



SCIENTIFIC INSTRUMENT TECHNICIAN

4339

GENERAL DESCRIPTION OF CLASS

The SCIENTIFIC INSTRUMENT TECHNICIAN diagnoses user requirements and equipment malfunctions, and designs, fabricates, modifies, calibrates, and maintains scientific instruments and systems and are experts on the design and maintenance of electronic equipment.

DISTINGUISHING FEATURES

This is a single classification and not currently part of a series of classes.

DUTIES AND RESPONSIBILITIES

The duties listed below are not inclusive but characteristic of the type and level of work associated with this class. Individual positions may perform all or some combination of the duties listed below as well as other related duties.

1. Design

Design original or replication instruments and systems. Draw schematic diagrams, parts layouts, parts lists, and other working drawings. Test equipment to evaluate its performance and make necessary adjustments.

2. Fabrication

Fabricate circuit boards, chassis, cabinets, specialized sensors, hydraulics, motors and other scientific instruments, from blueprints, rough sketches, and verbal instructions when vendor equipment is unavailable or requires modification. Draw schematic diagrams, parts layouts, parts lists, and other working drawings. Test equipment to evaluate its performance and make necessary adjustments.

3. Calibration and Maintenance

Diagnose malfunctioning equipment to identify problems. Calibrate, align, and repair scientific instruments and systems per manufacturer specifications. Complete preventative maintenance to reduce unscheduled repair request. Design circuits that modify instrumentation. Troubleshoot instrument operation, software and other computer-related problems. Remove and install instruments from service when a malfunction is detected.

Examples of these Instruments and systems are; breath-alcohol testing, weigh-in-motion, ice detection, falling weight syflectometer, flow pumps, noise dosimeters, air velocity meters, sound level meters, dynaflect, skid tester, video log, automatic vehicle identification, maze meter, UV and infrared spectrophotometer, gas chromatograph, photoelectron microscopes and robotics equipment. These systems contain microcomputer, data communications, and various types of specialized sensors, hydraulics, and motors.

Testify in court on the operation, repair, maintenance and calibration of scientific instruments and laboratory equipment.

4. Administration

Review forms and reports for consistency and accuracy. Testify in court on the operation, repair, maintenance and calibration of scientific instruments and laboratory equipment. Develop procedures, write documentation, and maintain records on repairs, calibration, and other work on equipment and instruments.

5. Consultation

Consult with and advise end users on the use of instruments and alternative systems. Confer with manufacturers about their equipment. Estimate job completion dates and cost. Advise and recommend which instruments to purchase.

6. Miscellaneous

Maintain a spare parts inventory including proper component substitutions. Initiate and approve purchase orders and contract release orders to order parts and supplies. Develop procedures, write documentation and maintain records on repairs, calibration and other work done on equipment and instruments. Maintain inventory stock and technical library of components used for repair and fabrication of instruments and equipment. Purchase parts and components needed for repair and fabrication.

RELATIONSHIPS WITH OTHERS

Employees in this class have daily contact with other departments and users of scientific equipment to complete assigned tasks. Employees have frequent contact with private contractors and manufacturers to discuss equipment operation and specifications.

SUPERVISION RECEIVED

Employees in this class receive general supervision from a supervisor or manager who reviews work through periodic meetings. Work is reviewed for conformance to agency policy, procedures, guidelines, state or federal statutes. Employees work independently, frequently at remote locations.

KNOWLEDGE AND SKILLS (KS)**Extensive knowledge of:**

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| Design principles and theories related to the maintenance and repair of electronic scientific equipment. |
| Calibration principles and testing procedures as related to electronic scientific equipment. |
| Principles of electronic circuits and their interaction as they relate to scientific equipment. |
| Electronic components, transistors, diodes, integrated circuits (both digital and analog), microprocessors and other scientific equipment. |
| The principles of optics, mechanics, hydraulics, and vacuum systems as they relate to scientific equipment. |
| Algebra, trigonometry, and metric conversion related to the operation of precision scientific equipment. |
| Measuring instruments and their tolerances. |
| Resources available to accomplish work such as equipment, materials, vendors, contractors. |

General knowledge of:

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| Electrical codes as related to scientific instruments and equipment. |
| Programmable Logic Control (PLC) as it relates to scientific instruments and equipment. |
| Transmission and communication system troubleshooting procedures. |
| Statistical procedures to calculate means and standard deviation. |

Skill to:

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| Motivate, develop and direct people as they work, identifying the best people for the task at hand. |
| Manage one's own time and the time of others. |
| Give guidance and direction to others including setting performance standards and monitoring outcomes. |
| Identify the developmental needs of others and coach or otherwise help others to improve their knowledge or skills. |
| Diagnose instrument requirements and problems. |
| Read blueprints, drawings, and mechanical and electrical diagrams. |
| Use hand and power tools and shop machinery. |
| Solder and wire wrap. |
| Fabricate circuit boards and scientific instruments and equipment. |
| Construct electronic, mechanical, and optical equipment and instruments. |
| Measure physical quantities, such as voltage, current, resistance, frequency, resonance amplification and inductance. |
| Evaluate new instruments to determine if they meet required specifications. |
| Do fine precision work and read scientific instruments. |
| Operate testing equipment related to scientific instruments. |
| Purchase parts and supplies. |
| Construct electronic, mechanical, and optical equipment and instruments. |
| Write procedures, proposals, and reports. |
| Read and understand technical manuals. |

NOTE: The KNOWLEDGE and SKILLS are required for initial consideration. Some duties performed by positions in this class may require different KS's. No attempt is made to describe every KS required for **all** positions in this class. Additional KS requirements will be explained on the recruiting announcement.

Adopted 4/90
 Revised 11/93; 10/2005
 STATE OF OREGON
 Dept. of Administrative Services
 Human Resource Services Division