

Massive Open Online Courses

Cheap, Convenient Classes to Gain the Skills You Need

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The U.S. Army Test and Evaluation Command (ATEC) Headquarters G1 (HQ G1) instituted an Educational Partnership Cadre back in August 2020. The cadre is broken down into smaller working groups, one of which focuses on certifications/courses to assist the workforce with upskilling or reskilling.

ATEC HQ G1 is excited to share research the Certifications/Courses working group conducted on Massive Open Online Courses (MOOCs) to help start to address gaps in Artificial Intelligence, Data Science, MATLAB, Neural Networks, and Python.

You may be asking, what are MOOCs? Essentially, MOOCs are free online courses from renowned universities and institutes in the world (e.g. Harvard University, IBM, MIT, etc...). The best part is you can take courses on your own schedule – anytime, anywhere! For a fee, you can obtain a Certificate of Achievement (if desired).

This is the first MOOC series to share resources available to our workforce and focuses on Edx.org. Additional sites will be shared in future articles.

The below table provides courses researched to date and outlines the website link, name of course, skill gap addressed,

length of time to complete, cost (which is free, unless an employee wants a Certificate of Achievement*), delivery method, product assessment, and notes to illustrate what you will learn.

*Some certifications may qualify for funding. Employee Career Programs may provide funding for courses related to their position. Apply through [ArmyIgnitED](#). Additionally, your command may approve funding for certifications through the SF-182 process. See your training coordinator for more info.

To learn more about MOOC resources/options, you can visit their site at <https://www.mooc.org/>

Edx.org <https://www.edx.org/>

Machine Learning for Data Science and Analytics

Skill: Artificial Intelligence

Course Length: 35-50 hours

Cost: Free. Certificate of achievement available for \$99

<https://www.edx.org/course/machine-learning-for-data-science-and-analytics>

Virtual, pre-recorded

Taught by Columbia University

What machine learning is and how it is related to statistics and data analysis.

How machine learning uses computer algorithms to search for patterns in data.

MATLAB and Octave for Beginners

Skill: MATLAB

Course Length: 20-24 hours

Cost: Free. Certificate of achievement available for free

<https://coursewire.com/edx/matlab-and-octave-for-beginners/>

Virtual, pre-recorded

Taught by Swiss Federal Institute of Technology

How to use and to write scripts and functions using MATLAB and Octave.

How to work with vectors and matrices.

How to handle data files.

How to plot graphics and save them in pdf and jpg formats.

Deep Learning with Python and PyTorch

Skill: Neural networks

Course Length: 12-24 hours

Cost: Free. Certificate of achievement available for \$99

<https://coursewire.com/edx/deep-learning-with-python-and-pytorch/>

Virtual, pre-recorded

Taught by IBM

Explain and apply knowledge of Deep Neural Networks and related machine learning methods.

Know how to use Python, and Python libraries such as Numpy and Pandas along with the PyTorch library for Deep Learning applications.

Machine Learning with Python: A Practical Introduction

Skill: Python

Course Length: 20-30 hours

Cost: Free. Certificate of achievement available for \$99

https://www.edx.org/course/machine-learning-with-python-a-practical-introduct?utm_medium=affiliate_partner&utm_source=coursewire-course-wire

Virtual pre-recorded

Taught by IBM

Learn the difference between the two main types of machine learning methods: supervised and unsupervised. Supervised learning algorithms, including classification and regression. Unsupervised learning algorithms, including Clustering and Dimensionality Reduction.

Machine Learning with Python: from Linear Models to Deep Learning

Skill: Neural networks

Course Length: 140-196 hours

Cost: Free. Certificate of achievement available for \$300

<https://coursewire.com/edx/machine-learning-with-python-from-linear-models-to/>

Virtual, pre-recorded

Taught by MIT

Understand principles behind machine learning problems such as classification, regression, clustering, and reinforcement learning.

Implement and analyze models such as linear models, kernel machines, neural networks, and graphical models.

Deep Learning with Tensorflow

Skill: Neural networks

Course Length: 10-20 hours

Cost: Free. Certificate of achievement available for \$99

https://www.edx.org/course/deep-learning-with-tensorflow?utm_source=coursewire-course-wire&utm_medium=affiliate_partner

Virtual, pre-recorded

Taught by IBM

Explain foundational TensorFlow concepts such as the main functions, operations and the execution pipelines.

Describe how TensorFlow can be used in curve fitting, regression, classification and minimization of error functions.

Computing in Python I: Fundamentals and Procedural Programming

Skill: Python

Course Length: 45-50 hours

Cost: Free. Certificate of achievement available for \$99

<https://coursewire.com/edx/computing-in-python-i-fundamentals-and-procedural/>

Virtual, pre-recorded

Taught by Georgia Institute of Tech

Learn how a computer processes programming code.

The write-run-debug cycle of writing code, running it, and revising it based on its output.

Procedural programming, or how to write sequential lines of code.

Data Science: R Basics

Skill: R (statistical software)

Course Length: 8-16 hours

Cost: Free. Certificate of achievement available for \$49

<https://coursewire.com/edx/data-science-r-basics/>

Virtual, pre-recorded

Taught by Harvard University

The first in the [Professional Certificate Program in Data Science](#), this course will introduce you to the basics of R programming. You can better retain R when you learn it to solve a specific problem, so you'll use a real-world dataset about crime in the United States. You will learn the R skills needed to answer essential questions about differences in crime across the different states.