**MOHAMED BIN ZAYED**
**UNIVERSITY OF**
**ARTIFICIAL INTELLIGENCE**

**Graduate programs**
**prospectus**

**The world's first specialized**
**research-based AI university**

2021 – 2022

**Professor Sir Michael Brady**
Interim President of Mohamed
Bin Zayed University of Artificial
Intelligence

Our aim is to make MBZUAI more than a university. Our goal is to introduce a new model of academia and research in the field of AI.

As part of our campus in Abu Dhabi, whether as a student or faculty, you will have a role to play in shaping not only this new academic model, but the future of our AI-driven society.

MBZUAI provides graduate students and faculty with access to some of the world's most advanced AI systems and state-of-the-art labs. Students will also learn from a world-class faculty, supported by a Board of Trustees comprising individuals who are on the cutting-edge of international AI development.

Our partnership with the Inception Institute of Artificial Intelligence (IIAI), a global driving force in excellence and leadership of AI research, will further augment student's research and PhD work.

Our goal is to encourage the development of real-world AI applications in collaboration with industry and public institutions. We want to demonstrate the immense potential of AI as a force for good.

Moreover, we will create experiences for students that bridge the gap between the classroom and the workforce.

By doing so, MBZUAI will enable its students to explore AI's potential to the fullest, as they earn their positions as trusted advisors in global matters related to AI.

**Read more about our Leadership on
www.mbzuai.ac.ae/about**

# ABOUT
# MBZUAI

The **Mohamed bin Zayed University of Artificial Intelligence (MBZUAI)** in Abu Dhabi, is a graduate-level, research focused academic institution that offers specialized degree programs for local and international students in the field of Artificial Intelligence.

**MBZUAI** aims to support the advancement of scientific research, development, transfer, and use of Artificial Intelligence through the introduction of MSc and PhD programs that allow students to fulfill their intellectual potential in a state-of-the-art environment.

The goal of **MBZUAI** is to achieve academic and research excellence at the local, regional and international level, helping its students succeed in their career and leverage their acquired knowledge to tackle some of the greatest challenges of our time.

## Research focused

The Mohamed bin Zayed University of Artificial Intelligence is the first AI-focused research university in the world. MBZUAI has partnered with the Abu Dhabi-based Inception Institute of Artificial Intelligence (IIAI), a global force in excellence and leadership of AI research, for the supervision of PhD students and curriculum development

## The campus

MBZUAI is fully integrated with the city of Abu Dhabi, a vibrant capital which combines heritage with a modern lifestyle. The campus, located in Masdar City - one of the world's most sustainable urban communities - offers state-of-the-art facilities, labs and research centers providing a unique environment in which to conduct your research.

## Scholarship

MBZUAI offers full scholarship that covers 100% tuition fees and other benefits such as a monthly stipend, health insurance, and accommodation.

## Professional opportunities

MBZUAI's strong connections with the UAE government, the industry and the academic world, provide a platform for our students to connect with a network of strategic partners to gain tremendous experiences through possible internships in fields such as healthcare, telecommunication, technology, government, finance and much more. It's the perfect gateway to successfully drive your professional development.
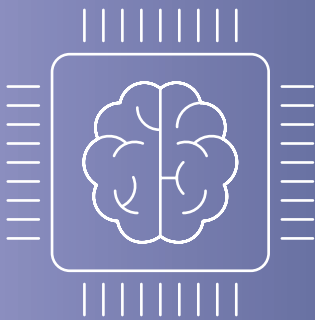
## International environment

MBZUAI provides you the opportunity to work with the best minds in the world using cutting-edge technology in a research-focused environment. Applicants from all countries and nationalities are welcome as the admission and acceptance to the programs will be based on high academic standing and merit. By creating an international campus environment, MBZUAI aims to promote a culture of inclusion and development.

**Read more on MBZUAI on www.mbzuai.ac.ae/study**

# MACHINE LEARNING (ML)

# MASTER OF SCIENCE IN MACHINE LEARNING

## Upon completion of the program requirements, the graduate will be able to:

• Exhibit highly specialized understanding of the modern machine learning pipeline: data, models, algorithmic principles, and empirics.

• Achieve advanced skills in data-preprocessing and using various exploration and visualization tools.

• Demonstrate critical awareness of the capabilities and limitations of the different forms of learning algorithms.

• Obtain advanced capabilities to critically analyze, evaluate, and continuously improve the performance of learning algorithms.

• Acquire advanced abilities to analyze computational and statistical properties of advanced learning algorithms and their performance.

• Gain expertise in using and deploying machine learning-relevant programming tools for a variety of complex machine learning problems.

• Develop advanced problem-solving skills through independently applying machine learning methods to multiple complex problems, and demonstrate expertise in dealing with ambiguity in a problem statement.

• Apply sophisticated skills in initiating, managing, and completing multiple project reports and critiques on variety of machine learning methods, that demonstrate expert understanding, self-evaluation, and advanced skills in communicating highly complex ideas.

**MSc programs**
The minimum degree requirements for **MBZUAI** MSc programs are 35 credits, distributed as follows:

**Core courses**
4 courses - 15 credit hours
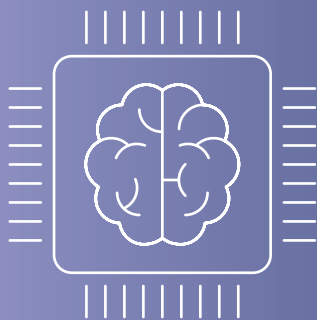
**Elective courses**
2 courses - 8 credit hours

**Research thesis**
1 course - 12 credit hours

# DOCTOR OF PHILOSOPHY IN MACHINE LEARNING

## Upon completion of the program requirements, the graduate will be able to:

- Obtain rigorous mathematical background and advanced reasoning capabilities to express comprehensive and deep understanding of the pipelines at the frontier of machine learning: data, models, algorithmic principles and empirics.

- Master a range of skills and techniques in data preprocessing, exploration, and visualization of data-statistics as well as complex algorithmic outcomes.

- Have a critical awareness of the capabilities and limitations of the different forms of learning algorithms and the ability to critically analyze, evaluate, and improve the performance of the learning algorithms.

- Grow expert problem-solving skills through independently applying the principles and methods learned in the program to various complex real-world problems.

- Develop a deep understanding of statistical properties and performance guarantees including convergence rates (in theory and practice) for different learning algorithms.

- Become an expert in using and deploying machine learning-relevant programming tools for a variety of machine learning problems.

- Grow proficiency in identifying the limitations of existing machine learning algorithms and the ability to conceptualize, design, and implement an innovative solution for a variety of highly complex problems to advance the state-of-the-art in machine learning.

- Able to initiate, manage, and complete research manuscripts that demonstrate expert self-evaluation and advanced skills in communicating highly complex ideas related to machine learning.

- Obtain highly sophisticated skills in initiating, managing, and completing multiple project reports and critiques on a variety of machine learning methods, that demonstrates expert understanding, self-evaluation, and advanced skills in communicating highly complex ideas.

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**PhD programs**
The minimum degree requirements for **MBZUAI** PhD programs are 59 credits, distributed as follows:

**Core courses**
4 courses - 15 credit hours

**Elective courses**
2 courses - 8 credit hours

**Research thesis**
1 course - 36 credit hours

NLP focuses on system development that allows computers to communicate with people using everyday language. Natural language generation systems convert information from the computer database into readable or audible human language and vice versa. Such systems also enable sophisticated tasks such as inter-language translation, semantic understanding, text summarization and holding a dialog. The key applications of NLP algorithms include interactive voice response applications, automated translators, digital personal assistants (e.g., Siri, Cortana, Alexa), chatbots and smart word processors.

# ADMISSION CRITERIA

## For MSc programs:

### Completed Degree:

Bachelor's degree in S.T.E.M fields, such as Computer Science, Electrical Engineering, Computer Engineering, Mathematics, Physics and other relevant Engineering majors, from an accredited university or college recognized by the UAE Ministry of Education, without the need of prior work experience.

### Academic Transcripts:

Students should have a minimum CGPA of 3.2 (on a 4.0 scale) or equivalent or top 20% of the university's grading scale.

### English Language Proficiency Certificate (for applications submitted for Fall intake (2021) onwards):

Each applicant has to show proof of English language ability by providing a TOEFL iBT with a minimum total score of 90 or IELTS Academic with a minimum overall score of 6.5. TOEFL iBT and IELTS Academic certificates should be valid during the application process. Waiver requests from eligible applicants who are citizens (by passport or nationality) of UK, USA, Australia, and New Zealand who completed their studies from K-12 until Bachelor's degree and Master's degree (if applicable) from those same countries will be processed. They need to submit notarized copies of their documents during the application stage and attested documents upon admission. Waiver decisions will be given within seven days after receiving all requirements.

### Graduate Record Examination (GRE):

General score is a plus and would be considered in the evaluation of the applicants (optional).

### Statement of Purpose:

In a 500 to 1,000-word essay, the applicant should present his/her motivation for applying to the university. It may include information regarding the applicant's personal and academic background as well as his/her chosen career path; goals as a prospective student; graduation plans; and other details that will support the application.

## For PhD programs:

### Completed Degree:

Bachelor's and Master›s degrees in S.T.E.M fields, such as Computer Science, Electrical Engineering, Computer Engineering, Mathematics, Physics and other relevant Engineering majors, from an accredited university or college recognized by the UAE Ministry of Education, without the need of prior work experience.

### Academic Transcripts:

Students should have a minimum CGPA of 3.2 (on a 4.0 scale) or equivalent or top 20% of the university's grading scale for both degrees.

### English Language Proficiency Certificate (for applications submitted for Fall intake (2021) onwards):

Each applicant has to show proof of English language ability by providing a TOEFL iBT with a minimum total score of 90 or IELTS Academic with a minimum overall score of 6.5. TOEFL iBT and IELTS Academic certificates should be valid during the application process. Waiver requests from eligible applicants who are citizens (by passport or nationality) of UK, USA, Australia, and New Zealand who completed their studies from K-12 until Bachelor's degree and Master's degree (if applicable) from those same countries will be processed. They need to submit notarized copies of their documents during the application stage and attested documents upon admission. Waiver decisions will be given within seven days after receiving all requirements.

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### Research Proposal:

It is a 3-5 page document summarizing the potential research project an applicant is interested in working on. The proposal should clearly justify the research gap which the applicant would like to fill in over the course of his/her study. It must be presented in the context of currently existing literature. The proposal must provide an overview of how he/she aims to investigate the underlying research project, and what are the expected outcomes. The proposal could also mention his/her relevance and suitability for the project. Finally, the proposal should highlight the scientific and commercial significance of the project. Note that applicants are expected to write a proposal completely independently. MBZUAI selection team will read an applicant's proposal and use it as one of the measures to gauge and assess his/her skills. MBZUAI faculty will NOT help applicants write a research proposal for the purpose of the application.

# UNIVERSITY CALENDAR

The **MBZUAI academic year** is divided into two semesters - Fall and Spring. Classes are held Sundays through Thursdays; Fridays and Saturdays are considered as weekends.

**The university calendar is available at:**
**www.mbzuai.ac.ae/study#univ-calendar**

# LIVING IN ABU DHABI

**MBZUAI** is based in **Abu Dhabi**, the capital of the United Arab Emirates (UAE). The UAE is a young country that crowns its traditions and cultural beliefs with a solid vision towards a prosperous and productive future for all citizens and residents.

Studying and working in the UAE means first and foremost working in the very center of the Middle East's economic hub. Abu Dhabi city is ruled by **H. H. Sheikh Khalifa bin Zayed Al Nahyan**, who is also the President of the UAE.

Abu Dhabi is a modern cosmopolitan city with towering skyscrapers, gleaming beaches, five-star entertainment, resplendent public parks, a budding art scene, and modern health and educational sectors. The city is also one of the most open and progressive communities in the Gulf region, **awarded as the safest city in the world for 3 years in a row**.

**For more information about Abu Dhabi, please visit https://visitabudhabi.ae/ae-en/default.aspx**