

Electronics Technician

University of California, Los Angeles
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Class Specifications - G.40

Principal Electronics Technician - 8301
Senior Electronics Technician - 8302
Electronics Technician - 8303
Electronics Technician Trainee - 8304

SERIES CONCEPT

Electronics Technicians perform a variety of operations in connection with the design, development, evaluation, testing, installation and maintenance of electronic equipment and systems; and perform other related duties as required. These operations require a knowledge of the capabilities, limitations, design characteristics and functional use of a wide variety of electronic equipment and systems.

Incumbents typically design electronic equipment; fabricate electronic equipment and systems by wire wrapping boards and back panels, by mounting components and power supplies, and by constructing inter-connecting units; test and operate electronic equipment to establish permissible tolerances and parameters in its operation; debug prototype equipment and repair existing equipment by working from schematic drawings and using test equipment in locating and isolating malfunctions within the equipment; install and check out new equipment; maintain existing and prototype electronic systems and equipment; perform diagnostic tests on digital systems; and may get up programs using digital and analog equipment to perform experiments.

The series is characterized by a knowledge and understanding of mathematics, electronics and physics that is less than professional engineering knowledge, but which enables the technician to understand electronic devices. Electronics Technicians must apply this general knowledge, and in addition must transfer their experience and knowledge of electronic equipment from systems on which they have previously worked. Knowledge acquired is normally in the areas of digital techniques such as loading rules, speeds, noise problems and timing characteristics of commonly used integrated circuit families; and/or analog techniques such as elimination of interference and distortion, modulation and demodulation of waveforms, and amplification of electrical currents and voltages by recognizing source and load impedance as well as basic limitations of amplifiers. Levels of difficulty within the series are based on such factors as the nature and complexity of work performed, the complexity of equipment involved, and the degree of technical responsibility exercised.

CLASS CONCEPTS

Principal Electronics Technician

Under general supervision, incumbents design electronic equipment under the guidance of engineers or other scientific professionals using reference material from manufacturers' catalogs and trade

publications. Incumbents also perform construction, assembly, installation, maintenance, documentation, or instrumentation of complex electronic equipment; and may serve as working leaders of small groups performing fabrication, assembly, and installation of complex electronic equipment.

Principal Electronics Technicians typically design, construct, and test experimental electronic devices and circuits, or advise on modifications or new devices; advise on feasibility of electronic solutions; maintain, troubleshoot, and install electronic systems or sub-systems; analyze technical data to determine applicability to design problems; supply technical advice on the types, techniques and proper electronic instruments for each experiment; integrate circuits or units and package prototype models into operational form; conduct and supervise the collection and interpretation of data; may serve as working leaders in scheduling and assigning work to other electronics technicians and personnel performing related work; and assist students and faculty in solving electronic problems.

Principal Electronics Technicians are distinguished from Senior Electronics Technicians in that incumbents perform design and development work on units of a system requiring (a) some adapting of existing precedents or techniques, and (b) exercising originality based on an understanding of the interaction of various subunits in adapting equipment to perform new or different functions to meet objectives; and/or maintain large scale prototype electronic systems which, due to density of circuitry, miniature size, or lack of documentation, are most difficult to maintain. Incumbents work with a high degree of independence and are responsible for the technical quality and accuracy of their work.

Senior Electronics Technician

Under supervision, incumbents fabricate, assemble and install electronic components and assemblies following prints, diagrams, rough sketches or verbal instructions; devise methods by which mounting and wiring insures that possible sources of electrical interference are physically isolated, that length of leads are kept at a minimum to reduce the possibility of a regenerative feedback, and that circuit components are securely mounted to avoid malfunctioning under anticipated conditions of temperature, shock and vibration; perform routine and preventive maintenance and troubleshooting on major electronic equipment associated with a complex electronic system using test equipment and schematic drawings; fabricate delicate or intricate parts using machine tools to moderately close tolerances; and must possess the ability to follow schematic drawings and be able to break the schematic into block diagram form.

Senior Electronics Technicians are distinguished from Electronics Technicians in that incumbents typically debug or troubleshoot parts of an electronic system. In addition, they perform construction, maintenance and testing with a greater degree of independence from technical supervision than do Electronics Technicians performing routine construction, maintenance and bench repair work. Incumbents plan their work and assure that it meets established technical requirements usually laid down in manufacturers' handbooks.

Electronics Technician

Under supervision, incumbents follow detailed prints or diagrams in fabricating, assembling and wiring power panels, chassis, printed circuit boards and back panels involving the mounting of transformers, switches, resistors, capacitors, integrated circuits, and other parts; fabricate and install special cables; use metal-working and wood-working hand tools in connection with fabrication and assembly of parts; perform routine maintenance of electronic equipment using established procedures; use complex test equipment; lay out printed circuit boards and provide adequate mechanical mounting; make calculations to determine the value of basic components; and may perform scheduled preventive maintenance or

regular periodic calibration to insure that instruments and systems perform within their design specifications.

Electronics Technicians commonly rely on precedent type or parallel methods that can be extended or modified in completing the design concept of the engineer. They may, following precedents, integrate equipment into complete systems, and make modifications to permit such integration, but are not expected to have the electronic knowledge and experience to plan and carry out a non-standardized integration independently.

Electronics Technician Trainee

Under close supervision and with work assignments checked while in process, incumbents perform increasingly more difficulty tasks leading to the development of Technician level skills. Guidelines include detailed procedures, blueprints, sketches, schematics, or verbal instructions. Incumbents lay out, fabricate, assemble, and install electrical, electronic and/or mechanical parts, products, or component assemblies to systems or units; perform routine diagnosis and troubleshooting to determine cause and remedy for malfunctions of equipment; conduct simple tensile, hardness, or other routine experimental tests; maintain and record test data, calculations, drawings, curves and graphs; and assist in general laboratory work.

MINIMUM QUALIFICATIONS

Incumbents of positions included in the Electronics Technician series are expected to have the ability to perform basic technical tasks in research, troubleshooting, or electronic circuitry construction, to follow oral instructions, and to possess the skills, knowledges, and abilities essential to the successful performance of the duties assigned to the position.

Note: Specific minimum qualification requirements are defined for positions by the appropriate user departments with the assistance of the Personnel Manager.