Contest Description
Electronics
Post-Secondary

DATE	LOCATION
April 11, 2025	NSCC Sydney Waterfront Campus

1. Schedule

Time	Task
8:30 am	Orientation
9:00 am - 11:15 am	Fabrication & Troubleshooting
11:15 am – 12:00 pm	Lunch (provided)
12:00 pm – 1:00 pm	Equipment Use and Bode Plot
1:15 pm – 2:15 pm	Reverse Engineering to Schematic
2:30 pm – 3:45 pm	Microcontroller Project

2. Purpose of the Contest

Demonstrate technical knowledge of electronic engineering, evaluate each competitor's skills and to recognize outstanding students for excellence and professionalism in the field of Electronics Technology.

3. Criteria

The contest will cover applying theoretical knowledge to the practical aspects of current state of the art electronic industry standards.

4. Number of Stations / Allocations

There are 10 stations available.

5. Skills & Knowledge to be Tested

- Interpret electronic schematic diagrams, pictorials, manufacturers, technical specifications and suppliers' catalogues;
- Identify common electrical and electronic components;
- Construct, analyze and troubleshoot circuits including series resistance, parallel resistance, series-parallel resistance and solid state switching circuits;
- Construct, analyze and graph output (Bode Plot) of AC circuits including capacitive, inductive and complex RLC circuits;
- Construct, analyze and troubleshoot analog circuits including discrete amplifiers, operational amplifiers and comparator circuits;

- Hand solder through-hole and surface-mount components on a printed circuit board to acceptable industry standards using an iron or hot air;
- Hand de-solder through-hole and surface-mount components on a printed circuit board;
- Set-up and demonstrate use of common electronic measuring equipment including multimeters, power supplies, frequency generator and oscilloscope;
- Prototype circuits using Arduino microcontrollers and the C++ programming language;
- Troubleshoot simple electronic circuits having a pre-installed fault;
- Reverse engineer an electronic circuit to a schematic.

6. Prerequisites

Contest-Specific Prerequisites

- Second year student maintaining good standing and enrolled in a post-secondary electronics program. Consideration will be given to first year students with approval of their instructor and space considerations;
- Competitors are to be dressed in a clean and safe manner. They should not wear jewelry on hands or wrists;
- All safe shop practices must be followed.

SCNS Prerequisites

- Be enrolled in a community college, university, private school OR be a registered apprentice with the Department of Labour and Advanced Education (Apprenticeship Agency);
- Be registered as a competitor with Skills Canada – Nova Scotia;
- The competitor cannot be a certified journeyperson;
- Possess Canadian citizenship, Permanent Resident (Landed Immigrant) status, Protected Person status, or International Student status and be a resident of Nova Scotia. Competitors are responsible for verifying this information if requested;
- Have been earning post-secondary credits in a sector relevant to the one in which they wish to compete (i.e. to compete in carpentry, the student would be earning credits in any construction-related trade) at any time during the academic school year (September to June);
- All competitors must be able to show either current apprenticeship status and/or proof of enrollment in a post-secondary institution upon request of the Provincial Technical Committee (PTC) or Skills Canada – Nova Scotia.
- Have completed and submitted a signed release form

7. Equipment & Clothing

a) What Will Be Supplied

Bench Equipment:

- Minimum 100MHz, 2 channel Oscilloscope and 10X probes;
- Function Generator;
- Dual Power Supply 0 to +/- 15 Volts @ 1 amp minimum;
- Digital Multimeter;
- Project supplies, components and documentation specific to the competition;
- Soldering station with attachments;
- "Third Hand."

Note: competitors may choose to supply and use their own equipment in place of that provided by the campus as long as this does not result in an unfair advantage over others (as determined by the judges).

b) What Competitors Must Supply

- Safety glasses with side shields or goggles;
- Long nose pliers;
- Side cutters;
- Wire stripper;
- ESD strap;
- Screwdrivers;
- Magnifying glass (if desired);
- Pens, pencils, eraser, ruler;
- 2 breadboards, minimum size each, 2"x 6" (wire will be supplied);
- Calculator - programmable calculators may be reset if judges feel that a competitor has an unfair advantage over others.

8. Evaluation & Judging Criteria

Task	Value
Fabrication & Troubleshooting	40%
Equipment Use and Bode Plot	20%
Reverse Engineering to Schematic	20%
Microcontroller Project	20%

NO TIES ARE PERMITTED. In the event of a final evaluation showing a difference of less than 2%, the placement will be determined by the mark achieved on the following project sections:

- First determinant – component recognition/soldering/troubleshooting;
- Second determinant - reverse engineering.

9. Additional Information

- Safety glasses with side shields or goggles must be worn when anyone enters the EETN shop environment. Failure to comply with this regulation may result in disqualification from the competition at the discretion of the judges;
- It is the responsibility of each competitor to supply the aforementioned tools and supplies. Failure to supply the required tools and supplies may result in competitor not being allowed to participate;
- Competition documents will be available to the competitor only at the time of competition;

10. PTC Contact Information

Name	Employer	Email
Frederick Boutilier	NSCC SWC	Frederick.Boutilier@nscc.ca
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