MOHAMED BIN ZAYED
UNIVERSITY OF
ARTIFICIAL INTELLIGENCE

MBZUAI
# University Catalogue
2023-2024

mbzuai.ac.ae

# Welcome from the President

**Welcome to Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), a graduate research university dedicated to AI and AI natives. Your journey with us is going to be no less than extraordinary: you will pursue curiosity-driven research and develop a problem-solving mindset; work alongside some of the brightest minds in AI; and have the opportunity to make a lasting impact on society and humanity.**

Located in Abu Dhabi, MBZUAI was founded in 2019 and is the product of the visionary leadership of the UAE, a country committed to solving the world's most pressing challenges with the power of AI. We have an important responsibility to seed a culture of research and innovation in the region to produce AI talents and lead the world in unleashing the full potential of AI through transformative research, diversity in thought and scientific discovery.

We are home to an outstanding faculty in computer vision, machine learning, natural language processing, robotics and computer science, with two more departments being added this year. Our curriculum has been designed to align your learning experience with real-life issues and prepares you to use your knowledge and skills to make a difference – whether you choose to stay in research or apply your learning in industry.

## What we expect from you

AI is reshaping our lives and the world that we live in at a rapid pace. Be curious about how you can promote understanding of AI as a force for good and make a difference in the world. Your time here should be used to work toward that goal.

I encourage you to challenge existing norms, think creatively, and embrace feedback.

## What you can expect from us

At MBZUAI, you will have unparalleled access to tools and resources that give you the freedom to remain curious and hone your research skills. You will be trained by top faculty in a safe and nurturing environment.

Like the great scientific revolutions before us – the steam engine, electricity and the internet – we are helping write the story of what comes next. And you are now part of that story.

Sincerely,

**Professor Eric Xing**
**President, MBZUAI**

THE UNIVERSITY MOTTO

# **POWER** from **KNOWLEDGE** to **SERVE**

# The university

**The Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) is established in the Emirate of Abu Dhabi, with a clear mission to drive AI knowledge creation and development, foster economic and social growth, and position the UAE as a hub for the international AI community.**

The university, in addition to its academic offerings, will have a direct and indirect impact on AI advancement in the UAE in multiple ways including, but are not limited to:

- Attracting international talents (students and faculty staff) and ensuring the transition to enter the UAE market

- Creating an active AI community and collaborating in AI research and publications

- Hosting conferences that attract AI experts to the UAE and the region

- Supporting technology and AI related startups in the UAE

- Supporting governments and businesses by providing AI consulting  services and AI solutions/ applications

- Conducting training and workshops in various AI fields for government entities and businesses.

## MBZUAI currently offers

**Ph.D. and M.Sc. programs in five AI specializations including machine learning (ML), computer vision (CV), natural language processing (NLP), robotics (ROB) and computer science (CS).**

## Institutional history

MBZUAI was established as an independent local entity in Abu Dhabi and shall be affiliated to the Executive Council. The university has a Board of Trustees comprising seven members including the chairman of the board.

## Vision

Drive excellence in knowledge creation, transfer and use of AI to foster economic growth and position Abu Dhabi as a hub for the international AI community.

## Mission

Establish and continually evolve interdisciplinary, collaborative research and development capability in the field of AI, while educating students to be innovators and leaders with the breadth and depth to grow technology and enterprise in the UAE and globally.

## Strategic objectives

As a unique institution, purpose built to lead the world in AI research, MBZUAI seeks to be a paradise for transformative research; a cradle for the best minds in computer science; and a hub for startups and high-tech innovation.

**Its strategic objectives are:**

- Attract the best talent focused on AI
- Develop, train, and retain talent for the UAE economy
- Lead Abu Dhabi's efforts to build and sustain an AI- based knowledge economy
- Develop real business applications in collaboration with industry and the public sector to enhance innovation, productivity, and growth
- Be the birthplace for high-tech innovation and AI startups in the UAE and the MENA region.

## Licensing and accreditation

The MBZUAI is located in Abu Dhabi, and is officially licensed from March 10, 2020 by the Ministry of Education of the United Arab Emirates (UAE) to award degrees/qualifications in higher education.

# MBZUAI leadership



## His Highness Sheikh Mohamed bin Zayed Al Nahyan
### President of the UAE

Among his many interests, His Highness Sheikh Mohamed bin Zayed Al Nahyan is known for his unwavering commitment to enhance educational standards in the Emirate of Abu Dhabi and raise them to be on par with the best international standards. The university is named in his honor

# Admission
## Master of Science (M.Sc.) programs

**To be considered for admission to a Master of Science program at MBZUAI an applicant must provide evidence of the following:**

- A completed bachelor's degree in a STEM field such as Computer Science, Electrical Engineering, Computer Engineering, Mathematics, Physics and other relevant Science and Engineering majors, from an accredited university or college recognized by the UAE Ministry of Education, without the need of prior work experience.

- Applicants must provide their complete degree certificates and transcripts (in English) when submitting their application. Senior-level students can apply initially with a copy of their transcript and upon admission must submit official complete degree certificate/transcript. A degree attestation (for degrees from the UAE) or an equivalency certificate (for degrees acquired outside the UAE) should also be furnished within their first semester at the university.

- Knowledge, skills & competencies in some of the following subjects:
  - Programming skills such as Python, C, C++ or MatLab.
  - Math skills such as:
  - Data Structures and Algorithms.
  - Linear Algebra.
  - Probability and Statistics.
  - Calculus
- A minimum undergraduate CGPA of 3.2 (on a 4.0 scale).
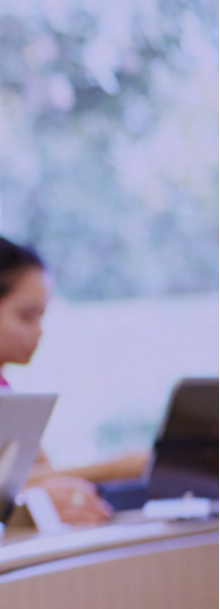
- **An English Language Proficiency Certificate which must remain valid during the application process. Minimum requirements are:**

  - TOEFL iBT with a minimum total score of 90, or
  - IELTS Academic with a minimum overall score of 6.5, or
  - EmSAT English with a minimum total score of 1550.
  - TOEFL iBT, IELTS Academic and EmSAT English certificates should be valid during the application process.

  Waiver requests from applicants who undertook all their schooling (K-12) plus a bachelor's degree in English in a reference English speaking country (e.g., UK, USA, Australia, New Zealand) may be processed in accordance with the Admission Procedure.

  Applicants must 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.

- A minimum of two letters of recommendations from mentors and supervisors or others with good knowledge of the applicant's qualification are mandatory, at least one should be from a previous course instructor or faculty/research advisor and the other one from a current or previous work supervisor.

- Selected applicants will be invited to participate in an entry exam to assess their knowledge and skills:

  - Math and programming for CV, ML and NLP
  - Math, programming and machine learning for CS & Robotics

- A Graduate Record Examination (GRE) General Score may be optionally submitted.

- 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.

**All applications for admission to Master of Science programs must be submitted online providing all required documentation.**

## Admission Doctor of Philosophy (Ph.D.) programs

In order to be considered for admission to a PhD program at MBZUAI an applicant must provide evidence of the following:

### Degree Requirements for Computer Vision, Machine Learning, Natural Language Processing and Robotics

- **Completed Degree**

EITHER

Bachelor's degree in a STEM field such as Computer Science, Electrical Engineering, Computer Engineering, Mathematics, Physics and other relevant Science and Engineering majors, from a university accredited or recognized by the UAE Ministry of Education (MoE) which demonstrates academic distinction in a discipline appropriate for the doctoral degree. Students should have a CGPA of at least 3.5 (on a 4.0 scale) or equivalent and valid Graduate Record Examination (GRE) scores of at least 150 (Verbal Reasoning), 150 (Quantitative Reasoning) and 3 (Analytical Writing) is mandatory. However, the GRE can be waived if the applicant is an academically distinguished student as specified below.

OR

- Bachelor's and master's degrees in STEM fields such as Computer Science, Electrical Engineering, Computer Engineering, Mathematics, Physics and other relevant Science and Engineering majors, from a university accredited or recognized by the UAE Ministry of Education (MoE). Students should have a minimum CGPA of 3.2 (on a 4.0 scale). The GRE submission is optional for applicants with both bachelor's and master's degrees although submitting a GRE will be considered a plus during the evaluation.

- The GRE submission is optional for applications via the Academically Distinguished Student Portfolio pathway, although submitting a GRE will be considered a plus during the evaluation.

## Degree Requirements for Computer Science

- **Completed Degree**

EITHER

Bachelor's degree in computer science with a minimum of 50% Computer Science content, from a university accredited or recognized by the UAE Ministry of Education (MoE) which demonstrates academic distinction. Students should have a strong background in both applied and theoretical aspects of computer science with a CGPA of at least 3.5 (on a 4.0 scale) or equivalent and valid Graduate Record Examination (GRE) scores of at least 150 (Verbal Reasoning), 150 (Quantitative Reasoning) and 3 (Analytical Writing) is mandatory. However, the GRE can be waived if the applicant is an academically distinguished student as specified below.

OR

- Bachelor's and master's degrees in Computer Science from a university accredited or recognized by the UAE Ministry of Education (MoE) which demonstrate academic distinction. Students should have a strong background in both applied and theoretical aspects of computer science with a minimum CGPA of 3.2 (on a 4.0 scale). The GRE submission is optional for applicants with both bachelor's and master's degrees although submitting a GRE will be considered a plus during the evaluation.

## Following requirments apply for admission to all MBZUAI Ph.D. programs.

- The GRE submission is optional for applications via the Academically Distinguished Student Portfolio pathway, although submitting a GRE will be considered a plus during the evaluation.

- Applicants must provide their complete degree certificates and transcripts (in English) when submitting their application. Senior students can apply initially with a copy of their transcript and upon admission must submit an official complete degree certificate/transcript. A degree attestation (for degrees from the UAE) or an equivalency certificate (for degrees acquired outside the UAE) should also be furnished within their first semester at the university.

- **Knowledge & Competencies: Demonstrate evidence of skills acquired in some of the following subjects:**

  - Programming skills such as Python or C or C++ or MatLab.
  - Math skills such as:
    - Data Structures and Algorithms.
    - Linear Algebra.
    - Probability and Statistics.
    - Calculus.
  - Knowledge of basic machine learning algorithms such as linear regression, decision trees, Support Vector Machines, etc.

- **English Language Proficiency Certificate (for applications submitted from Fall 2021 intake onwards). Minimum requirements are:**

  - TOEFL iBT with a minimum total score of 90; or
  - IELTS Academic with a minimum overall score of 6.5 or
  - EmSAT English with a minimum total score of 1550.
  - TOEFL iBT, IELTS Academic and EmSAT certificates should be valid during the application process.

  Waiver requests from applicants who undertook all their schooling (K-12) plus a bachelor's degree and/or a Master's degree, as applicable, in English in a reference English speaking country (e.g., UK, USA, Australia, New Zealand) may be processed in accordance with the Admission Procedure.

  Applicants must 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.

- Three (3) letters of recommendation from mentors and supervisors or others with good knowledge of the applicant's qualifications are mandatory. At least one letter should be from a previous course instructor or faculty/research advisor and the others from a current or previous work supervisor

- Selected applicants will be invited to participate in an entry exam to assess their knowledge and skills in Math, programming and Machine learning.

- **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.

- **Research Statement:** a 1–3-page document which provides a high-level overview of the applicant's past research experience and the research he/she is interested in working on, including his/her motivation for wanting to investigate this area. Note that applicants are expected to write a research statement completely independently. The admission committee will review an applicant's research statement and use it as one of the measures to determine if an applicant's interests and experience make them a good fit for MBZUAI's research programs. MBZUAI faculty will NOT help applicants write a research statement for the purpose of the application. It is recommended that the statement contains few sections including introduction, literature review, problem definition, methods (optional), timeline, and a list of references.

**All applications for admission to PhD programs must be submitted online providing all required documentation.**

## Credit transfer

Students applying for admission who wish to transfer credit from a federal or licensed institution in the UAE, or a foreign institution of higher learning based outside the UAE and accredited in their home country must provide evidence, as outlined in the admission procedure, which will allow the MBZUAI Academic Department to make a determination regarding the transfer.

- The limit for the number of transfer credits that may be accepted for a specific degree program is 25% of total credit hours for M.Sc. and Ph.D. programs.
- Transfers will only be permitted for students who are in good academic standing and who are eligible to return to their current or former institution.
- MBZUAI will accept the transfer of credits only for courses relevant to the degree that provide equivalent learning outcomes and in which the student earned a grade of B (3.0 on a 4.0 scale) or better.
- The grade of the transfer credit course will be recorded as a "TC" on the transcript record. The approved transfer credits will be calculated towards the credit hours but not included in GPA calculation.
- The course transfer credits may not have been used previously in any graduate program to fulfil the requirement of any other graduate degree.
- The course credits must have been completed no more than a

maximum of two (2) years prior to the student's acceptance into the program of MBZUAI.

The MBZUAI academic department will have the ultimate right to accept or reject the transfer requests for any student.

All applications for transfer credit to M.Sc. or Ph.D. programs must be submitted online providing all required documentation.

## Recognition of prior learning

MBZUAI does not recognize prior learning and does not award credit for informal and non-formal learning that has taken place prior to admission into its academic programs, other than the credit specified in the admission policy and associated procedures.

Prior learning in the form of professional certification, training programs, credit bearing courses of non-accredited degrees, and other similar programs will not receive any credit towards academic degree programs.

## Course exemptions

A student may be granted a course exemption, rather than credit, if they can provide evidence that a course previously studied at a federal or licensed institution in the UAE, or a foreign institution of higher learning based outside the UAE and accredited in its home country, is equivalent to a course that forms part of the program for which the student is applying. Course exemptions are usually only granted for mandatory courses or those that form a prerequisite for other courses.

The student must provide evidence, as outlined in the admission procedure, which will allow the

MBZUAI academic department to decide regarding the course exemption.

MBZUAI will consider applications for course exemption only for courses relevant to the degree that provide equivalent learning outcomes and in which the student earned a grade of B (3.3/4) or better.

The grade of the exempted course will be recorded as a "EX" on the transcript record. The exempted course will have no credit assigned and will not be used in the calculation of the CGPA.

The exempted course will not count towards the course requirements for a program.

The previous study being used as evidence for the course exemption must have been completed no more than a maximum of two (2) years prior to the student's acceptance into the MBZUAI program.

The MBZUAI Academic Department will have the ultimate right to accept or reject the application for course exemption for any student.

All applications for transfer credit to M.Sc. or Ph.D. programs must be submitted online providing all required documentation.

## Scholarships

All admitted students are granted full scholarship upon acceptance. The scholarship includes 100% tuition fees, accommodation, health insurance and a competitive monthly stipend and annual ticket to the student's home country.

**To retain a scholarship, students must meet the following criteria:**

- Maintain a CGPA of 3.3 or above.
- Complete their degree requirements within the allowed duration, as set out in the Academic Progress Policy.
- Maintain a clean deed record, and with no evidence of dishonest or unethical behavior.

## Tuition fees

| Program | Fee per one credit |
|---------|--------------------|
| M.Sc.   | AED 5,000          |
| Ph.D.   | AED 6,600          |

# ACADEMIC PROGRAMS

Master of Science | Doctor of Philosophy

# Master of Science in
# **Computer Science**

**CS**

**Mode**
Full-time

**Credits**
36

**Location**
On-campus

## Program Aims

The goals of the Master of Science in Computer Science are to train specialists to (1) analyze complex computer science and AI problems, (2) take a scientific, innovative, ethical, and socially responsible approach to conducting and contributing to computer science research, and (3) solve complex problems in the field. As technological progress accelerates, so does the demand for skilled computer science professionals. The Master of Science in Computer Science is intended for students desiring to substantially advance their knowledge and skill in a field or fields of computer science. Students will be supervised and mentored by faculty members with world-class expertise in a variety of areas in computer science, including algorithms, systems, and computational intelligence. This master's program is ideally suited to students wishing to become senior professionals in the technology industry or to those seeking to prepare for a career in scientific research.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with the Emirates Qualifications Framework and, as such, are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Role in context (RC) and Self-development (SD).

# Master of Science in
# Computer Vision

**CV**

**Mode**
Full-time

**Credits**
36

**Location**
On-campus

## Program Aims

The goals of the Master of Science in Computer Vision are to train specialists to (1) analyze complex problems within the field of computer vision (2) take a scientific, innovative, ethical, and socially responsible approach to conducting and contributing to research, and (3) solve complex problems in the field. This scientific field studies how computers can be used to automatically understand and interpret visual imagery. It aims to mimic the astounding capabilities of human visual cortex using machine vision algorithms. It studies how an image is created, the geometry of the 3D world and high-level tasks such as object recognition, object detection, and tracking, image segmentation and action recognition. Computer vision has important applications in augmented/virtual reality, autonomous cars, service robots, biometrics and forensics, remote sensing and security and surveillance.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

# Master of Science in
# **Machine Learning**

**ML**

**Mode**
Full-time

**Credits**
36

**Location**
On-campus

## Program Aims

The goals of the Master of Science in Machine Learning are to train specialists to (1) analyze complex problems within the field of ML, (2) take a scientific, innovative, ethical, and socially responsible approach to conducting and contributing to research, and (3) solve complex problems in the field.The scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task without using explicit instructions, relying on patterns and inference instead. These algorithms are based on mathematical models learned automatically from data, thus allowing machines to intelligently interpret and analyze input data to derive useful knowledge and arrive at important conclusions. Machine learning is heavily used for enterprise applications (e.g., business intelligence and analytics), effective web search, robotics, smart cities and understanding of the human genome.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

# Master of Science in
# Natural Language Processing

**NLP**

**Mode**
Full-time

**Credits**
36

**Location**
On-campus

## Program Aims

The goals of the Master of Science in Natural Language Processing are to train specialists to (1) analyze complex problems within the field of NLP, (2) take a scientific, innovative, ethical, and socially responsible approach to conducting and contributing to research, and (3) solve complex problems in the field.

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.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

# Master of Science in
# **Robotics**

**R**

**Mode**
Full-time

**Credits**
36

**Location**
On-campus

## Program Aims

The aims of the Master's in Robotics are (1) to develop students' interest in, knowledge and understanding of robotics and autonomous systems and (2) to prepare them for PhD research in that area and/ or the industry workforce. The program teaches students to apply the research techniques and knowledge they have gained to solve complex problems in the field of Robotics. Robotics research and the development of intelligent systems continue to be one of the key priorities set by both government and industry. Interdisciplinary in scope, our Master's in Robotics provides an ideal foundation for what today's experts in robotics and intelligent systems need to know. Along with the chance to learn from world leaders in their fields from across the globe, our program offers hands-on activities where you will learn by designing, prototyping, and validating intelligent robotic systems. As a graduate of the Master's in Robotics program you will take a leading role in the development of integrated robotics technologies and systems, both locally and internationally.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with the Emirates Qualifications Framework and, as such, are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Role in context (RC), and Self-development (SD).

# Doctor of Philosophy in
# **Computer Science**

**CS**

**Mode**
Full-time

**Credits**
60

**Location**
On-campus

### Program Aims

The goal of the Doctor of Philosophy (PhD) in Computer Science is to produce highly trained researchers for industry and academia. The program prepares students to apply the research techniques and knowledge they have gained to solve complex problems in the field of Computer Science and AI.

The PhD in Computer Science offers exciting opportunities to do innovative applied research and produce new intellectual contributions with world leaders in their field. It is designed to prepare students for leadership careers in academia, industry research labs and education in computer science. As a graduate of this program, students will not only have strong technical and research expertise in their field but will also have the ability to work effectively in interdisciplinary teams and be able to tackle problems that require both technical and non-technical solutions.

## National Qualifications Framework  – five strands

The program learning outcomes (PLOs) are aligned with the Emirates Qualifications Framework and, as such, are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Role in context (RC), and Self-development (SD).

# Doctor of Philosophy in
# **Computer Vision**

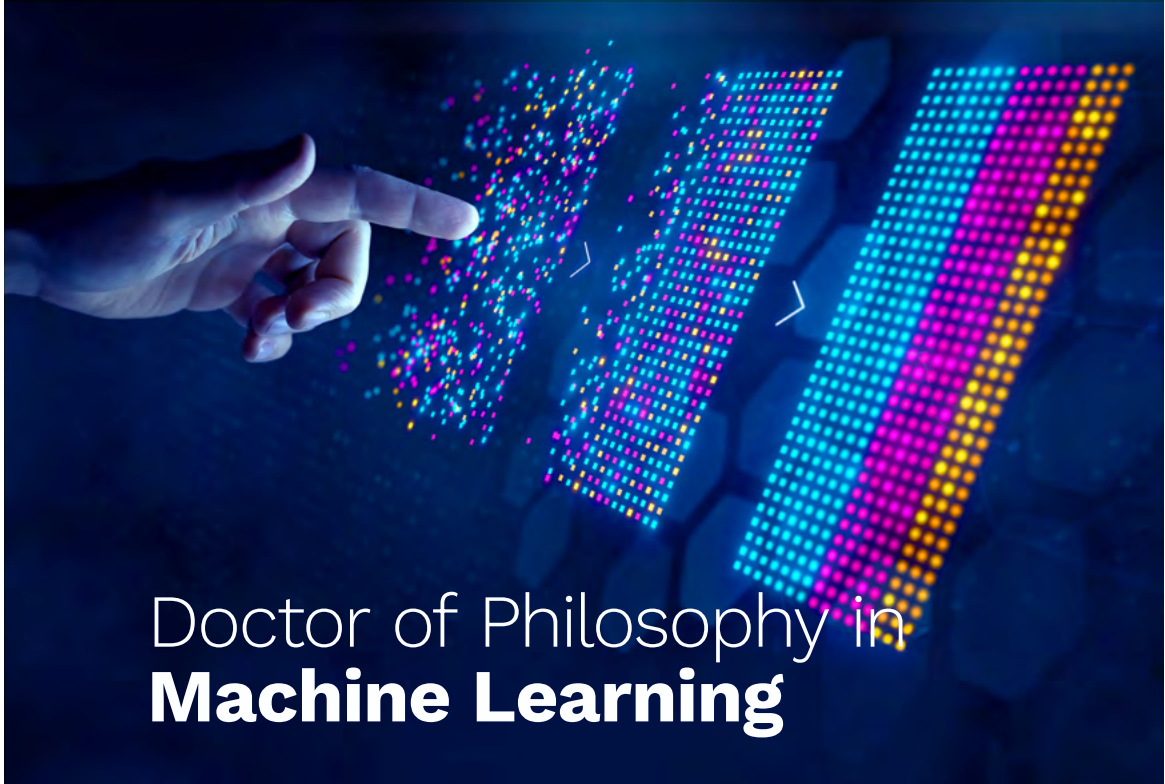| CV | Mode **Full-time** | Credits **60** | Location **On-campus** |
| --- | --- | --- | --- |

**Program Aims**

The goal of the Doctor of Philosophy (PhD) in Computer Vision is to produce highly trained researchers for industry and academia. The program prepares students to apply the research techniques and knowledge they have gained to solve complex problems in the field of Computer Vision and AI.

This scientific field studies how computers can be used to automatically understand and interpret visual imagery. It aims to mimic the astounding capabilities of human visual cortex using machine vision algorithms. It studies how an image is created, the geometry of the 3D world and high-level tasks such as object recognition, object detection, and tracking, image segmentation and action recognition. Computer vision has important applications in augmented/virtual reality, autonomous cars, service robots, biometrics and forensics, remote sensing and security and surveillance.

**National Qualifications Framework – five strands**

The program learning outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

# Doctor of Philosophy in
# Machine Learning

**ML**

| | Mode | Credits | Location |
|---|---|---|---|
| | Full-time | 60 | On-campus |

**Program Aims**

The goal of the Doctor of Philosophy (PhD) in Machine Learning is to produce highly trained researchers for industry and academia. The program prepares students to apply the research techniques and knowledge they have gained to solve complex problems in the field of Machine Learning and AI.

The scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task without using explicit instructions, relying on patterns and inference instead. These algorithms are based on mathematical models learned automatically from data, thus allowing machines to intelligently interpret and analyse input data to derive useful knowledge and arrive at important conclusions. Machine learning is heavily used for enterprise applications (e.g., business intelligence and analytics), effective web search, robotics, smart cities and understanding of the human genome.

## National Qualifications Framework – five strands

The program learning outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided in the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

## Program learning outcomes

**Upon completion of the program requirements, graduates will be able to:**

1 Express comprehensive and deep understanding of the pipelines at the

# Doctor of Philosophy in
# Natural Language Processing

**NLP**

**Mode**
Full-time

**Credits**
60

**Location**
On-campus

## Program Aims

The goal of the Doctor of Philosophy (PhD) in Natural Language Processing is to produce highly trained researchers for industry and academia. The program prepares students to apply the research techniques and knowledge they have gained to solve complex problems in the field of Natural Language Processing and AI.

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.

## National Qualifications Framework — five strands

The Program Learning Outcomes (PLOs) are aligned with Emirates Qualifications Framework and as such are divided in the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Self-development (SD), and Role in context (RC).

# Doctor of Philosophy in
# Robotics

**(R)**

**Mode**
Full-time

**Credits**
60

**Location**
On-campus

## Program Aims

The goal of the Ph.D. program in Robotics is to prepare the next generation of world-class researchers, industry leaders, academics, and educators in the field of robotics and autonomous systems.

The Ph.D. in Robotics focuses on human-centered and autonomous robotics research and prepares exceptional students for careers at the cutting edge of academia, industry, and government. Our world-leading robotics researchers, students and industry partners collaborate to advance discoveries in various aspects of robotics, such as perception and applied machine learning, human-robot interaction, cognitive and soft robotics, and swarm intelligence. Ph.D. students in Robotics enjoy the unique experience of conducting world-class research with the state-of-the-art equipment and under the guidance of internationally renowned experts

**National Qualifications Framework – five strands**The Program learning outcomes (PLOs) are aligned with the Emirates Qualifications Framework and as such are divided into the following learning outcomes strands: Knowledge (K), Skills (S), Autonomy and responsibility (AR), Role in context (RC), and Self-development (SD).