

## (SCIENTIFIC) ELECTRONICS TECHNICIAN SERIES

<u>Code No.</u>	<u>Class Title</u>	<u>Occ. Area</u>	<u>Work Area</u>	<u>Prob. Period</u>	<u>Effective Date</u>
3964	Electronics Technician I	02	029	6 mo.	11/14/00
3965	Electronics Technician II	02	029	6 mo.	11/14/00
0215	Electronics Engineering Assistant	02	029	6 mo.	11/14/00
1356	Electronics Engineer	02	029	6 mo.	11/14/00

### *Promotional Line: 12*

#### Series Narrative

Employees in this series perform duties involved in the planning, design, development, construction, testing, modification, repair, and/or maintenance of electronics circuits or equipment that is used in scientific research or instruction.

#### DESCRIPTIONS OF LEVELS OF WORK

##### Level I: Electronics Technician I

**3964**

Employees at this level perform, with a moderate degree of skill, construction and maintenance of electronics equipment used in scientific research or instruction. They work under direct supervision from a designated supervisor and/or from members of the research staff.

An Electronics Technician I typically –

1. performs, with a moderate degree of skill, mechanical and electrical layout, construction, modification, testing, adjustment, calibration. and routine preventive maintenance of simple and complex electronics equipment used in scientific research or instruction
2. with technical assistance, performs troubleshooting and repair of simple and complex electronics equipment
3. prepares schematic and wiring diagrams of simple equipment
4. in connection with other duties as required, operates simple machine tools and common electronics instruments and performs skilled soldering
5. supervises others as assigned
6. performs other related duties as assigned

**Level II: Electronics Technician II****3965**

Employees at this level perform, with a high degree of skill, maintenance and construction of complex electronics equipment used in scientific research or instruction. They work under general supervision from a designated supervisor and/or from members of the research staff.

An Electronics Technician II typically –

1. performs, with a high degree of skill, mechanical and electrical layout, construction, modification, testing, adjustment, calibration, and preventive maintenance of simple and complex electronics equipment for use in scientific research or instruction
2. independently and with a high degree of skill, performs troubleshooting of simple and complex electronics equipment, covering the most complex types of equipment (such as sampling oscilloscopes, multi-channel pulse-height analyzers, nanosecond amplifiers, precision feedback electrometers, and digital circuits)
3. originates, modifies, assembles, and maintains complex schematic and wiring diagrams
4. designs relatively simple a.c. and d.c. circuits (such as power supplies and small modifications of standard circuits)
5. trains employees of lower rank and instructs research program employees in the use of equipment
6. supervises other employees or an electronics shop
7. in connection with other duties as required, operates simple machine tools and common electronics instruments and performs skilled soldering
8. performs other related duties as assigned

**Level III: Electronics Engineering Assistant****0215**

Employees at this level perform engineering and research functions requiring a high degree of skill in the planning, design, development, and construction of complex electronics equipment. They work under general supervision from a research director and/or designated staff member(s).

An Electronics Engineering Assistant typically –

1. considers electronics problems to be solved and potential solutions to those problems
2. consults with research staff on details of electron and semiconductor device design, fabrication, and testing techniques
3. designs circuits, devices, and layouts of specialized electronics equipment
4. plans, constructs, installs, adjusts, calibrates, repairs, and modifies complex specialized electronics equipment

5. tests equipment, including tests under extreme conditions; evaluates data obtained and prepares technical reports
6. maintains familiarity with technical data on the latest electronics materials, practices, components, and equipment
7. studies properties of specialized components and selects components required
8. performs other related duties as assigned

**Level IV: Electronics Engineer****1356**

Employees at this level plan, develop, and test new types of electronics circuits of advanced design for use in nuclear physics or other specialized fields. They work under administrative supervision from academic staff members.

An Electronics Engineer typically –

1. suggests and develops new or improved circuit designs required in instrumentation for research
2. is in charge of the electronics shop
3. supervises circuit development and construction work by electronics technicians
4. instructs electronics technicians in circuit design and use of specialized electronics instruments
5. consults with senior staff on design of equipment for use in their research problems
6. is responsible for maintenance and repair by the electronics shop of electronics circuits and equipment used in research
7. performs other related duties as assigned

**MINIMUM ACCEPTABLE QUALIFICATIONS REQUIRED FOR ENTRY INTO:****Level I: Electronics Technician I****3964**

CREDENTIALS TO BE VERIFIED BY PLACEMENT OFFICER

1. High school graduation or equivalent
2. (A) One year of full-time-equivalent, on-site electronics training in a technical institute

OR

- (B) One year of college with a minimum of 12 semester hours in mathematics, chemistry, physics, or engineering

OR

- (C) Two years of verifiable full time equivalent paid employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment or electronics instrumentation

**PERSONAL ATTRIBUTES NEEDED TO UNDERTAKE JOB**

1. Knowledge of elementary electricity, including concepts of voltage, current, resistance, power, Ohm's Law, and common electrical units
2. Knowledge of simple alternating-current phenomena including a.c impedance and resonance
3. Knowledge of the properties and uses of electronics components, including resistors, capacitors, inductances, transformers, vacuum tubes, and transistors
4. Ability to do neat and accurate construction of electronics equipment
5. Ability to operate simple machine tools and common electronics instruments and to perform skilled soldering
6. Manual dexterity

**Level II: Electronics Technician II**

**3965**

**CREDENTIALS TO BE VERIFIED BY PLACEMENT OFFICER**

1. High school graduation or equivalent
2. (A) Bachelor's degree in physics, electrical engineering, or computer engineering

OR

- (B) Two years of college with a minimum of 12 semester hours in mathematics, chemistry, physics, or engineering and one year of verifiable full-time-equivalent paid employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment, or electronics instrumentation

OR

- (C) Five years of verifiable full-time-equivalent employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment, or electronics instrumentation

**PERSONAL ATTRIBUTES NEEDED TO UNDERTAKE JOB**

1. Thorough understanding of and competence in the use of electronics instruments
2. Knowledge of elementary electricity, including concepts of voltage, current, resistance, power, ohm's Law, and common electrical units
3. Knowledge of simple alternating-current phenomena, including a.c. impedance and resonance
4. Knowledge of the properties and uses of electronics components, including resistors, capacitors, inductances, transformers, vacuum tubes, and transistors
5. Ability to do neat and accurate construction of electronics equipment
6. Ability to operate standard machine tools (such as drill press, punch press. and lathe) and to perform skilled soldering
7. Ability to troubleshoot and maintain complex electronics equipment
8. Manual dexterity

**Level III: Electronics Engineering Assistant****0215****CREDENTIALS TO BE VERIFIED BY PLACEMENT OFFICER**

1. High school graduation or equivalent
2. (A) Bachelor's degree in physics, electrical engineering, or computer engineering AND one year of verifiable full-time-equivalent employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment, or electronics instrumentation

OR

- (B) Two years of college with a minimum of 12 semester hours in mathematics, chemistry, physics, or engineering and four years of verifiable full-time-equivalent paid employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment, or electronics instrumentation

OR

- (C) Seven years of verifiable full time equivalent paid employment performing electronics work in the maintenance or construction of technical or scientific electronics equipment or in troubleshooting and repair of radio/television equipment, computer equipment, or electronics instrumentation

PERSONAL ATTRIBUTES NEEDED TO UNDERTAKE JOB

- 1. Thorough understanding of and competence in the use of electronics instruments
- 2. Knowledge of the behavior of d.c. and low and high frequency a.c. circuits, including familiarity with units, circuit theory, and the use of equivalent circuits
- 3. Knowledge of the properties and uses of electronics components, including resistors, capacitors, inductances, transformers, vacuum tubes, and transistors
- 4. Ability to design common types of electronics circuits
- 5. Ability to construct, test, and service complex electronics equipment

**Level IV: Electronics Engineer**

**1356**

CREDENTIALS TO BE VERIFIED BY PLACEMENT OFFICER

- 1. Bachelor's degree in physics, electrical engineering, or computer engineering
- 2. Three years of experience in actual design and construction of electronics equipment (such as radio, radar, and scientific instrumentation)

PERSONAL ATTRIBUTES NEEDED TO UNDERTAKE JOB

- 1. Thorough understanding of and competence in the use of electronics instruments
- 2. Administrative ability

Electronics Technician I.....	Revised
Electronics Technician II.....	Revised
Electronics Engineering Assistant.....	Revised
Electronics Engineer .....	Revised