MSc in Data Science & Artificial Intelligence

2025 Intake

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
UNIVERSITY OF MORATUWA

INTRODUCTION

The MSc in Data Science & Artificial Intelligence (AI) postgraduate degree program is designed to provide practicing professionals having an engineering/science background with in-depth technical knowledge and exposure to emerging and niche topics in data science & AI.

Compared to the Data Science & Engineering specialization in our MSc in Computer Science, this program offers more advanced knowledge in machine learning, deep learning, artificial intelligence, and data science in addition to core software engineering and computer science topics. Furthermore, this program offers a wider range of electives focused on emerging topics in data science and AI and their applications.

The following are some of the core modules and electives offered in the program:

- Data Science
- Advanced Machine Learning
- Advanced Deep Learning
- Advanced Data Mining
- Advanced Artificial Intelligence
- Information Visualization
- Statistical Inference
- Machine Learning for Graphs
- Advanced Databases
- Software Architecture Concepts

- Big Data Analytics
- Business Intelligence
- Machine Vision & Image Processing
- Advanced Natural Language Processing
- Advanced Bioinformatics
- Speech Processing
- Cloud Computing for DS & AI
- Game Theory
- Mobile Computing
- Information Security

COURSE MODULES AND PROGRAM STRUCTURE

The MSc in DS&AI postgraduate degree program consists of compulsory modules, specialization-specific compulsory modules, elective modules, and a compulsory research project. The research project is expected to be in the area of specialization.

The program is structured as a six-semester (two-year) degree program, with each semester consisting of 12 weeks of academic activities. Lectures are held on Saturdays at the University of Moratuwa (UOM) or using the UOM online learning platform (online.mrt.ac.lk) or using a hybrid approach. Lectures may also be held on one/two weekdays from 5.30 PM to 7.30 PM using the UOM online learning platform.

In a typical study program arrangement, the first three semesters consist of taught course modules, while the fourth semester is a mix of taught courses and research. The final two semesters are used for the research project and dissertation writing.

The following are the course modules of the program:

Code	Course Modules	Credits
CS5902	Research Seminar	1
CS5999	PG Diploma Project	3
CS6997	MSc Research Project	20
CS5617	Data Science	3
CS5801	Advanced AI	3
CS5802	Advanced ML	3
CS5803	Advanced DM	3
CS5805	Information Visualization	3
CS5651	Statistical Inference	3
CS5804	Advanced Deep Learning	3
CS5224	Advanced Databases	3
CS5229	Big Data Analytics Technologies	3

Code	Course Modules	Credits
CS5429	Distributed Computing	3
CS5820	Machine Vision and Image Processing	3
CS5821	Advanced Bioinformatics	3
CS5618	Business Intelligence	3
CS5822	Speech Processing	3
CS5823	Cloud computing for DS & AI	3
CS5824	Game theory	3
CS5825	Machine Learning for Graphs	3
CS5826	Advanced Natural Language Processing	3
CS5827	Data Classification	3
CS5701	Advanced Algorithms	3
CS5405	Performance Modelling and Analysis	3
CS5212	Software Architecture Concepts	3
CS5430	Mobile Computing	3
CS5243	Client Side Application Development	3

Students are required to earn 60 credits to graduate. 20 of those credits would come from the Research/Industry Projects. Four more credits would come from modules that prepare the students for the Research Project. That leaves 36 credits to be earned by taught modules. Students will be required to select and take a minimum of 5 other optional courses in addition to the compulsory courses. They can select the courses based on their interest and intended research project direction in consultation with the course coordinator/project supervisor. If you need any additional information regarding the specializations, course modules or the program structure, please contact the MSc in DS&AI course coordinators through the contact details given on http://postgrad.cse.mrt.ac.lk website.

Note: *Offering a particular specialization or a course module during a given academic year is subject to having the minimum number of registrations.*

RESOURCE PERSONS

The MSc in DS&AI postgraduate degree program is conducted by senior academics of the University of Moratuwa with research specializations in specific study areas complemented by specialists from the industry.

Prof. Gihan Dias

BSc Eng Hons (Moratuwa), MSc (UCSB), PhD (UCD), MIE(SL), CEng

Professor, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Sanath Jayasena

BSc Eng Hons (Moratuwa), MSc (UIUC), PhD (UIUC), MIE(SL), CEng

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Indika Perera

BSc Eng Hons (Moratuwa), MBS (Colombo), MSc (Moratuwa), PhD (St Andrews), PGDBM (Colombo), MIE (SL), CEng

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Chandana Gamage

BSc Eng Hons (Moratuwa), MEng (AIT), PhD (Monash), MIE(SL), CEng

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Dulani Meedeniya

BSc Hons (Peradeniya), MSc (Moratuwa), PhD (St Andrews)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Chathura De Silva

BSc Eng Hons (Moratuwa), MEng (NTU), PhD (NUS), MIE(SL), CEng

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Prof. Shantha Fernando

BSc Eng Hons (Moratuwa), MPhil (Moratuwa), PhD (Delft), MIE(SL), MIEE

(London), CEng

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Adeesha Wijayasiri

BSc Eng. (Hons) (Moratuwa), MSc (UFL), PhD (UFL)

Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Charith Chitraranjan

BSc Eng. (Hons) (Moratuwa), MSc (NDSU), PhD (NDSU)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Kutila Gunasekera

BSc Eng Hons (Moratuwa), PhD (Monash)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Shehan Perera

BSc Hons (Colombo), MSc (NDSU), PhD (NDSU)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Ms. Vishaka Nanayakkara

BSc Eng Hons (Moratuwa), Tech Licentiate (Chalmers),

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Uthayasanker Thayasivam

BSc Eng Hons (Moratuwa), PhD (U. Georgia).

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Nisansa de Silva

BSc Eng Hons (Moratuwa), MS (UO), PhD (UO).

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Sapumal Ahangama

BSc Eng Hons (Moratuwa), PhD (NUS).

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Sunimal Rathnayake

BSc Eng Hons (Moratuwa), PhD (NUS).

Senior Lecturer, Dept. of Computer Science and Engineering, University of Moratuwa

Dr. Buddhika Karunarathne

BSc Eng Hons (Moratuwa), PhD (HKUST).

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Thanuja Ambegoda

BSc Eng Hons (Moratuwa), Dr. sc. (ETH).

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Sandareka Wickramanayake

PhD (NUS), BSc Eng. (Hons) (Moratuwa)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Dr. Chathuranga Hettiarachchi

PhD (NTU), BSc Eng. (Hons) (Moratuwa)

Senior Lecturer, Dept of Computer Science and Engineering, University of Moratuwa

Mr. Chamara Disanayake

MSc (Moratuwa), BSc Eng. (Hons) (Moratuwa), MBS(Colombo), AMIE(SL)

Senior Lecturer, Department of Network and Security, Faculty of Computing, NSBM

Dr. Srinath Perera

BSc Eng Hons (Moratuwa), MS (Indiana), PhD (Indiana)

Vice President - Research, WSO2

ELIGIBILITY REQUIREMENTS

The MSc in DS&AI postgraduate degree program requires a prospective candidate to fulfill the following eligibility criteria for course enrollment.

- An Honours Bachelor's degree of the University of Moratuwa in a relevant field, as approved by the Senate.

  OR

- Any other four-year degree in Engineering or Science or Technology from a recognized University in a relevant field as approved by the Senate.

  OR

- Any other three-year degree in Engineering or Science or Technology from a recognized University in a relevant field with a minimum of one year period of appropriate post-qualifying experience as may be approved by the Senate.

  OR

- Any recognized category of membership of a recognized Professional Institute obtained through an academic route with a minimum of one year period of appropriate post-qualifying experience as may be approved by the Senate.

SELECTION PROCESS

The selection to the MSc in DS&AI postgraduate degree program is through an open competitive process. The applicant's educational qualifications, professional qualifications, commitment to advanced study, demonstrated aptitude for research, English language skills required for preparation of study/research outcomes and knowledge dissemination, and references all contribute to the evaluation of a candidate. Following are the steps in the selection process:

1. Each applicant is evaluated for the conformity with the applicable eligibility criteria based on the information provided with the application. Applicants satisfying the eligibility criteria will be invited to a selection test.

2. The applicants who satisfy the eligibility criteria will appear for an online selection test of one-hour duration. The selection test consisting of multiple-choice, short-answer and similar questions will examine analytical skills, conceptual knowledge, and topic-specific knowledge in areas such as Programming, Data Structures and Algorithms, Operating Systems, Computer Systems and Organization, Software Engineering, Software Architecture, Theory of Computing, Databases, Artificial Intelligence, Networking, Computer Security, Professional Practice, and Management Information Systems. In addition, the candidates will be required to write a short essay (250 words) on a given topic. Successful applicants at the selection test will be invited to a selection interview.

3. The applicants who were successful at the selection test will face an interview of 5-10 minutes by an interview panel of not less than three persons. The interview will ascertain the applicant's suitability and competency for the study program.

4. Based on the marks received for the selection test and the selection interview, each applicant will be ranked into a "Selected Candidates List" and a "Waiting List". After the selection process, all applicants will be informed of their application status. If an applicant from the Selected Candidates List fails to enroll in the program within the stipulated period, that opportunity will be afforded to an applicant from the Waiting List.

COURSE FEE AND PAYMENT STRUCTURE

The total fee for the course is Rs. 650,000/-, which includes a registration fee of Rs.100,000/- and a course fee of Rs.550,000/-. It can be paid according to either plan A or B, as shown below.

Plan A

- Course registration fee - Rs. 100,000/- (by 31st October 2024)
- Full course fee - Rs. 550,000/- (by 15th December 2024)

    OR

Plan B

- Course registration fee - Rs. 100,000/- (by 31st October 2024)
- First installment – Rs. 300,000/- (by 15th December 2024)
- Second installment – Rs. 200,000/- (by 01st June 2025)
- Third installment – Rs. 50,000/- (by 01st March 2026)

The above fees include Annual Academic Registration Fees, Semester Examination Fees, and a Library Deposit of Rs. 2,500/-. In the case of a change in government taxes, the student will have to incur the additional tax amount.

Foreign Students must pay an additional 2000 USD.

HOW TO APPLY

1. Pay the application processing fee.

    The application processing fee of Rs. 2,000/- may be paid either to University Shroff (weekdays from 9.00 AM to 12.30 PM and 1.30 PM to 3.00 PM) or as a pay-in voucher of Rs. 2,000/- obtainable at any Bank of Ceylon branch by paying Rs. 2,000/- to the credit of "University of Moratuwa – A/C No. 306836". You may also make an online transfer to the same account. Please indicate the course as "MSc in DS&AI 2025" and your NIC number on the deposit slip or online transfer form (in case the online form does not allow all of this, please indicate your NIC).

2. Fill up the online application form at https://postgrad.cse.uom.lk/, and submit and print the completed application.

    You need to attach all documents indicated in the application form and submit them by the application deadline. The copies of the degree certificate and the academic transcript you upload must be certified with digital signatures by you and your employer. The digital signature should be a certificate-based Digital ID obtained either from a cloud-based trust service provider or the signer's local system. More information on the required type of digital signature can be found here. Once submitted, you will receive a PDF of the filled application as a record.

3. Arrange for Letters of Recommendation.

    You are required to provide two (02) Letters of Recommendation.

    Ensure that your reference forms are sent (emailed) to the relevant referees. Request the recommender to use the same e-mail address that you used while filling out the application and request the recommender to use the official e-mail address whenever possible.

    Once the referees have completed the reference form, they can submit it online. The recommender will receive a confirmation email with an attached PDF as a record. You will also receive a notification to the provided e-mail address.

4. Once your application is processed, you will be notified via e-mail whether you are invited for writing and selection tests and interviews or not. You may also receive e-mail notifications if the selection committee has any queries about your application.

If you are invited to the selection test (usually will be informed within one week from the application deadline), prepare the following application pack and have it ready at the selection test:

o   A printed copy of the completed and signed "Application Form"

o   Your National Identity Card (NIC), Driving License, or Passport

o   Original certificates and copies of academic/professional qualifications, membership of professional institutes, etc.

o   Updated "Curriculum Vitae" of the applicant

o   Completed "Letter of Consent Form" from the employer (if applicable)

o   Letter of sponsorship (if applicable)

o   Copy of the application processing fee receipt

https://postgrad.cse.uom.lk/