



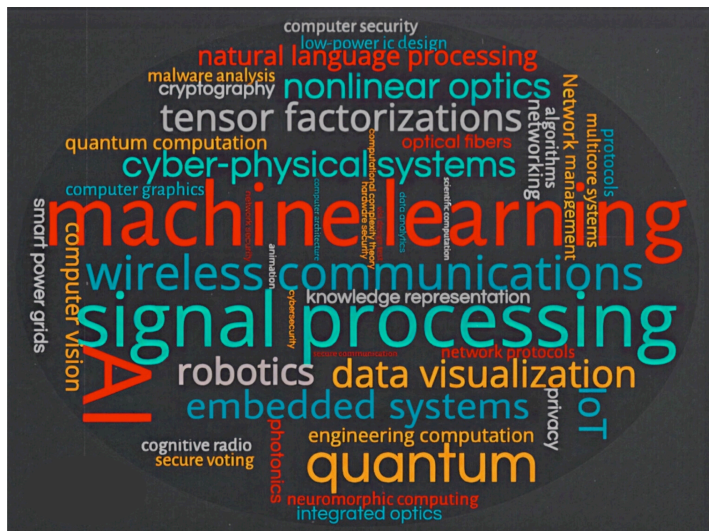
# Graduate Programs in Computer Science

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## Welcome to UMBC computer science!



- Classes
- Research
- Social engagement
- Outreach

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## Overview

- Degree requirements
- Faculty and research areas
- Miscellaneous advice
- The handbook

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## MS Coursework Requirements

- “Core” courses:
  - 641: Algorithms
  - One course from “systems” area
  - One course from “applications” area
- Plus thesis and non-thesis credits to 30 or 33

A note: **do not** take all your core courses in one semester! It's tempting but it's a trap!

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## Systems Courses

Pick any one of:

- 611: Computer Architecture
- 621: Operating Systems
- 661: Database Systems
- 681: Advanced Computer Networks

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## Applications Courses

Pick any one of:

- 626: Computer Security
- 634: Computer Graphics
- 655: Numerical Methods
- 671: Artificial Intelligence
- 678: Machine Learning

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## MS: To thesis or not to thesis?

- Thesis option: 6 credits of thesis research, CMSC 799, plus 24 credits (30 total)
- Write and defend your thesis
- Suitable for MS students interested in research and independent work



*Image: Imagen 3, April 2025*

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## MS: To thesis or not to thesis?

- Non-thesis option: 33 total credits
- Focus on coursework
- Suitable for MS students interested in non-research computer science work and class structure



Image: Imagen 3, April 2025

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## Ph.D. Coursework Requirements

- Same core courses: 641 + 1 systems + 1 applications
- 24 additional graduate credits
- 18 credits of Dissertation Research (CMSC 899) taken after Admission to Candidacy, taken over at least two semesters

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## Ph.D. Research Requirements

- Portfolio
- Preliminary Exam
  - Ph.D. Proposal + oral exam
  - Within 5 years of admission
- Dissertation
- Oral defense

Done with your research advisor. Finding an advisor should be one of your earliest priorities!

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## Research Labs

- Our faculty are active in research, and you should approach them to learn more!
- Attending research group meetings can be fun and interesting, with no commitment



*Image: Imagen 3, April 2025*

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## Before the Semester Starts

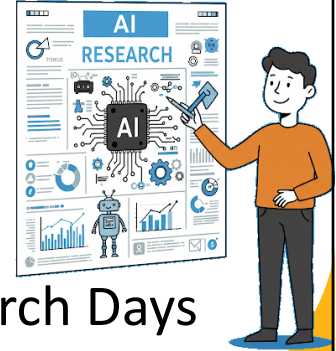
- Register for Courses ASAP
- Talk to your assigned graduate advisor
- If you don't know who your advisor is, please ask Mrs. Fliggins!

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## During the Semester

- Participate in research group meetings
- Attend departmental research talks and seminars
- Participate in UMBC's Annual Research Symposium (Spring)
- Participate in CSEE and COEIT Research Days



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## Progression Milestones

- Select your research advisor by the end of second semester
- M.S. thesis: Start by beginning of second year
- Ph.D. program: Start preparing portfolio by start of third semester

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## Research Areas

- Communications and Photonics
- Computer Architecture and Hardware Systems
- Cyber-Physical Systems
- Graphics and Visualization
- Quantum Computing/Theory and Algorithm
- Security and Privacy
- AI, Machine Learning, and Signal Processing

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## Research Areas

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  - AI, Machine Learning, and Signal Processing
- For details on who works in each area and what they do, see [https://www.csee.umbc.edu/cse-e-research-areas!](https://www.csee.umbc.edu/cse-e-research-areas)

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## Research Classes

- 699: Independent study (can be taken twice)
- 799: MS Thesis credits (2x required for thesis)
- 898: PhD pre-proposal research
- 899: PhD post-quals research
- 601: Research Skills

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## Common Questions

- Who is my advisor?
  - Ask Mrs. Fliggins for contact information
- How can I become a TA or grader?
  - Apply through UMBC Handshake: <https://careers.umbc.edu/handshake>
- How can I become an RA?
  - Talk to individual professors and explain why you're interested in their work specifically

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## Common Questions: Thesis or No

- (MS) How do I choose thesis or non-thesis?
  - Do you want to do research on novel unsolved problems?
  - Do you want to work with a specific professor in some area?
  - Do you do well in less structured, self-directed courses?
  - Do you like (or tolerate) writing?

If yes, consider a thesis. It's not for everyone, and that's fine.

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## Common Questions: Advisor and Topic

- (Ph.D.) How do I find a long-term research advisor?
  - Look at <https://www.csee.umbc.edu/csee-research-areas>, look at faculty, read their papers, and talk to them
  - Attend various labs' group meetings
- (Both) How do I choose a thesis topic?
  - This grows organically during your first few research projects and in consultation with your advisor
  - You don't have to nail it down immediately

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## Common Questions: Some Gotchas

- I/my friend wants to come in Spring. Should they?
  - No, Spring entry makes life harder
  - OPT, housing, and course progressions are all thrown off
- Should I take 611, 621, and 641 at the same time?
  - No, **do not** take all your core courses at once
- How do I know if XYZ is academic misconduct?
  - We'll explain

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## Mental Health

- Grad school is stressful!
- Look out for yourself and each other!
- If your friends or your students or your instructors go silent or exhibit other disturbing behavior, let us know
- As students, you're paying for mental health support—consider using it!

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## Progressions, Forms, Policies, ...

- Lots of good information in the CMSC Grad Student Handbook:

<https://www.csee.umbc.edu/computer-science-graduate-program-handbook>

OR

<http://tiny.cc/cs-handbook>

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## Other Questions?

- Write grad program coordinator, Mrs. Fliggins, at [fliggins@umbc.edu](mailto:fliggins@umbc.edu)
- Write grad program director, Dr. Matuszek, at [cmat@umbc.edu](mailto:cmat@umbc.edu)

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