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%
- Administration Method: Remote Proctored Online Testing Session

Written Exam Content Coverage

15%   *Fundamentals of Computer Information Technology*
- Explain the role of information technology in the workplace and community.
- Explain concepts fundamental to security.
- Demonstrate concepts fundamental to graphic tools.
- Explain concepts fundamental to networking.
- Explain concepts fundamental to operating systems.
- Explain concepts fundamental to databases.
- Describe and classify computer hardware.
- Explain concepts fundamental to server-side technologies.

26%   *Elements of Software Development*
- Demonstrate problem solving and troubleshooting techniques.
- Determine software requirements.
- Create software design.
- Demonstrate software implementation.
- Perform software testing.
- Create user software documentation.
- Publish and maintain software.

22%   ***Programming Concepts***
- Implement concepts fundamental to programming.
- Demonstrate fundamentals of Object Orientated (OO) Programming.

30%   ***Web Development Concepts***
- Demonstrate fundamentals of Hypertext Markup Language (HTML).
- Demonstrate fundamentals of cascading style sheets (CSS)
- Demonstrate fundamentals of JavaScript
- PMC
- Construct a website

5%   ***Programming Math Concepts***

2%   ***Safety and Health***

Written Exam Reference Materials (Reference Current Edition)

- **Instructors and Their Jobs** by W.R. Miller and M.F. Miller (American Technical Publishers)
- **Improving Student Learning** by Lee Jenkins (ASQC Quality Press)
- **Teaching Your Occupation to Others** by Paul A. Bott, Allyn and Bacon (Pearson College Division)
- **Learning to Program with Alice** by Wanda Dann, Stephen Cooper & Randy Pausch (Pearson Prentice Hall)
- **Programming Logic & Design** by Tony Gaddis (Addison-Wesley)
- **Computer Concepts 2010** by June Jamrich Parsons, Dan Oja, David W. Beskeen, Carol M. Cram, and Jennifer Duffy (Cengage Learning)
- **Object Oriented Systems** Design by Edward Yourdon (Yourdon Press)
- **Software Engineering: A Practitioner's Approach** by Roger S. Pressman (McGraw-Hill)
- **Information Architecture for the World Wide Web** by Peter Morville and Louis Rosenfeld (O'Reilly)
- **Programming PHP** by Rasmus Lerdorf and Kevin Tatroe (O'Reilly Media)
- **Python Programming for the Absolute Beginner** by Michael Dawson (Course Technology Cengage Learning)
- **HTML, XHTML, and XML** by Patrick Carey (Course Technology Cengage Learning)
- **Information Technology Project Management** by Kathy Schwalbe (Thomson Course Technology)
- **Project Management: A Systems Approach to Planning, Scheduling, and Controlling** by Harold Kerzner (Wiley)
- **HTML, JavaScript, and Advanced Internet Technologies Basics** by Karl Barksdale and E. Shane Turner (Cengage Learning)
- **The Media of Mass Communication** by John Vivian (Pearson)
- **JavaScript** by Patrick Carey and Frank Canovatchel (Thomson Course Technology)
- **Succeeding with Technology Computer System Concepts for Real Life** by Ken Baldauf and Ralph M. Stair, (Thomson)
- **Introduction to Computing and Programming in Python A Multimedia Approach** by Mark Guzdial, Pearson College Division
- **Beginning Java Game Programming** by Jonathan S. Harbour (Thomson Course Technology)

- **Head First C#** by Andrew Stellman and Jennifer Greene (O'Reilly Media)
- **Learning Computer Programming: It's Not About Languages** by Mary E. Farrell (Charles River Media, Inc.)

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 (*).

When is a fire watch needed?

In computer programming, an array is a(n):

a.   area of storage on a disk.
b.   group of files.
c.   block of memory locations allocated of different data types under one name.
d.   a block of memory locations allocated of the same data type under one name. (*)

Applying a style sheet to your Web page or pages is accomplished by adding a _____ tag to the head section of your HTML file.

a.   <connect>
b.   <apply>
c.   <link> (*)
d.   <new>

Performance Exam

- Administration Time: 4 hours
- NOCTI Criterion-Referenced Cut Score/Passing Score: 70%
- 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

64% **Programming and Logic Development**
The candidate will develop an interactive program and develop a program that applies the use of sequential files.

36% **Web Page Development**
The candidate will demonstrate the fundamentals of Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript to create a web site.

Performance Exam Requirements

Candidate Supplied

Candidates must bring all appropriate Personal Protective Equipment (PPE), attire/uniform, and any other safety items as is 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 job on the performance test will be provided by the testing site. Test takers will have internet access as a resource but cannot copy/paste previously written or AI-generated code.

The following software applications may be provided for use; no other software development environments are permitted.

- Visual Studio 2017 or higher
- Google Chrome or equivalent browser
- Eclipse IDE with Java SE installed or equivalent
- Visual Studio Code or equivalent
- Adobe Dreamweaver or equivalent

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).