



Fall 2021

MACHINE LEARNING

Technician Certification

Combine your domain expertise
with a science-based approach to
machine learning technical skills!

amii.ca

Join us for

MACHINE LEARNING

Technician Certification

Combine your domain expertise with a science-based approach to machine learning (ML) and the power of technical skills to meet the growing demand for AI expertise! Applications are now open.

Modern businesses recognize the transformative power of artificial intelligence (AI) but are also facing a severe shortage of skilled workers. The demand for AI and machine learning (ML) expertise is growing across all industries. Through the marriage of domain expertise, a key understanding of the science of machine learning and foundational technical skills, companies can gain their competitive advantage. Be part of that advantage.

You'll graduate from the course with:

- A science-based understanding of what machine learning is and how it works
- The skills to confidently create a business case for a ML project at your company
- The ability to undertake an ML project or apply for a job with AI/ML requirements
- Hands-on experience with all stages of a machine learning project: from objective definition and data preparation; through model selection and tuning; to model maintenance and growth.

What is the goal of this course?

The purpose of this course is to develop your ML knowledge and skills in order to define and execute a machine learning project that supports your organization's business outcomes. What you learn in this course will take you from the brainstorming phase of a business idea to the identification of the right data and the execution and evaluation of the right model. We will accomplish this with multiple model implementations that culminate in the delivery of your team's capstone project.

LEARNING OBJECTIVES

What will I learn in this course?

The following objectives will help you develop a machine learning perspective that combines the statistical, mathematical and computational knowledge and skill sets that are necessary for executing machine learning projects:

- Identify and scope an ML problem that aligns with your organization's business outcomes
- Pre-process, collect and summarize the most appropriate real-world data for your model
- Build the right model for your business problem by using sound estimation principles and accurately evaluating the performance of your ML model
- Understand the science of machine learning, where it comes from and how it works
- Apply Amii's ML frameworks that support the effective and efficient development of ML models

LEARNER PROFILE

Who should take this course?

This course has been created to upskill anyone with a basic technical skillset. For example, if you have previously obtained an engineering degree, you will already have the numerical sense necessary for acquiring knowledge of machine learning. In addition, we expect that the learner will have background and experience with the following skills and concepts:

- Programming in Python
- Matrix calculations
- Probabilistic reasoning

Participants in this course are required to attend Amii's ML Foundations 1 & 2 prior to course start - successful applicants for the ML Tech Certification will receive complementary access to the Foundations courses. Previous attendance in ML Foundations applies.

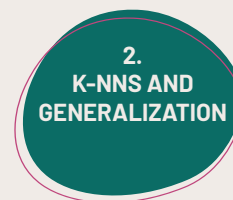
COURSE OUTLINE

The course is composed of five modules in three parts:

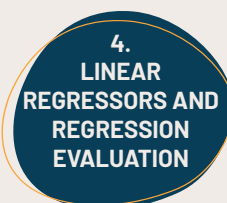
PART 1: Data & ML Problem Set-Up



PART 2: Classification



PART 3: Regression



Group Work & Capstone Project

This course mimics the experience of developing a machine learning solution in a business setting. As such, a portion of your time will be devoted to group work on programming assignments, which will lead to a final capstone project and presentation. Participants will be assigned to groups in the first weeks and will work collaboratively throughout the remainder of the course. This gives learners both the experience of working with diverse individuals and hands-on experience employing machine learning to solve a defined business problem.

MEET YOUR INSTRUCTORS

Blanca Miller, MSc

Blanca Miller is a Machine Learning Educator and Scientist at the Alberta Machine Intelligence Institute (Amii). She is currently a PhD student in the Computing Science Department at the University of Alberta advised by Rupam Mahmood. She has a master's in computer science with a research emphasis in reinforcement learning. Her master's research involved investigations of high-accuracy optimal control for autonomous driving. Before being a computer scientist, she was a high school math teacher and as such is passionate about accessibly communicating concepts relevant to applications of machine learning for real-world problems.

Mohammad M. Ajallooeian, MSc

Mohammad is a Machine Learning Educator & Scientist at Amii. He has been researching and teaching AI/ML for 12 years, and is currently pursuing a PhD in Computing Science at the University of Alberta specializing in Statistical Machine Learning. In addition to AI and ML, he has a deep passion for philosophy and education. Mohammad received his BSc in Electrical Engineering and completed his MSc in Computer Engineering at the University of Tehran; he also completed an MSc in Computer Science at the University of Alberta.

COURSE SCHEDULE & MEETING TIMES

Welcome to the ML Technician I Course! This **project-based course** spans **9 weeks** and takes a **blended learning approach**, with live online lectures, videos, programming labs and group work. At the end of each module (about every two weeks), your group will be asked to complete one programming assignment which will contribute to your end-of-course capstone project.

You should expect to make available **12-14 hours per week** for instruction and course work.

CONTENT DAYS

Tuesdays: 5:00 - 7:30 p.m. MT

Thursdays: 5:00 - 7:30 p.m. MT

LAB DAYS

Fridays: 1:00 - 3:30 p.m. MT

COST AND FINANCIAL AID

The cost of the course is \$4,995 CDN and payment can be made via credit card in either one or three payments. The ML Technician Certification is eligible for a maximum 2/3 reimbursement through the Canadian Job Grant.

FREQUENTLY ASKED QUESTIONS

- 1. How many hours per week will I need to dedicate to the course to be successful?**
 - 12-14 hours per week
 - 50% live online lectures and labs, meeting 3 times per week (7.5 hours total)
 - 50% collaborative hands-on work (weekly group meetings and working on coding notebooks)
- 2. What are the technological requirements for the course?**
 - Access to a computer
 - High-speed internet
- 3. What are the technical prerequisites?**
 - This course has been created to upskill or reskill anyone with basic technical skill sets. If you are comfortable with Python, matrix calculations, and probabilistic reasoning, you are qualified! The application includes a number of assessment questions for us to better understand your readiness for the certificate.
 - Participants in this course are required to attend Amii's ML Foundations 1 & 2 prior to course start - successful applicants for the ML Tech Certification will receive complementary access to the Foundations courses. Previous attendance in ML Foundations applies.
- 4. Is this course self-directed or on-demand online learning?**
 - This course is delivered live online and requires participants to attend sessions in real-time with the facilitators to make the most of our applied focus and hands-on approach. Participants from around the world are encouraged to apply.
- 5. Is financial assistance available?**
 - The ML Technician Certification is eligible for a maximum 2/3 reimbursement through the Canadian Job Grant.
- 6. What are the payment options?**
 - Successful applications can request a three-part payment plan, with the first payment required upon registration and the entire course paid-in-full before classes begin on September 21, 2021.

ABOUT Amii

One of Canada's three centres of AI excellence as part of the Pan-Canadian AI Strategy, Amii (the Alberta Machine Intelligence Institute) is an Alberta-based non-profit institute that supports world-leading research in artificial intelligence and machine learning and translates scientific advancement into industry adoption. Amii grows AI capabilities through advancing leading-edge research, delivering exceptional educational offerings and providing business advice - all with the goal of building in-house AI capabilities. For more information, visit amii.ca.



TRANSFORMATION

Starts with

LEARNING

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