

Massachusetts CTE Teacher Testing Program

Advanced Manufacturing Technology Content Outline

Written and Performance Exam General Overview

- The intent of this exam is to assess the candidate’s ability to teach the skills found in the Massachusetts Technical Education Framework.
- The written exam is a state-developed exam aligned to the frameworks which can be accessed [here](#). The performance exam is a NOCTI-developed teacher test and has been determined by DESE to align to the state frameworks.
- Many questions and tasks require a synthesis of knowledge based on experience in the field and may not be found in any book.
- Use this exam outline and the Massachusetts Technical Education Framework to focus your preparation for the exams.
- Candidates are encouraged to prepare for their written exam by reviewing textbooks and reference material which have been listed as part of this exam outline. These resources can be found using online search tools, online vendors, and websites.

Written Exam

- Number of Questions: 100
- Administration Time: 3 hours
- Passing Score: 70.0%
- Administration Method: Remote Proctoring Online Testing Session

Written Exam Content Coverage

7%	<i>Health and Safety</i>
5%	<i>Quality Control</i>
5%	<i>Material Sciences</i>
3%	<i>Blueprints</i>
5%	<i>Machining Operations</i>
5%	<i>Power Saw, Finishing, and Grinding Processes</i>
10%	<i>Lathe Processes</i>
5%	<i>Milling Processes</i>
5%	<i>CAD</i>

35% ***CNC Programming and Operations***

5% ***Advanced Manufacturing (Robotics)***

10% ***Machine Tool Technology-Related Mathematics***

Written Exam Reference Materials (Reference Current Edition)

- **Machinery's Handbook** (Industrial Press)
- **Technology of Machine Tools** by J.E. St. Amand, S.F. Krar, and J.W. Oswald (McGraw-Hill)
- **Blueprint Reading for Machine Trades** by David Taylor (Delmar Publishers)
- **Familiar Problems in Mechanical Drawing** by T.E. French and C.L. Svenson (McGraw-Hill)
- **Trigonometry Tables and Handy References for Engineers**
(https://www.carrlane.com/Portals/0/PDFs/Trig_Book_Revised_20150204_forweb.pdf)
- **CNC Training Mill Program** by HAAS Automation

Materials Needed for the Written Exam

- A four-function calculator is included in the online testing system. No other calculators are permitted.
- Scrap paper and pencil/pen are permitted.

Written Exam Sample Items

Each question on the exam consists of one incomplete sentence or question followed by four choices. Some items reference an image or diagram. A few sample items are included below; the correct answer is designated with an asterisk (*).

If a person comes in contact with a live electrical wire, the first thing to do is to:

- immediately separate the person from the wire.
- shut off the power source. (*)
- cover person with fire blanket.
- go for help.

The included angle of an Unified National Form threading tool is:

- $14 \frac{1}{2}^\circ$
- 30°
- 59°
- 60° (*)

NOCTI Performance Exam

- Administration Time: 3 hours
- NOCTI Criterion-Referenced Cut Score/Passing Score: 92.5%
- Administration Method: Onsite at a DESE approved Massachusetts Area Testing Center (MATC) location. Candidates must register and schedule their exam session through NOCTI.

Performance Exam Content Coverage

50% Milling Operations

Participants will safely operate the mill with correct measurements for quality work and clean up and take care of the tools and equipment.

50% Lathe Operations

Participants will safely operate the lathe with correct measurements for quality work, and clean up and take care of the tools and equipment.

Performance Exam Requirements

Candidate Supplied

Candidates must bring all appropriate Personal Protective Equipment (PPE), attire/uniform, and any other safety items routinely expected to be used by an employee in the related industry. If the candidate does not bring what is needed to safely complete all jobs on the exam as required in the workplace, the testing session will need to be rescheduled at the candidate's expense.

Site Supplied

Additional equipment and supplies needed to complete the jobs on the performance test will be provided by the testing site.

Performance Exam Site Requirements

Testing sites may have individual requirements based on location and any relevant and current guidance from the Center for Disease Control and Prevention (CDC).