Graduate Matters – Nov 3, 2020

1. Graduate Number Trends

2. Updating Graduate Courses - Discussion

Graduate Number Trends

Semester	New MSc	New PhD	Total	QE	MSc Def	PhD Def
F16	13	1	52	0	2	0
W17	5	2	51	0	2	5
S17	3	3	50	0	3	0
F17	5	1	50	0	2	1
W18	5	1	53	0	5	2
S18	1	0	48	2	8	0
F18	11	2	52	2	3	0
W19	4	3	58	0	3	0
S19	2	0	56	1	2	0
F19	6	6	62	0	5	0
W20	2	2	60	1	4	0
S20	1	0	55	0	4	2
F20	6	3	57	-	-	1

Notes:

- Not all numbers are accurate - but very close
- 15 international and 42 Domestic
- 23 PhD, 34 MSc

Updating Graduate Courses - Self Study Priority

E.3.3. Review and Modernize Graduate Course Offerings (Self Study Report)

With 8 new faculty (excluding teaching-focused) joined SoCS in the past 3.5 years, which accounts for 30% of SoCS faculty, the area of research expertise in SoCS has changed. Hence, reviewing and modernizing our graduate course offerings is needed. There are also needs for offering more graduate courses every year and at least one graduate course during the summer.

The Graduate Curriculum Committee is expected to lead the implementation of this action plan. The goal is to have a revamped set of graduate courses for our SoCS programs by Fall 2021.

Courses Identified for Deletion

	COURSE TITLE	OFFERINGS SINCE 2010	NOTES
2	**CIS*6000 Distributed Systems**	**2011F, 2013F**	**Last taught - Q Mahmoud**
3	CIS*6020 Artificial Intelligence	2010F, 2020W, 2021W	
4	CIS*6030 Information Systems	2010W, 2012W,2019F	
5	**CIS*6070 Discrete Optimization**	**2010W, 2012W**	**Last taught - D Gillis (AI)**
6	CIS*6320 Image Processing Algorithms and Applications	2013W, 2015F,2016F, 2018W, 2020F	
7	CIS*6420 Soft Computing	2011F, 2013F, 2017W,2018F	
8	CIS*6890 Technical Communication and Research Methodology	EVERY YEAR	
9	**CIS*6050 Neural Networks**	**W11**	**2021 by N Bruce**
10	**CIS*6060 Bioinformatics**		**2021 by A. HW**
11	CIS*6080 Genetic Algorithms	2018W, 2021W	
12	**CIS*6090 Hardware/Software Co-Design of Embedded Systems**		
13	**CIS*6100 Parallel Processing Architectures**		**In the AI specialization**
14	CIS*6120 Uncertainty Reasoning in Knowledge Representation	2010W, 2011F, 2014F, 2016F, 2018F	
15	CIS*6130 Object-Oriented Modeling, Design and Programming	2019W	
16	**CIS*6140 Software Engineering**		**In the AI specialization**
17	CIS*6160 Multiagent Systems	2013W,2019F	
18	**CIS*6200 Design Automation in Digital Systems**		
19	**CIS*6490 Analysis and Design of Computer Algorithms**		**This is only 0.25 credits**
20	CIS*6650 Topics in Computer Science	**37 TIMES**	
21	CIS*6660 Topics in Computer Science II	**13 TIMES**	Reading courses

Source: `https://wiki.socs.uoguelph.ca/grads/courseofferingsgrad/start`

Course Descriptions - Proposed Deletions

For complete course listing:
`https://www.uoguelph.ca/registrar/calendars/graduate/current/gradprog/cis-courses.shtml`

CIS*6000 Distributed Systems U [0.50]

The evolution of distributed computer systems. Models for distributed processing. Taxonomy of multiprocessor systems. Interconnection networks. Memory and I/O for distributed architectures. Performance of distributed systems. Architectural issues of distributed systems

Department(s): School of Computer Science

CIS*6070 Discrete Optimization U [0.50]

This course will discuss problems where optimization is required and describes the most common techniques for discrete optimization such as the use of linear programming, constraint satisfaction methods, and genetic algorithms.

Department(s): School of Computer Science

CIS*6090 Hardware/Software Co-Design of Embedded Systems U [0.50]

Specification and design of embedded systems, system-on-a-chip paradigm, specification languages, hardware/software co-design, performance estimation, co-simulation and validation, processes architectures and software synthesis, retargetable code generation and optimization.

Department(s): School of Computer Science

Course Descriptions - Proposed Deletions

CIS*6100 Parallel Processing Architectures U [0.50]

Parallelism in uniprocessor systems, parallel architectures, memory structures, pipelined architectures, performance issues, multiprocessor architectures.

Department(s): School of Computer Science

CIS*6140 Software Engineering U [0.50]

This course will discuss problems where optimization is required and describes the most common techniques for discrete optimization such as the use of linear programming, constraint satisfaction methods, and meta-heuristics.

Department(s): School of Computer Science

CIS*6200 Design Automation in Digital Systems U [0.50]

Techniques and software tools for design of digital systems. Material covered includes high-level synthesis, design for testability, and FPGAs in design and prototyping.

Department(s): School of Computer Science

CIS*6490 Analysis and Design of Computer Algorithms U [0.25]

The design and analysis of efficient computer algorithms: standard methodologies, asymptotic behaviour, optimality, lower bounds, implementation considerations, graph algorithms, matrix computations (e.g. Strassen's method), NP-completeness.

Department(s): School of Computer Science

Courses Identified for Addition

Guidelines/considerations

- Have been offered recently as Topics course 6650
- Fill a gap in our advertised research areas
- Can be taught by at least two faculty members
- Have a flexible course description so faculty can teach to strengths

Potential Additions

1. Algorithms
2. HCI
3. Data Science (Scientific methods in CS)
4. Natural Language Processing
5. *Other Suggestions?*