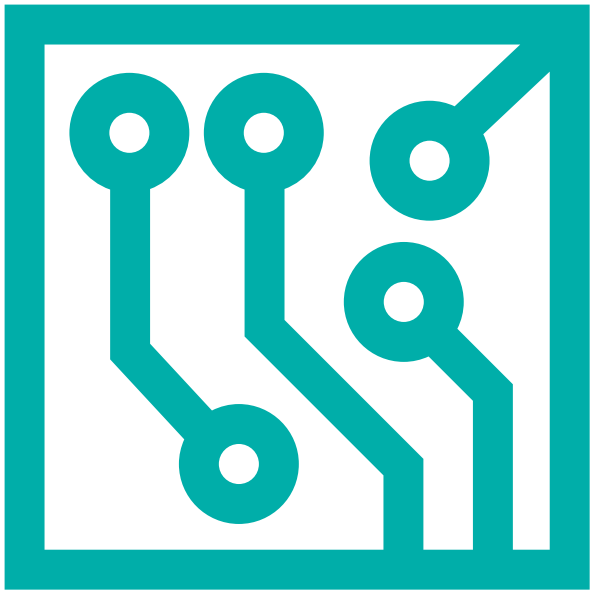
NOCTI

Teacher Credential Blueprint



Electronics Technology

Code: 5947 / Version: 01

Original Release: 2018. Content Review: 2026. All Rights Reserved.

General Assessment Information

Blueprint Contents

General Assessment Information
Written Assessment Information
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Test Type: The Electronics Technology assessment is included in NOCTI's Teacher assessment battery. Teacher assessments measure an individual's technical knowledge and skills in a proctored proficiency examination format. These assessments are used in a large number of states as part of the teacher licensing and/or certification process, assessing competency in all aspects of a particular industry. NOCTI Teacher tests typically offer both a written and performance component that must be administered at a NOCTI-approved Area Test Center. Teacher assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of New Jersey, North Carolina, Ohio, and Pennsylvania.

Content Review: A content review is an independent, comprehensive review by Subject Matter Experts to evaluate content accuracy, the currency of technical material, and relevance to current industry practices.

CIP Code

15.0303- Electrical, Electronic and Communications Engineering Technology/Technician

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Career Cluster 15- Science, Technology, Engineering, and Mathematics

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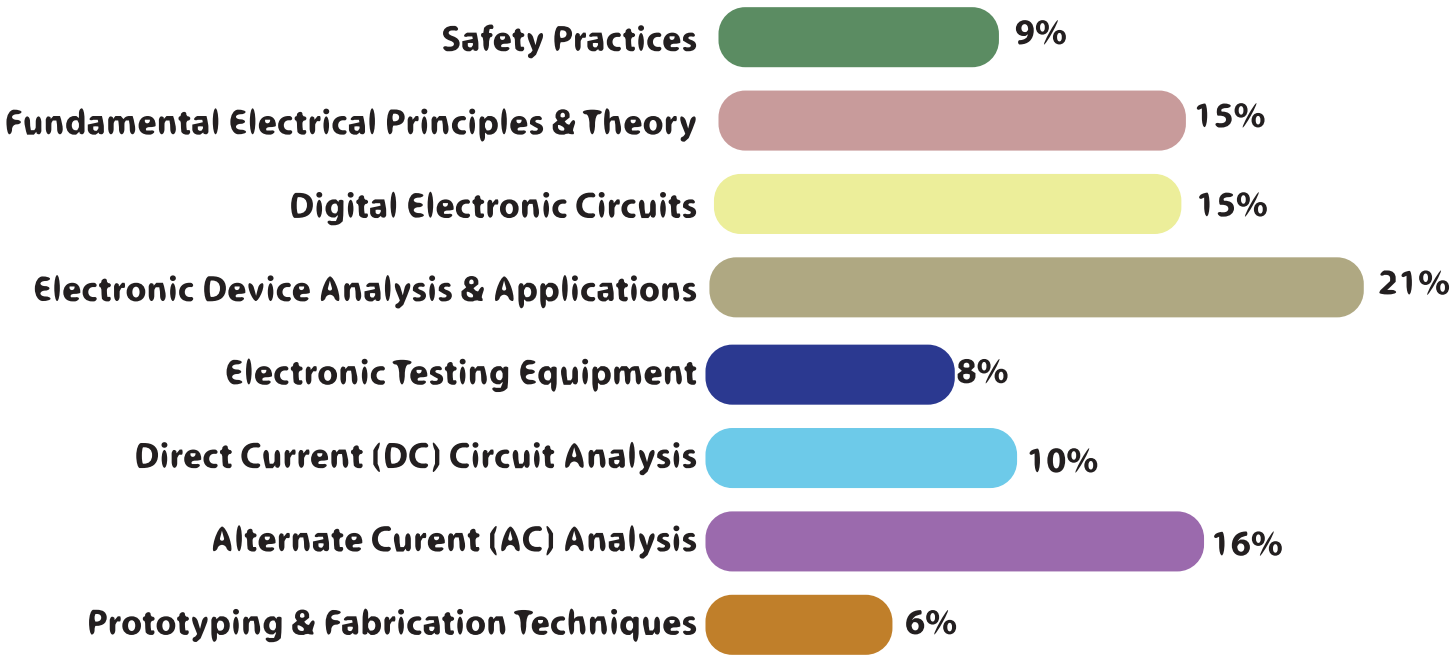
17-3023.01- Electronics Engineering Technicians

Written Assessment

NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours
Number of Questions: 175
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Safety Practices

- Demonstrate safe working procedures
- Explain the purpose of OSHA and how it promotes safety on the job
- Identify electrical hazards and how to avoid or minimize them in the workplace
- Explain safety issues concerning lockout/tagout procedures
- Safely discharge electronic equipment

Fundamental Electrical Principles and Theory

- Explain basic electrical theory, including Ohm's Law, Watt's Law, Kirchhoff's Law
- Describe magnetism and electromagnetism
- Identify schematic symbols
- Identify sources of electricity, including renewable sources
- Interpret component values
- Describe conductors, resistors, insulators, and semiconductors
- Apply proper engineering notations; SI and metric prefixes

Digital Electronic Circuits

- Identify and compare digital to analog signals and circuits
- Demonstrate knowledge of different number systems
- Convert between different number systems
- Demonstrate knowledge of fundamental logic gates and functions
- Demonstrate knowledge of Boolean logic
- Demonstrate knowledge of sequential logic (flip flops)
- Demonstrate knowledge of digital circuitry



(Continued on the following page)

Specific Standards and Competencies Included in this Assessment (continued)

Electronic Device Analysis and Applications

- Identify diodes, rectifiers, and power supply circuits
- Identify bipolar transistors and bipolar transistor circuits
- Demonstrate knowledge of Field Effect Transistors (FETs) and FET circuits
- Demonstrate knowledge of thyristors and control circuits
- Identify optoelectronic devices and light functions
- Identify Op-Amps, principles, and applications
- Describe circuit protection methods including Electromagnetic Interference (EMI)
- Interpret a manufacturer's data sheet

Electronic Testing Equipment

- Identify, select, and demonstrate proper hand tool use
- Display knowledge and proper use of multimeters
- Display knowledge and proper use of oscilloscopes
- Display knowledge and proper use of function generators, frequency counters, and testers

Direct Current (DC) Circuit Analysis

- Analyze and troubleshoot DC series circuits
- Analyze and troubleshoot DC parallel circuits
- Demonstrate knowledge of inductors and capacitors in DC circuits
- Analyze and troubleshoot DC combination circuits

Alternating Current (AC) Analysis

- Analyze AC circuits and waveforms
- Troubleshoot an AC circuit
- Demonstrate knowledge of inductance, capacitance, and resonance
- Identify, analyze, and troubleshoot filter circuits
- Explain current and voltage phase relationships
- Describe the operation of transformers, including troubleshooting

Prototyping and Fabrication Techniques

- Layout components on a printed circuit board according to a schematic
- Demonstrate knowledge of proper soldering and de-soldering techniques
- Repair or replace a component or foil on a printed circuit board

Sample Questions

Information regarding toxicity of chemical or environmental hazards of electronic components may be found

A. in a textbook
B. posted on Craigslist©
C. published in the SDS
D. on standard manufacturer labels

Impedance is measured in

A. farads
B. joules
C. henries
D. ohms

The binary numbering system is base

A two
B. four
C. eight
D. ten

What does an FET do?

A. makes the silicon on PCBs
B. amplifies weak signals
C. maintains a stable voltage
D. works in parallel with a capacitor

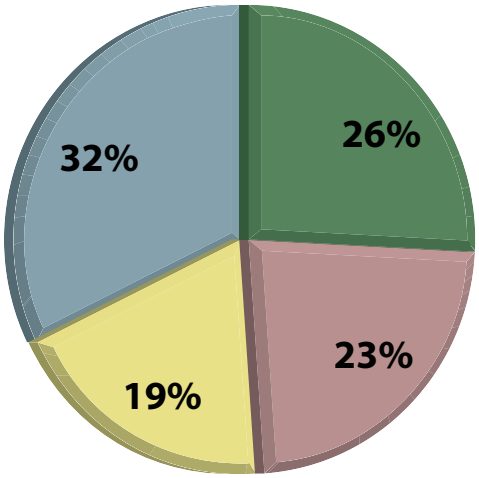
Which meter is always wired in series?

A. ohmmeter
B. ammeter
C. wattmeter
D. voltmeter

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 2 hours and 55 minutes
Number of Jobs: 4



Areas Covered:

26% Soldering and De-Soldering
Participant will select components, solder and de-solder using appropriate tools, and adhere to safety procedures.

23% Power Supply Construction and Circuit Analysis
Participant will select components, use tools and equipment correctly following safety procedures, construct circuit with correct measurements, install capacitors, and measure voltages.

19% Operational Amplifier Construction and Analysis
Participant will select correct components, use tools and equipment properly following safety procedures, measure output voltage, display input versus output, and calculate and measure gain.

32% Design and Build a Combinational Logic Circuit
Participant will develop and simplify a Boolean expression, draw the gate logic diagram, and build and test the circuit.

Sample Job

Power Supply Construction and Circuit Analysis

Maximum Time: 45 minutes

Participant Activity: The participant will refer to the diagram provided and build the circuit, choose proper components from the selection given, measure and record the full RMS Secondary Voltage, measure the DC voltage and record the correct polarity from X to the ground and from Y to the ground.

