

# HEAVY EQUIPMENT TECHNICIAN (HTEC)

## HTEC 111 Introduction to Heavy Equipment Service Industry

(3 Credits, Fall)

Introduction to mobile off-road equipment terminology, design, and operation. Includes theory and application of shop safety, tool and equipment usage, precision measuring, and lifting/rigging. Also includes identification of careers within the industry, common workplace practices, and employable skills. PREREQ: Program orientation and successful completion of any one (1) general education course, or PERM/CHAIR. COREQ: HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 121 DC Circuits & Basic Electrical Systems

(3 Credits, Fall)

Introduction to electrical terminology, fundamental principles, and testing and servicing of heavy equipment electrical systems. Includes the use of a multimeter to test battery, starting, charging, and lighting circuits on equipment as well as reading and interpreting wiring schematics to aid in diagnosis. PREREQ: HTEC 111. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 131 Track Systems and Mechanical Repair

(3 Credits, Fall)

Terminology, fundamental operating principles, inspection, and basic service techniques associated with track and undercarriage systems. Includes theory and application of basic welding, oxyacetylene, and fabrication skills. Also includes safety related to maintenance and removal/installation of work equipment/attachments. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 141 Diesel Engine Theory of Operation and Repair

(3 Credits, Fall)

Diesel engine principles including lubrication, cooling, intake and exhaust, engine controls, and fuel systems. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 151 Preventive Maintenance

(3 Credits, Spring)

Vehicle and equipment maintenance, service procedures, and upon-arrival and pre-delivery inspection. Also includes air brake system theory of operation, inspection, and repair. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 161 HVAC System Service

(3 Credits, Spring)

Terminology, fundamental operating principles, and basic service techniques associated with mobile equipment HVAC systems. Includes HVAC controls and troubleshooting techniques performed on simulators and actual equipment. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 171 Fundamentals of Fluid Power

(3 Credits, Spring)

Terminology, fundamental principles, and basic service of mobile hydraulic systems. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 181 Principles of Electronically Managed Systems

(3 Credits, Spring)

Advanced theories, system testing, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 211 Gearing and Driveline Systems

(3 Credits, Summer)

Terminology, fundamental operating principles, and basic service techniques associated with heavy equipment powertrains. PREREQ: HTEC 111 and HTEC 121. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 220 Advanced Electrical Systems

(4 Credits, Fall)

Advanced theories, system testing, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 106, HTEC 120, HTEC 130, and HTEC 140. COREQ: HTEC 240 and HTEC 250. *(2 lecture hours, 6 lab hours, 4 credits)*

## HTEC 221 Mobile Equipment Hydraulic Systems

(3 Credits, Summer)

Advanced theories, system testing, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 111, HTEC 121, and HTEC 171. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 230 Advanced Engines/Engine Controls

(4 Credits, Spring)

Advanced system theory with diagnostic procedures on simulators and actual equipment. PREREQ: HTEC 110, HTEC 220, HTEC 240, HTEC 250, and completion of a GEM 1 (or GEM 2), GEM 3, and GEM 6 course. COREQ: HTEC 260 and HTEC 290. *(2 lecture hours, 6 lab hours, 4 credits)*

## HTEC 231 Transmissions

(3 Credits, Fall)

Advanced theories, component disassembly/inspection/reassembly, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 111, HTEC 121, HTEC 211, and HTEC 221. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 240 Advanced Powertrains

(4 Credits, Fall)

Advanced theories, component rebuild, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 120, HTEC 130, and HTEC 140. COREQ: HTEC 220 and HTEC 250. *(2 lecture hours, 6 lab hours, 4 credits)*

## HTEC 241 On-Board Vehicle Networks and Electronic Systems Troubleshooting

(3 Credits, Fall)

Advanced theories, system testing, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 111, HTEC 121, and HTEC 181. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 250 Advanced Hydraulic Systems

(4 Credits, Fall)

Advanced theories, system testing, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 120, HTEC 130, and HTEC 140. COREQ: HTEC 220 and HTEC 240. *(2 lecture hours, 6 lab hours, 4 credits)*

## HTEC 251 Engine Emissions and Fuel Systems

(3 Credits, Fall)

Advanced theories, component disassembly/inspection/reassembly, and troubleshooting on simulators and actual equipment. PREREQ: HTEC 111, HTEC 121, HTEC 131, HTEC 141, HTEC 151, HTEC 161, HTEC 171, HTEC 181, HTEC 211, and HTEC 221. *(1 lecture hours, 4 lab hours, 3 credits)*

## HTEC 260 Advanced Preventive Maintenance/HVAC

(4 Credits, Spring)

HVAC controls and troubleshooting techniques performed on simulators and actual equipment. PREREQ: HTEC 140, HTEC 220, HTEC 240, HTEC 250, and completion of a GEM 1 (or GEM 2), GEM 3, and GEM 6 course. COREQ: HTEC 230 and HTEC 290. *(2 lecture hours, 6 lab hours, 4 credits)*

**HTEC 261 Hydraulic System Service and Repair**

(3 Credits, Fall)

Advanced theories, component disassembly/inspection/reassembly, and troubleshooting on simulators and actual equipment. Includes excavator hydraulic controls, wheeled steering systems, and mobile hydraulic mechanic certification test preparation. PREREQ: HTEC 111, HTEC 121, HTEC 131, HTEC 141, HTEC 151, HTEC 161, HTEC 171, HTEC 181, HTEC 211, and HTEC 221. *(1 lecture hours, 4 lab hours, 3 credits)*

**HTEC 271 Industry Practicum**

(3 Credits, Fall)

Supervised application of coursework. Practicum projects will be assigned by the instructor and may take place within an industry or lab setting. PREREQ: HTEC 111 and HTEC 121. PRE/COREQ: HTEC 251 and HTEC 261. *(0 lecture hours, 9 lab hours, 3 credits)*

**HTEC 290 Heavy Equipment Technician Capstone**

(4 Credits, Spring)

Supervised application of coursework. Capstone projects will be assigned by instructor and may take place within an industry or lab setting. PREREQ: HTEC 220, HTEC 240, HTEC 250, and completion of a GEM 1 (or GEM 2), GEM 3, and GEM 6 course. COREQ: HTEC 230 and HTEC 260. *(0 lecture hours, 12 lab hours, 4 credits)*

*Refer to How to Read Course Descriptions for an explanation of elements found in the course descriptions above.*