmental written approval

For electrical apprentices. Teaches installation, troubleshooting, preventive maintenance and repair of AC motor controls. Covers the proper use of hand tools and test equipment used in the maintenance of AC motor controllers.

EART 2320

Electrical Apprentice 3B

5:5:0

Sp

• Prerequisite(s): Departmental written approval
For electrical apprentices. Covers theory of operation of electronic devices used in industrial control systems. Studies test equipment and procedures used in installation maintenance, troubleshooting, and repair of electronic control circuits. Introduces basic theory and operation of instrumentation and process control equipment.

EART 2330

Electrical Union Apprentice 3A

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches Kirchhoff's laws, Thevenin's and Norton's theorems, diodes, single phase power supplies, transducers, transistors, switching and biasing techniques. Covers silicon controlled rectifiers (SCR), triacs and diacs, unijunction transistor, amplifiers, field effect transistors, ICs and OP AMPs, IC timers, electronic applications, and industrial prints. Reviews DC/AC theory.

EART 2340

Electrical Union Apprentice 3B

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches grounding, cause and effect of electrical faults, grounding components, grounding connections, grounding of electrical systems, systems and circuit grounding requirements for 1kV and over. Introduces earth testing, transformer overcurrent protection, proper applications of fuses, short circuits calculations, electrical load calculations, calculating the

Course Descriptions

parameters of range loads. Review three phase transformers, WYE and DELTA connections.

EART 2350

Electrical Union Apprentice 4A

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches lightning protection systems, AC fractional horsepower motors, repulsion, DC and universal motors, polyphase motors, AC motors, manual starters and magnetic coils, relays and timers, controls, clutches and drives. Covers motor control drawings, wiring diagrams, and schematics.

EART 2360

Electrical Union Apprentice 4B

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
For electrical union apprentices. Teaches characteristics of logics circuits, AND logic, OR logic, amplifiers, NAND and NOR logic, XOR and XNOR logic, fiber optic theory and installation, optoelectronic devices. Covers motor speed control, series resonance, parallel resonance, filters, power factor, power quality, power harmonics, cable trays, motor branch circuits. Introduces Boolean algebra, hazardous locations, methods and equipment.

EART 2370

Electrical Union Apprentice 5A

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
Designed for fifth year electrical union apprentices. Teaches fire alarms, advanced technology systems, smoke detectors, fire alarm installation, maintenance, and troubleshooting. Introduces instrumentation, calibration and telephone wiring. Covers fundamentals of flow, pressure, level, temperature, control valves, pneumatics, controllers, and sexual harassment.

EART 2380

Electrical Union Apprentice 5B

5:5:0

Not 07-08

• Prerequisite(s): Departmental Written Approval
Designed for fifth year electrical union apprentices. Teaches fundamentals, troubleshooting and electrical controls for air conditioning/refrigeration systems. Introduces Cable faults, security systems, small programmable controllers. Covers programming timers and counters, data manipulation, emergency system installation requirements.

EART 2410

Electrical Apprentice 4A

5:5:0

F

• Prerequisite(s): EART 2320 or departmental written approval
For electrical apprentices. Studies industrial motor control with particular attention to the National Electrical Code

and Programmable Logic Controllers (PLC). Explores the fundamental parts of a PLC and motor control systems. Includes print reading.

EART 2420

Electrical Apprentice 4B

5:5:0

Sp

• Prerequisite(s): EART 2410 or departmental written approval
For electrical apprentices. Reviews DC and AC theory, electrical circuits and circuit calculations, transformers, motors, and motor control circuits. Studies the calculation of single and three phase loads, service entrance size, feeder and branch circuit capacity, wire and conduit size, and voltage drops. Includes a comprehensive study of all chapters of the National Electrical Code with an emphasis placed on the preparation for taking the Utah State Journeyman Exam. Includes print reading and problem solving. Completers should be prepared to take the Utah Journeyman Exam, provided they have completed all State requirements.

EART 2450

Hydraulics and Pneumatics Fundamentals

2:2:0

On Sufficient Demand

This course addresses the fundamentals of hydraulic and pneumatic components and systems used in industrial applications. Focus is on pumps, motors, directional and flow control valves, cylinders, transmission, and fluids. Emphasizes maintenance, safety and environmental problems as well as troubleshooting techniques and blue print reading. Includes lectures, demonstrations and CD instructional material.

EART 245L

Hydraulics and Pneumatics Fundamentals Laboratory

1:0:3

On Sufficient Demand

• Corequisite(s): EART 2450
This course addresses the fundamentals of hydraulic and pneumatic components and systems used in industrial applications. Focus is on the use of pumps, motors, directional and flow control valves, cylinders, transmission, and fluids. Emphasis is on maintenance, safety and environmental problems, as well as troubleshooting techniques and blueprint reading.

EART 2750

Programmable Controllers

3:3:0

On Sufficient Demand

• Prerequisite(s): EART 1450 or equivalent
This course covers the theory, programming and industrial control system applications of small and medium sized programmable logic controllers (PLC's). Studies basic maintenance and troubleshooting techniques for programmable logic controllers. Includes lecture, demonstration, and print reading.

EART 275L

Programmable Controllers Laboratory

2:0:6

On Sufficient Demand

• Corequisite(s): EART 2750 or equivalent
This laboratory course addresses the "hands-on" aspects of programming and industrial control system applications of small- and medium-sized programmable logic controllers (PLC/s). Studies basic maintenance and troubleshooting techniques for programmable logic controllers. Course focus is on print reading and lab projects.

EART 281R

Cooperative Work Experience

1 to 8:0:5 to 40

Su, F, Sp

• Prerequisite(s): Approval of Department Chair
Provides paid on-the-job work experience that relates to Electrical Automation and Robotics Technology (EART) in the student's major. Work experience, the related class, and enrollment are coordinated by the EART Cooperative Coordinator. Completers must individually set and complete goals/learning objectives based on the job description from their work assignment.

EART 285R

Cooperative Correlated Class

1:1:0

Su, F, Sp

• Prerequisite(s): Approval of Department Chair
Designed to identify on-the-job problems and to remedy those problems through in-class discussion and study. Focuses on preparing for, participating in, and utilizing the experiences available from working in a cooperative education/internship program.

ECFS—EDUCATION, CHILD AND FAMILY STUDIES

ECFS 1400

SS

Marriage

3:3:0

Su, F, Sp

For single and married students interested in marriage dynamics. Examines courtship, marriage, communication within marriage, and expected values of spouses. Studies marital sexuality, causes of marital stability and instability. Uses class-selected personal topics as the foundation for group discussion. Includes guest speakers and small group interaction. Successful completers should have improved communication skills relating to marriage.

ECFS 208R

Directed Readings

1 to 4:0:3 to 12

Su, F, Sp

For second-year ECFS students. Includes readings with analysis and discussion of selected topics in child education and family relationships. Requires approval of the department for registration. May be taken for a maximum of four credits.