Orientation Meeting
MSc/PGDip in Computer Science

Augmented and Virtual Reality
Data Science
Intelligent Systems
Future Network Systems

Dr. John Dingliana,
Co-Director, MSc in Computer Science
School of Computer Science and Statistics [SCSS]
Overview

• Course objectives, structure and timeline
• Assessment Regulations
• Facilities and Resources
• Where to go for help
Contacts: Course Team and School

**Strand Leaders:**
- Augmented and Virtual Reality: Michael Manzke
- Data Science: Mimi Zhang
- Future Networked Systems: Melanie Bouroche
- Intelligent Systems: Gaye Stephens

**Course Director:** Doug Leith  
Co-director (for admissions): John Dingliana

**SCSS Director of Postgraduate Teaching and Learning:** Ivana Dusparic  
**Head of School:** Gregory O’Hare

**MSc CS Course Administrator:** Joy Igbinosun [teaching-unit@rt.scss.tcd.ie]  
Technical Help – School Resources: help@rt.scss.tcd.ie

**Contact details:** https://www.tcd.ie/scss/people/
Contacts : General College

Global Relations [International students] : https://www.tcd.ie/globalrelations/
Global Officer for SCSS: Eimear Morhan
Student Counselling : https://www.tcd.ie/Student_Counselling/

Graduate Students Union: https://www.tcdgsu.ie/
Postgraduate Advisory Services (academic, pastoral and professional support):
   http://www.tcd.ie/Senior_Tutor/postgraduate/

Careers Office : https://www.tcd.ie/Careers/

General Administration (registration, fees, graduation, etc.) : academic.registry@tcd.ie
Information Systems Services (General computing facilities for all college) : http://isservices.tcd.ie/
Important Information

SCSS Teaching Web Pages
https://teaching.scss.tcd.ie/msc-in-computer-science/
• Course/Module Information
• Link to Course Handbook

TCD Calendar Part III
https://www.tcd.ie/calendar/graduate-studies-higher-degrees/
• Formal College Regulations (including this course)
MSc and PGDip Degrees

Level 9, National Framework of Qualifications

- knowledge and comprehension beyond Bachelor’s level and at the forefront of a field of learning

- critical awareness of current problems and new insights, new tools and new processes within their field of learning

- ability to apply knowledge and critical awareness in the context of research in broader or multidisciplinary areas related to their fields of study

- ability to integrate knowledge and handle complexity, to formulate judgements with incomplete or limited information

- ability to lead or initiate activity, and take responsibility for the intellectual activities of individuals or groups

- ability to communicate conclusions, and knowledge, rationale and processes underpinning these, to specialist and non-specialist audiences

- learning skills to continue to study in a self-directed or autonomous manner.

http://www.nfq-qqi.com/
The Year Ahead

September

Semester 1
(30 ECTS)
Taught Modules

January

Semester 2
(30 ECTS)
Taught Modules

May

mid August

Summer Research Period

30 ECTS (European Credit Transfer Systems)
= approx. 600 to 750 hours of Work

N.B. 90 ECTS must be from approved modules for the course.
# TCD Academic Year Structure

TCD Academic Year Structure [https://www.tcd.ie/calendar/academic-year-structure/](https://www.tcd.ie/calendar/academic-year-structure/)

<table>
<thead>
<tr>
<th>Academic Year Term</th>
<th>Start Date</th>
<th>End Date</th>
<th>UG continuing years / PG all years</th>
<th>UG new first years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28-Aug-23</td>
<td>12-Mar-24</td>
<td>Assessment * (Semesters 1 &amp; 2 of 2022/23)</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>2</td>
<td>04-Sep-23</td>
<td>16-Mar-24</td>
<td>Orientation (Programme, Visting &amp; Examinations)</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>3</td>
<td>11-Sep-23</td>
<td>23-Mar-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>4</td>
<td>18-Sep-23</td>
<td>30-Mar-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>5</td>
<td>25-Sep-23</td>
<td>07-Apr-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>6</td>
<td>02-Oct-23</td>
<td>14-Apr-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>7</td>
<td>09-Oct-23</td>
<td>21-Apr-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>8</td>
<td>16-Oct-23</td>
<td>28-Apr-24</td>
<td>Teaching and Learning</td>
<td>Marking/Results</td>
</tr>
<tr>
<td>9</td>
<td>23-Oct-23</td>
<td>05-May-24</td>
<td>Study/Review</td>
<td>Study/Review</td>
</tr>
<tr>
<td>10</td>
<td>30-Oct-23</td>
<td>02-May-24</td>
<td>Teaching and Learning (Monday, Public Holiday)</td>
<td>Teaching and Learning (Monday, Public Holiday)</td>
</tr>
</tbody>
</table>

**Dissertation Oral Examinations:** end Jul – start Aug (TBC)

**Dissertation Deadline:** mid Aug (TBC)

7th week in each Semester is free of classes

Semester 1 Teaching Begins 11.09.23

Semester 1 Teaching Ends 1.12.23

Semester 1 Exams*

Semester 2 Teaching Begins 22.01.24

7th week in each Semester is free of classes

Semester 2 Teaching Ends 12.04.24

Semester 2 Exams*

Semester 2 Exams*

Dissertation Oral Examinations: end Jul – start Aug (TBC)

Dissertation Deadline: mid Aug (TBC)
Course Content

Core Modules:
Compulsory to ALL strands

Strand Modules:
Compulsory to specific strand

Electives: Options:
Shared pool across all strands

Research Dissertation:
Unique to each student

<table>
<thead>
<tr>
<th>Module</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS7CS4 Machine Learning</td>
<td>5</td>
</tr>
<tr>
<td>CS7CS6 Research and Innovation Methods</td>
<td>5</td>
</tr>
<tr>
<td>CS7CS5 Dissertation</td>
<td>30</td>
</tr>
</tbody>
</table>

Machine Learning
Research Methods and Innovation

Strand Module 1 [10 ECTS]
Strand Module 2 [5 ECTS]
Strand Module 3
Option 1
Option 2
Option 3

Dissertation
Individual research project, under the supervision of an academic

Single largest piece of work in your M.Sc. (worth 33% of the overall award), important to work on it all year.

Partially supported by CS7CS6 Research and Innovation Methods module in Semester 1

Bulk of dissertation work typically takes place over the summer, but you **start now**!

- Selection of supervisors and research areas in the next two weeks (see below)
- Develop a research question by the end of Semester 1
- Dissertation submitted in August

Listing of Projects: [https://projects.scss.tcd.ie](https://projects.scss.tcd.ie)

N.B. This list is not exhaustive (many projects evolve through discussion). If you can’t find a listed project available that suits, find a supervisor in the correct area and contact them to see if they have supervision capacity

Examples of past projects: [https://publications.scss.tcd.ie/theses/diss/](https://publications.scss.tcd.ie/theses/diss/)

**Deadline of Project Registrations (MScCS) – Monday, 25th September 2023**

**Allocation of remaining project students to supervisors – Friday, 29th September 2023**

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**SCSS Research Areas**

- Artificial Intelligence
- Digital Content Technology
- Graphics, Vision, Augmented and Virtual Reality
- Future Networks and IoT
- Future Cities
- Security, Privacy and Data Protection
- Statistics and Data Science
- Software Performance and Correctness

[https://scss.tcd.ie/research/]
MSc / PGDip in Computer Science

Course Progression

**SEMESTER 1 TEACHING**
- 30 ECTS

**SEMESTER 2 TEACHING**
- 30 ECTS

**SEMESTER 3 RESEARCH**
- 30 ECTS

**TAUGHT COMPONENT ASSESSMENT**
- S1 EXAMS: January
- S2 EXAMS: May
- SUPPLEMENTALS: August
- FAIL
- PASS

**RESEARCH COMPONENT ASSESSMENT**
- FAIL
- WITHDRAW
- PASS

**SUP EXAMS**
- PASS
- FAIL
- WITHDRAW

**DISSERTATION**
- August
- PASS

**MSc in Computer Science**
- PASS

**PGDip in Computer Science**
- SUP EXAMS
Pass mark is $\geq 50\%$ for all modules including the dissertation
Mark of $\geq 70\%$ is considered a Distinction mark [marks above 80 are rare!]

**Taught Component**
- Must pass all modules (60 ECTS) in FIRST ATTEMPT to be allowed to do dissertation and be eligible for MSc
- Up to 10 ECTS of failed modules may be PASSED BY COMPENSATION iff the mark is $\geq 40\%$
- Otherwise you may attempt supplementals to pass failed modules for award of PGDip

**Research Component**
- Must pass dissertation (30 ECTS) in FIRST ATTEMPT to get MSc
- There are no supplementals for the Dissertation

**MSc with Distinction:** Must obtain $\geq 70\%$ overall in taught modules with no modules under 50% AND obtain $\geq 70\%$ in dissertation
Important Note: Academic Integrity

**Plagiarism:** presenting the work or ideas of others as one’s own, without due acknowledgement

Extremely important, particularly at PG level.
Disregarding this is one of the most likely ways to fail.

Students must read regulations

- Details: [https://libguides.tcd.ie/academic-integrity/](https://libguides.tcd.ie/academic-integrity/)
- Mandatory tutorial: [https://libguides.tcd.ie/academic-integrity/ready-steady-write](https://libguides.tcd.ie/academic-integrity/ready-steady-write)
- [Also detailed in Course Handbook]
Course Facilities

Lloyd Building
(Lecture Theatres LB01, Seminar Rooms LB107, LB120)

O’Reilly Building
(School Reception + Staff Offices)

Trinity Central
(Trinity Central Lab)

Hamilton Building
(Hamilton Library)

7-9 South Leinster Street
(Main MSc Lab, Seminar Rm., Meeting Rooms*)

Listed locations are spaces controlled by SCSS. Highlighted area is dedicated spaces for MSc CS.

Further Computer Facilities Provided by College are listed at:
https://www.tcd.ie/itservices/students/computer_rooms.php
Main MSc Facility: South Leinster Street 4th Floor Lab

Google Map: https://goo.gl/maps/DnrvLUNaAjnSmxkaA

**Student lab dedicated for the MSc in Computer Science**

Main lab [~80 workspaces]:
- Workstations with high-performance CPUs and GPUs
- Flexible spaces for work on student owned laptops

Special equipment room

6 x Glass-panelled break-out rooms for small group learning and project work

50-seat seminar room

Student Common Room & Kitchen
Online Course Materials and Resources: Blackboard

http://mymodule.tcd.ie

Course Notes
Assignment Submission
Feedback
etc.
What you should do next

- Attend the lunch reception at 1:00pm to meet other new PG students in SCSS [O’Reilly Building Foyer]
- Ensure you are registered, if not already
- Check that you can access blackboard mymodule.tcd.ie
- Check that you can see your modules in your timetable and blackboard (in particular check your elective modules)
  - **URGENT:** Contact teaching-unit@rt.scss.tcd.ie asap if you cannot see your elective modules or did not get the module selection form
- If you missed the college orientations earlier this week, check out some of the online materials: [https://www.tcd.ie/students/orientation/](https://www.tcd.ie/students/orientation/)
- Complete the Plagiarism Online Tutorial
- Look at [https://projects.scss.tcd.ie](https://projects.scss.tcd.ie) and try to find a topic, contact supervisor
Pick a class rep early (volunteer for rep if interested).
See: https://www.tcdgsu.ie/how-do-i-get-involved

Make sure you know who your strand leader is
Try to get to know your class mates
Try to pick a dissertation early

Please be respectful of colleagues and college community. Online communications on college business should be treated as interactions within the grounds of college and members should abide by College’s code of conduct and Dignity and Respect policy.

Please be understanding of the fact that the volume of electronic communications is very high at this time. Sometimes you may need to send a gentle reminder.
Strand Co-ordinators
Augmented and Virtual Reality Strand

Strand Co-ordinator: Prof. Michael Manzke. [Michael.Manzke@tcd.ie]

Visual computing technologies that underpin digital entertainment industries and new media as well as applications in science and engineering.

<table>
<thead>
<tr>
<th>Machine Learning</th>
<th>Graduate Employment Examples</th>
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<tbody>
<tr>
<td>Research Methods and Innovation</td>
<td>• Virtual Reality Software Engineer at ModelWorks</td>
</tr>
<tr>
<td>Advanced Software Engineering [10 ECTS]</td>
<td>• Software Engineer at Unity Technologies</td>
</tr>
<tr>
<td>Computer Vision</td>
<td>• Computer Vision Engineer at Volograms</td>
</tr>
<tr>
<td>Computer Graphics*</td>
<td>• Game Developer at Tencent Games</td>
</tr>
<tr>
<td>Math of Light and Sound</td>
<td>• Senior Software Engineer at AMD</td>
</tr>
<tr>
<td>Real-time Rendering</td>
<td>• Full-stack Developer at NVIDIA</td>
</tr>
<tr>
<td>Real-time Animation</td>
<td>• Research Engineer at The Foundry</td>
</tr>
<tr>
<td>Augmented Reality</td>
<td>• AI/Graphics Engineer at Viga</td>
</tr>
<tr>
<td>Option 1</td>
<td>• Graphics Engineer at Imagination Technologies</td>
</tr>
<tr>
<td>Option 2</td>
<td>• FX Pipeline Tech. Director at Boulder Media</td>
</tr>
<tr>
<td>Dissertation [30 ECTS]</td>
<td>• Senior Software Engineer (R&amp;D) at Logitech</td>
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<td></td>
<td>• Algorithm Engineer at Huawei</td>
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<tr>
<td></td>
<td>• Software Engineer at TopBox Studios</td>
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</tbody>
</table>
Data Science Strand

Strand Co-ordinator: Prof. Mimi Zhang. [Mimi.Zhang@scss.tcd.ie]

Statistics, cloud and security technologies, data management and analysis challenges and opportunities of the big-data revolution.

Graduate Employment

- Data Engineer at Accela
- Cloud Data Architect at Accenture AI
- Fraud Investigator at Amazon
- Data Analyst at Bank of America Merrill Lynch
- Senior Data Analyst at Bank of Ireland
- Risk Data Analyst at ByteDance
- Data Scientist at Citibank Europe
- Analyst at Deloitte
- Data Analyst at DMF Systems
- Senior Machine Learning Engineer at Everyangle
- Business Integrity Analyst at Facebook
- Storage AI Engineer at Huawei
- Data Analyst at Hubspot
- Business Analyst - Data Science and AI at IBM

<table>
<thead>
<tr>
<th>Machine Learning</th>
<th>Research Methods and Innovation</th>
</tr>
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<tbody>
<tr>
<td>Data Analytics [10 ECTS]</td>
<td>Data Visualization</td>
</tr>
<tr>
<td>Scalable Computing</td>
<td>Optimization Algorithms for Data Analysis</td>
</tr>
<tr>
<td>Applied Statistical Modelling</td>
<td></td>
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<tr>
<td>Security and Privacy</td>
<td></td>
</tr>
</tbody>
</table>

Option 1

Option 2

Option 3

Dissertation
### Future Networked Systems Strand

**Strand Co-ordinator:** Prof. Melanie Bouroche  
*Melanie.Bouroche@scss.tcd.ie*

- **smart and connected software systems increasingly embedded in our everyday lives**
- **distributed and cyber-physical systems**
- **timeliness, safety, privacy and scale challenges**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Machine Learning</td>
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<tr>
<td>Research Methods and Innovation</td>
<td></td>
</tr>
<tr>
<td>Advanced Software Engineering [10 ECTS]</td>
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<tr>
<td>Scalable Computing</td>
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<tr>
<td>Urban Computing</td>
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<tr>
<td>Internet of Things</td>
<td></td>
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<tr>
<td>Distributed Systems</td>
<td></td>
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<tr>
<td>Security and Privacy</td>
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<tr>
<td>Option 1 (Semester 1)</td>
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<tr>
<td>Option 2 (Semester 2)</td>
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<tr>
<td>Option 3 (Semester 3)</td>
<td></td>
</tr>
<tr>
<td>Dissertation</td>
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</tbody>
</table>

### Graduate Employment

- Big Data Cloud Engineer at Amazon Web Services
- Cloud Consultant at Hewlett Packard Enterprise
- Cloud Solution Architect at Microsoft
- Software Developer at ServiceNow
- Data Engineer at Sonra Intelligence Ltd.
- Data Engineer at 2K
- Technical Program Manager at Meta
- Senior Software Engineer (R&D) at Deem
- Technical Analyst at DXC Technology
- Software Engineer at Guidewire
- Software Developer at Jaguar
- PhD Student at Machine Learning Labs
- Technology Analyst at Citi
- Software Developer at Oracle

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Trinity College Dublin  
Coláiste na Tríonóide, Báilé Átha Cliath  
The University of Dublin
Intelligent Systems Strand

Smart interactive systems. Artificial intelligence, human language understanding and generation, web systems and applications, data analytics and knowledge engineering

Strand Co-ordinator: Prof. Gaye Stephens
[Gaye.Stephens@scss.tcd.ie]

Machine Learning
Research Methods and Innovation
Advanced Software Engineering [10 ECTS]
Knowledge and Data Engineering
Adaptive Applications
Text Analytics
Information Retrieval & Web Search
Artificial Intelligence

Option 1 (Semester 1)
Option 2 (Semester 2)
Option 3 (Semester 2)
Dissertation [30 ECTS]

Graduate Employment

- Research Engineer at Accenture
- AI/ML Research Engineer at ADAPT
- Software Engineer II at Ammeon
- Cloud Service Engineer at Aspiegel
- Deep Learning Engineer at Beautifeye
- Solutions Engineer at Datadog
- Data Scientist at First Data Corporation
- AI/ML Scientist at General Motors
- Software Engineer at IBM
- Software Engineer at Intel
- Data Scientist at Intel Movidius
- Software Engineer at Mastercard
- Machine Learning Engineer at Optum
- Vision Engineer at Surewash
- Data Scientist at Tandem
- AI Software Engineer at Genesys
Questions?