

**University of Waterloo**  
**SENATE UNDERGRADUATE COUNCIL**  
**Notice of Meeting**

DATE: Tuesday 11 May 2021  
TIME: 12:00 noon – 2:00 p.m.  
PLACE: Teams – See meeting invitation or contact the secretary

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**Open Session**

Item	Action
1. Declarations of Conflict of Interest - Excerpt from Senate Bylaw 1*	Information
2. Approval of the 13 April 2021 Minutes* and Business Arising.....	UGC
3. Curricular Items for Approval & Information	
a. Mathematics*.....	3.1, 3.6 SEN-R; 3.2-3.5 SEN-C; rest UGC
4. Registrar's Office	
a. Effective Dates Chart 2021-2022*.....	UGC
b. Undergraduate Scholarships, Awards and Bursaries*.....	Information
5. Strategic Plan Update.....	Information
6. Academic Program Reviews	
a. <a href="#"><u>Academic Program Reviews</u></a> - Status.....	Information
7. Other Business.....	
8. Next Meeting: Tuesday 15 June 2021, 12:00 to 2:00 p.m. via Teams	

\*material attached/to be distributed\*\*

“SEN-consent” to be recommended to Senate for approval (consent agenda)

“SEN-regular” to be recommended to Senate for approval (regular agenda)

“UGC” to be approved on behalf of Senate & sent to Senate for information

Rebecca Wickens  
Associate University Secretary

4 May 2021

## **Excerpt from Senate Bylaw 1**

### **8. Declarations of conflict of interest**

8.01	At the beginning of each meeting of Senate or any of Senate's committees or councils, the chair will call for members to declare any conflicts of interest with regard to any agenda item. For agenda items to be discussed in closed session, the chair will call for declarations of conflict of interest at the beginning of the closed portion of the meeting. Members may nonetheless declare conflicts at any time during a meeting.
8.02	A member shall be considered to have an actual, perceived or potential conflict of interest, when the opportunity exists for the member to use confidential information gained as a member of Senate, or any of Senate's committees or councils, for the personal profit or advantage of any person, or use the authority, knowledge or influence of the Senate, or a committee or council thereof, to further her/his personal, familial or corporate interests or the interests of an employee of the university with whom the member has a marital, familial or sexual relationship.
8.03	Members who declare conflicts of interest shall not enter into debate nor vote upon the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).
8.04	Where Senate or a committee or council of Senate is of the opinion that a conflict of interest exists that has not been declared, the body may declare by a resolution carried by two-thirds of its members present at the meeting that a conflict of interest exists and a member thus found to be in conflict shall not enter into debate on the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).

**University of Waterloo**  
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**Minutes of the 13 April 2021 Meeting**  
**[in agenda order]**

**Present:** Katherine Acheson, Veronica Austen, Monica Barra, Rachel Bruce, Benoit Charbonneau, Victoria Chu, Martin Cooke, Vivian Dayeh, Daniel Davison, Abigail DeSouza, David DeVidi (chair), Jaskaran Dhillon, Leeann Ferries, Ariel Gans, Brendon Larson, Bruce MacVicar, Cathy Newell Kelly, Jeremy Pittman, Francis Poulin, Megan Town, Cristina Vanin, Chris Vigna, Stephanie Ye-Mowe, Angela Wang-Lin, Rebecca Wickens (secretary), Richard Wikkerink

**Resources:** Blair Clarence, Jennifer Coghlin, Danielle Jeanneault, Amanda McKenzie

**Guests:** Darren Charters, Steve Fortin, Richard Kelly, Bruce Frayne, Blake Phillips, Michael Wood

**Regrets:** Kofi Campbell

**Organization of Meeting:** David DeVidi took the chair, and Rebecca Wickens acted as secretary. The secretary advised that a quorum was present. The agenda was approved without formal motion.

**1. DECLARATIONS OF CONFLICTS OF INTEREST**

No conflicts of interest were declared.

**2. APPROVAL OF THE 9 FEBRUARY 2021 MINUTES AND BUSINESS ARISING**

The minutes were approved without formal motion. There was no business arising from the minutes.

**3. CURRICULAR ITEMS FOR APPROVAL & INFORMATION**

**Arts.** Acheson spoke to a few minor modifications to the submission – the text for AFM 291 on page 15 is superceded by the revised text for that course on pages 33-34; the effective date for CI 300/SPAN 300 should be 1 September 2022.

Acheson took members through the first submission for the Faculty of Arts re: the proposed Bachelor of Sustainability and Financial Management, starting with an overview of the new program, rationale for its creation, and guests invited to respond to questions. Acheson then presented new SFM courses. There was a motion to approve the new courses on behalf of Senate. Acheson and Barra. Carried. Acheson spoke to course changes. In response to a question, members heard: it is preferable that students take AFM 321 after AFM 274; for some programs, this is not possible due to scheduling, so those students are permitted to take the courses concurrently. There was a motion to approve the course changes on behalf of Senate. Acheson and Charbonneau. Carried. Following approval of the new and revised courses necessary for the proposed plan, the requirements of the plan were presented. Discussion included: the relationship between the new plan and Environment and Business, including the different foci of the plans and whether the plans will compete for students. Following discussion there was a motion to recommend that Senate approve the proposed new Bachelor of Sustainability and Financial Management as presented, effective 1 September 2022. Acheson and Larson. Carried.

Acheson presented the second submission from the Faculty of Arts. There was a motion to approve the new courses on behalf of Senate. Acheson and Barra. Carried. There was a motion to approve the revised courses on behalf of Senate. In response to a question, members heard that location designations are under discussion. Acheson and Vanin. Carried. There was a motion to approve the course inactivations on behalf of Senate. Acheson and Charbonneau. Carried. Members heard that Social Development Studies is proposing to update rules around transfer credits to accept unspecific SDS-coded credits, which is consistent with the approach of other arts programs and provides more flexibility for students. There was a motion to recommend that Senate approve the proposed change to the Social Development Studies plans as presented, effective 1 September 2022. Acheson and Barra. Carried. Following presentation of the minor modifications, there was a motion to approve the proposed changes on behalf of Senate. Acheson and Larson. Carried. Acheson presented the regulatory changes,

highlighting: a proposed change to the list of invalid multiple-plan combinations to permit Liberal Studies to be combined with majors outside of the Faculty of Arts, while still restricting its combination with other stand-alone arts majors; for simplicity, to include Liberal Studies as a major wherever academic rules and regulations apply to both disciplinary majors and students in Liberal Studies plans and note exceptions where there are any; updates to breadth requirements to include Indigenous entrepreneurship and sustainability and financial management codes in the transdisciplinary studies list; moving honours economics and honours mathematical economics students to the same co-op sequence as arts and business, noting the rationale for the proposed change and consultations that have taken place. There was a motion to recommend that Senate approve the revised regulations as presented. Acheson and Ferries. Carried.

**Engineering.** Davison presented the engineering submission for approval as an omnibus motion, noting: a course offered as a special topic which is being made permanent; a course in law that is being inactivated due to low interest; other minor and housekeeping changes to courses and plans. There was a motion to approve the engineering submission on behalf of Senate as presented. Davison and Cooke. Carried. Members received the Fall 2020 report on temporary calendar deviations due to the pandemic for information.

**Environment.** Following an overview, there was a motion to approve the proposed new courses on behalf of Senate. Larson and Barra. Carried. Larson presented course changes, noting the revisions in support of the new Bachelor of Sustainability and Financial Management. There was a motion to approve the course changes on behalf of Senate. Larson and Austen. Carried. Larson presented the new Bachelor of Science in Climate and Environmental Change program, noting the unique strengths, consultations and support for the new program, and positive comments from the external assessors. There was a motion to recommend that Senate approve the new Bachelor of Science in Climate and Environmental Change as presented, effective 1 September 2022. Larson and Poulin. Carried. Larson spoke briefly to the course subject name change from Environmental Studies to Environment. There was a motion to approve that change on behalf of Senate, effective 1 September 2022. Larson and Ferries. Carried.

**Science.** Following a brief overview, there was a motion to approve the course changes on behalf of Senate. Barra and Larson. Carried. Barra presented the minor modification to the chemistry minor to make it open to students in all plans. There was a motion to approve the proposed minor modification on behalf of Senate. Barra and Ferries. Carried. Barra spoke to the proposed changes to the admission requirements for the Doctor of Pharmacy program, driven by a review undertaken by the School of the prerequisites for admission, similar changes made by competitor programs, and the intention of introducing more flexibility to increase diversity of student applicants. In discussion, it was noted that the Faculty of Mathematics had not been consulted on changes impacting their offerings, but, given the need to move this forward, there was not a request to table the item until that consultation could take place. There was a motion to approve the minor modification to the admission requirements for the Doctor of Pharmacy program, effective 1 September 2022. Barra and Acheson. Carried, with one against and one abstention. Members received the Fall 2020 report on temporary calendar deviations due to the pandemic for information.

#### **4. REGISTRAR'S OFFICE**

**Awards of Excellence.** Following an overview by Newell Kelly wherein she noted the unintentional omission of an academic standing when the award was originally approved, there was a motion to approve the addition of the academic standing “Eligible” in the Faculty of Health to the criteria for the Term Distinction award retroactive to 1 September 2020. Newell Kelly and Ferries. Carried.

#### **5. ACADEMIC PROGRAM REVIEWS**

The chair noted that item 5d is being pulled from the agenda for revision and will return to a later meeting. There was a brief discussion re: the role of the Dean under the current and new review process.

**Academic Program Reviews – Status.** This item was received for information.

**Handling of Final Assessment Reports & Two-Year Progress Reports.** This item was received for information.

**Final Assessment Report– Liberal Studies.** Reviewers noted that the report was well-written, and recommendations, in particular, re: the capstone course, were addressed well. Discussion included the impact of the pandemic on timelines. Following discussion, Acheson stepped out for the motion. There was a motion to approve the report on behalf of Senate. Charbonneau and Barra. Carried.

**Final Assessment Report – Sexuality, Marriage & Family.** Members commented favorably on the responsiveness of the department and how recommendations were addressed. In discussion: members noted the recommendation re: the name change in the context of the overlap between the acronym for this program and the proposed Bachelor of Sustainability and Financial Management; there were questions about the addition of new resources and how this recommendation has been impacted by the pandemic; it was noted that the family life educator certification is an external credential. Following discussion, Vanin stepped out for the motion. There was a motion to approve the report on behalf of Senate. Austen and Charbonneau. Carried.

## **6. OTHER BUSINESS.**

Members inquired about starting the meetings at 12:30 p.m. and whether there are plans for return to in person meetings in the Fall. The secretary will look into these items and report back.

## **7. NEXT MEETING**

The next meeting is 11 May 2021 from 12 noon – 2:00 p.m. via Teams.

5 May 2021

Rebecca Wickens  
Associate University Secretary

**FACULTY OF MATHEMATICS REPORT TO  
SENATE UNDERGRADUATE COUNCIL**

**1. NEW COURSES**

- 1.1. Computer Science (CS)
- 1.2. Computer Science (CS)

**2. COURSE CHANGES**

- 2.1. Applied Mathematics (AMATH)
- 2.2. Applied Mathematics (AMATH)
- 2.3. Computer Science (CS)
- 2.4. Computer Science (CS)
- 2.5. Computer Science (CS)
- 2.6. Computer Science (CS)
- 2.7. Dean of Mathematics (COMM)
- 2.8. Dean of Mathematics (MATH)
- 2.9. Dean of Mathematics (MATH)
- 2.10. Dean of Mathematics (MTHEL)
- 2.11. Statistics and Actuarial Science (STATS)
- 2.12. Statistics and Actuarial Science (STATS)

**3. ACADEMIC PLAN CHANGES (MINOR MODIFICATIONS)**

- 3.1. Applied Mathematics (Minor)
- 3.2. Applied Mathematics Fluids and Heat (Specialization)
- 3.3. Applied Mathematics Heat and Mass Transfer (Specialization)
- 3.4. Applied Mathematics Communication and Control (Specialization)
- 3.5. Applied Mathematics (Specialization)
- 3.6. Computer Science Computational Fine Art (Specialization)
- 3.7. Computer Science Human-Computer Interaction (Specialization)
- 3.8. Computer Science Software Engineering (Specialization)
- 3.9. Mathematics/Business Information Tech. Management (Honours)
- 3.10. Mathematics/Business Administration (Honours)
- 3.11. Computer Science Double Degree (Honours)
- 3.12. Computer Science Double Degree (Honours)
- 3.13. Mathematics/Business Chartered Professional Accountancy (Honours)
- 3.14. Mathematics/Business Double Degree (Honours)

**4. Notes**

- 4.1. Transition from ELAS to BASE

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**NEW COURSES (for approval)**

**Computer Science - David R. Cheriton School of**

**Effective 01-SEP-2022**

CS 136L (0.25) LAB Tools and Techniques for Software Development

This course introduces students to tools and techniques useful in the software development lifecycle. Students learn to navigate and leverage commands and utilities in the Linux Command Line Shell. Students gain experience in version control software, writing scripts to automate tasks, and creating effective test cases to identify bugs. Tracing and debugging strategies are discussed. Students also gain experience in using built-in support for version control, testing, debugging, build automation, etc. in integrated development environments (IDEs). Note: Course will be graded on a CR/NCR basis.

**Requisites :** Prereq: At least 90% in CS 115 or at least 70% in CS 116 or at least 60% in CS 135 or CS 145. Coreq: CS 136 or CS 146.

**Rationale :** In the first two years of the CS program, students take four consecutive programming-intensive courses with a strong focus on the design of algorithms and the translation of algorithms into programs. However, efficient and productive software development also requires many additional skills and best practices. Historically we expected students to pick these skills up on their own, which has not always been successful. CS136L is a lab course where these skills will be covered. Offered whenever CS 136 and CS 146 are offered. Grading Basis is CR/NCR.

**Effective 01-SEP-2022**

CS 346 (0.50) LAB, LEC, TST Application Development

Introduction to full-stack application design and development. Students will work in project teams to design and build complete, working applications and services using standard tools. Topics include best-practices in design, development, testing, and deployment.

**Requisites :** Prereq: CS 246; Computer Science students only

**Rationale :** This course is created to address the concern that many of our undergraduate students are lacking expertise in the most basic skills of software development.

**COURSE CHANGES (for approval)**

**Applied Mathematics**

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**Current Catalog Information**

AMATH 271 (0.50) LEC Introduction to Theoretical Mechanics  
Newtonian dynamics, gravity and the two-body problem, introduction to Lagrangian mechanics, introduction to Hamiltonian mechanics, non-conservative forces, oscillations, introduction to special relativity [Offered: F]  
No Special Consent Required  
Requisites : Prereq: MATH 138, PHYS 121. Coreq: (AMATH 250 or 251 or MATH 228), MATH 237. Antireq: PHYS 263

**Effective 01-SEP-2022**

Requisite Change : Prereq: (One of MATH 128, 138, 148), PHYS 121. Coreq: (One of AMATH 250, 251, MATH 228), (One of MATH 227, 237, 247). Antireq: PHYS 263  
Rationale : MATH 148 and MATH 247 are clearly appropriate alternate pre/co-requisite for MATH 138 and MATH 237, respectively. Not including these was an oversight when the course was created. Adding MATH 128 and MATH 227 will allow Physics majors who are not in Mathematical Physics to take the course.

**Current Catalog Information**

AMATH 342 (0.50) LAB, LEC Computational Methods for Differential Equations  
An introduction to numerical methods for ordinary and partial differential equations.  
Ordinary differential equations: multistep and Runge-Kutta methods; stability and convergence; systems and stiffness; boundary value problems. Partial differential equations: finite difference methods for elliptic, hyperbolic and parabolic equations; stability and convergence. The course focuses on introducing widely used methods and highlights applications in the natural sciences, the health sciences, engineering, and finance. [Offered: F,W]  
No Special Consent Required  
Requisites : Prereq: AMATH 242/CS 371 and (One of AMATH 250, 251, 350 or MATH 218, 228)

**Effective 01-SEP-2022**

Requisite Change : Prereq: (AMATH 242/CS 371 or CS 370) and (One of AMATH 250, 251, 350 or MATH 218, 228)  
Rationale : This will make the course accessible to students in several plans which require CS 370. The instructor has been signing several course overrides each term for such students. It is important to note that CS 370 is an antireq to CS 371.

**Computer Science - David R. Cheriton School of**

**Current Catalog Information**

CS 241 (0.50) LAB, LEC, TST, TUT Foundations of Sequential Programs  
The relationship between high-level languages and the computer architecture that underlies their implementation, including basic machine architecture, assemblers, specification and translation of programming languages, linkers and loaders, block-structured languages, parameter passing mechanisms, and comparison of

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programming languages. [Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. CS 251 is a recommended corequisite. Offered: F,W,S]

No Special Consent Required

Requisites :

Prereq: (CS 138 or 246) or (a grade of 85% or higher in one of CS 136 or 146); Computer Science and BMATH (Data Science) students only. Antireq: CS 230, ECE 351

**Effective 01-SEP-2022**

Requisite Change :

Prereq: (CS 138 or (CS 246 and **CS 136L**) or (**CS 136L** and a grade of 85% or higher in one of CS 136 or 146)); Computer Science and BMATH (Data Science) students only. Antireq: CS 230, ECE 351

Rationale :

CS241/CS241E will require the skills that are covered in CS136L.

CS241/CS241E already assumes that students have these skills. Therefore, adding CS 136L to the prerequisites ensure students will have the skills required to complete the course.

**Current Catalog Information**

CS 241E (0.50) LAB, LEC, TST, TUT Foundations of Sequential Programs (Enriched)

Enriched version of CS 241. [Note: See notes 1 and 9 above. CS 241E may be substituted for CS 241 wherever the latter is a requirement. Enrolment is restricted.

Lab is not scheduled and students are expected to find time in open hours to complete their work. CS 251 is a recommended corequisite. Offered: As permitted by demand and available resources]

No Special Consent Required

Requisites :

Prereq: A grade of 85% or higher in one of CS 136, 138, or 146; Computer Science and BMATH (Data Science) students only. Antireq: CS 230, GENE 344

**Effective 01-SEP-2022**

Requisite Change :

Prereq: (**CS 136L** and a grade of 85% or higher in one of CS 136 or CS 146), or a grade of 85% or higher in CS 138; Computer Science and BMATH (Data Science) students only. Antireq: CS 230, GENE 344

Rationale :

CS241/CS241E will require the skills that are covered in CS136L.

CS241/CS241E already assumes that students have these skills. Therefore, adding CS 136L to the prerequisites ensure students will have the skills required to complete the course.

**Current Catalog Information**

CS 246 (0.50) LAB, LEC, TST, TUT Object-Oriented Software Development

Introduction to object-oriented programming and to tools and techniques for software development. Designing, coding, debugging, testing, and documenting medium-sized programs: reading specifications and designing software to implement them; selecting appropriate data structures and control structures; writing reusable code; reusing existing code; basic performance issues; debuggers; test suites. [Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

No Special Consent Required

Requisites :

Prereq: CS 146 or a grade of 60% or higher in CS 136 or 138; Honours

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**Effective 01-SEP-2022**

Requisite Change :

Mathematics students only. Antireq: CS 247, MSCI 342, SYDE 322

Prereq: (CS 146 and [CS 136L](#)) or (a grade of 60% or higher in CS 138) or ([CS 136L](#) and a grade of 60% or higher in CS 136); Honours Mathematics students only.

Antireq: CS 247, MSCI 342, SYDE 322

Rationale :

CS246/CS246E will require the skills that are covered in CS136L.

CS246/CS246E has, over the years, needed to cover these skills. The existence of CS136L will allow CS246/CS246E to regain focus on its core subject, namely object-oriented programming.

**Current Catalog Information**

CS 246E (0.50) LAB, LEC, TST, TUT Object-Oriented Software Development (Enriched)

Enriched version of CS 246. [Note: See notes 1 and 9 above. CS 246E may be substituted for CS 246 wherever the latter is a requirement. Enrolment is restricted.

Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: As permitted by demand and available resources.]

No Special Consent Required

Requisites :

Prereq: A grade of 85% or higher in one of CS 136 or 146; Honours Mathematics students only. Antireq: SYDE 322

**Effective 01-SEP-2022**

Requisite Change :

Prereq: [CS 136L](#), a grade of 85% in either CS 136 or CS 146; Honours Mathematics students only. Antireq: SYDE 322

Rationale :

CS246/CS246E will require the skills that are covered in CS136L.

CS246/CS246E has, over the years, needed to cover these skills. The existence of CS136L will allow CS246/CS246E to regain focus on its core subject, namely object-oriented programming.

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**Dean of Mathematics**

**Current Catalog Information**

COMM 432 (0.50) LEC, TUT Electronic Business

This course will introduce students to approaches, techniques and terminology used in electronic business. Students will also study issues in disciplines related to electronic business. They will review a number of sites and identify efficient e-commerce analysis, design and development techniques. Students will be introduced to current electronic business tools and standards, and will construct their own simple electronic business site.

No Special Consent Required

Requisites : Prereq: BUS 352W, CS 330 or 490; Level at least 3A. Antireq: AFM 443

**Effective 01-SEP-2022**

Requisite Change :

Prereq: ([MGMT 244/ARBUS 302](#) or BUS 352W); CS 330 or 490; Level at least 3A.

Antireq: AFM 443

Rationale :

To update prerequisites. As we expect more and more of Math/BA and MATH/ITM students will take MGMT 244/ARBUS 302 since their plan requirement change, we should update the prerequisites to include them so that we do not use the override form.

**Current Catalog Information**

MATH 237 (0.50) LEC, TST, TUT Calculus 3 for Honours Mathematics

Calculus of functions of several variables. Limits, continuity, differentiability, the chain rule. The gradient vector and the directional derivative. Taylor's formula.

Optimization problems. Mappings and the Jacobian. Multiple integrals in various co-ordinate systems. [Note: MATH 247 may be substituted for MATH 237 whenever the latter is a plan requirement. Offered: F,W,S]

No Special Consent Required

Requisites : Prereq: (MATH 106 or 114 or 115 or 136 or 146) and (MATH 128 with at least 70% or MATH 138 with at least 60% or MATH 148); Honours Math or Math/Physics students. Antireq: MATH 207, 212/ECE 206, MATH 212N, 217, 227

**Effective 01-SEP-2022**

Requisite Change :

Prereq: (One of MATH 106, 114, 115, 136, 146) and (MATH 128 with at least 70% or MATH 138 with at least 60% or MATH 148); Honours Math or Math/Physics students. Antireq: MATH 207, 212/ECE 206, MATH 212N, 217, 227, [247](#)

Rationale :

As MATH 237 and MATH 247 are the only courses in the advanced and regular pairings that are not antirequisites of each other, this change is bringing consistency. This break in consistency happened for historical reasons. Pre 2008-2009 calendar, MATH 237 and MATH 247 were antirequisites of each other. At the time, there was a rush of students trying to get into Mathematical Finance without the appropriate knowledge of real analysis. They wanted to go straight from MATH 237 to PMATH 351, which is a complete disaster for most students. Taking MATH 247 was, for those students, a

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burned course, because it was antirequisite with MATH 237. The Faculty then decoupled the courses to enable a more reasonable pathway for those students. In the 2008 and 2009 calendar, MATH 247 was antirequisite to MATH 237 but not the other way around, and in 2009-2010 up to now, neither course listed the other as antirequisite. Since then, Pure Math has created PMATH 333, which is specifically designed to bridge the gap between MATH 237 and PMATH 351. Now most students figure out that they want Mathematical Finance before they take MATH 237. So there is really no need to continue having MATH 237 and MATH 247 decoupled.

**Current Catalog Information**

MATH 247 (0.50) LEC, TST Calculus 3 (Advanced Level)

Topology of real n-dimensional space: completeness, closed and open sets, connectivity, compact sets, continuity, uniform continuity. Differential calculus on multivariable functions: partial differentiability, differentiability, chain rule, Taylor polynomials, extreme value problems. Riemann integration: Jordan content, integrability criteria, Fubini's theorem, change of variables. Local properties of continuously differentiable functions: open mapping theorem, inverse function theorem, implicit function theorem. [Offered: F,W,S]

No Special Consent Required

Requisites : Prereq: MATH 146, 148; Honours Mathematics students only

**Effective 01-SEP-2022**

Requisite Change :

Rationale :

Prereq: MATH 146, 148; Honours Mathematics students only. [Antireq: MATH 237](#)  
As MATH 237 and MATH 247 are the only courses in the advanced and regular pairings that are not antireqs of each other, this change is bringing consistency. This break in consistency happened for historical reasons. Pre 2008 and 2009 calendar, MATH 237 and MATH 247 were antirequisites of each other. At the time, there was a rush of students trying to get into Mathematical Finance without the appropriate knowledge of real analysis. They wanted to go straight from MATH 237 to PMATH 351, which is a complete disaster for most students. Taking MATH 247 was, for those students, a burned course, because it was antirequisite with MATH 237. The Faculty then decoupled the courses to enable a more reasonable pathway for those students. In 2008-2009, MATH 247 was antirequisite to MATH 237 but not the other way around, and in 2009-2010 up to now, neither course listed the other as antirequisite. Since then, Pure Math has created PMATH 333, which is specifically designed to bridge the gap between MATH 237 and PMATH 351. Now most students figure out that they want Mathematical Finance before they take MATH 237. So there is really no need to continue having MATH 237 and MATH 247 decoupled.

**Current Catalog Information**

MTHEL 199 (0.25) LEC Special Topics

Special topics course as announced by the Faculty. [Note: This course will be graded on a Credit/No-Credit basis.]

No Special Consent Required

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**Effective 01-MAY-2021**

Subject/Catalog Nbr Change:  
Unit Change:  
Title Change:  
Description Change:

MTHEL 99

( 0.00 )

First-Year Mathematics Readiness

A skills-based course designed to help the incoming university student refresh their knowledge of secondary school mathematics. It includes extra practice with the following topics: inequalities and absolute values, radicals and rational expressions, trigonometry, exponential and logarithmic functions, polynomials, and introductory calculus.

Rationale :

MTHEL 199 was created as an emergency response to the pandemic. We were exploring ways to provide remedial mathematics to the incoming class whose senior high school math courses were disrupted by the COVID crisis, and one option was to provide a remedial course covering key high school topics. In case we were to go forward, a vessel was needed, and MTHEL 199 was created. It was reasonable at the time to make it a generic topics course. There was a strong desire in the Faculty of Mathematics that this course, should it be offered, would not increase student tuition because it covers high school material. During July 2020, the course was shaped. For students taking less than 2.5 units, there was a lot of MUO manual work in fall 2020 to prevent students being charged tuition. Since the course now exists, we should prevent the possibility that other topics could be taught through it, hence the new title and description. The move to 0 credit weight will ensure students are not charged tuitions, and that other Faculties are not impacted through the WBM for using the course. It also solves additional issues with regards to Laurier based Double Degree students. We renumber from 199 to 99 because of the level of the material. Permission for 2021 effective date obtained from RO.

## Statistics & Actuarial Science

### Current Catalog Information

STAT 321 ( 0.50 ) LEC, TUT

Regression and Forecasting (Non-Specialist Level)

Modeling the relationship between a response variable and several explanatory variables via regression models. Model diagnostics and improvement. Using regression models for forecasting, Exponential smoothing. Simple time series modeling.

[Offered: W]

No Special Consent Required

Requisites :

Prereq: ([MATH 225/126](#) or 235 or 245) and (STAT 221 or 231 or 241). Antireq: ECON [321](#), STAT 331, 371, 373, 443

**Effective 01-SEP-2022**

Requisite Change :

Prereq: One of MATH 225, 235, 245 and One of STAT 221, 231, 241. Antireq: STAT 331, 371, 373, 443

Rationale :

ECON updated their courses and removed ECON 321 in the 2019/2020 calendar and the course is no longer being offered. Only one active student with ECON 321, and they are currently enrolled in STAT 321. Note: The current listed prerequisites (MATH 225/126) do not reflect the actual prerequisites listed

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Undergraduate Catalog Report  
Faculty of Mathematics**

Page No. 8  
Run Date 04-MAY-2021  
Meeting Number(s) 82

in the UG Calendar (MATH 126 was removed in 2016 as the renumbering had occurred over five years previously), thus no change is occurring to the prerequisites at this time.

**Current Catalog Information**

STAT 331 (0.50) LEC, TUT Applied Linear Models  
Modeling the relationship between a response variable and several explanatory variables (an output-input system) via regression models. Least squares algorithm for estimation of parameters. Hypothesis testing and prediction. Model diagnostics and improvement. Algorithms for variable selection. Nonlinear regression and other methods. [Offered: F,W,S]  
No Special Consent Required  
Requisites : Prereq: MATH 235 or 245, (STAT 231 with a grade of at least 60%) or STAT 241 or (SYDE 212 with a grade of at least 70%). Antireq: ECON 321, 421, STAT 321, 371, 373, SYDE 334

**Effective 01-SEP-2022**

Requisite Change : Prereq: MATH 235 or 245, (STAT 231 with a grade of at least 60%) or STAT 241 or (SYDE 212 with a grade of at least 70%). Antireq: ECON 421, STAT 321, 371, 373, SYDE 334  
Rationale : ECON updated their courses and removed ECON 321 in the 2019/2020 calendar and the course is no longer being offered.

End of Report

**Motion 3.1:** Effective Sept 1, 2022, update the description section of the Degree Requirements for Applied Mathematics Minor as prescribed below to make the minor available to students outside of the Faculty of Mathematics (except as noted). It also makes the course selection more flexible and reduces the number of required courses by one, making this plan more consistent with other minors. For students in the Faculty of Mathematics, the previous minor and the proposed changed one are equivalent in unit needs given all students in the Faculty take automatically a course from the first three "One of" categories as part of their Core requirement. For Students outside the Faculty, the additional 1.5 units from these three "One of" categories ensures they can be successful in the other courses.

## **Current Catalogue Information**

### **Applied Mathematics Minor**

This minor is only open to students within the Faculty of Mathematics.

All of

- MATH 237 Calculus 3 for Honours Mathematics or MATH 247 Calculus 3 (Advanced Level)
- AMATH 231 Calculus 4
- AMATH 251 Introduction to Differential Equations (Advanced Level) Note: AMATH 250 can be substituted with consent of the department.
- AMATH 351 Ordinary Differential Equations 2
- AMATH 353 Partial Differential Equations 1

Three additional 300- or 400-level AMATH courses.

### **Effective 01-SEP-2022**

### **Applied Mathematics Minor**

**One of**

- [MATH 103 Introductory Algebra for Arts and Social Science](#)
- [MATH 106 Applied Linear Algebra 1](#)
- [MATH 114 Linear Algebra for Science](#)
- [MATH 115 Linear Algebra for Engineering](#)
- [MATH 136 Linear Algebra 1 for Honours Mathematics](#)
- [MATH 146 Linear Algebra 1 for Honours Mathematics \(Advanced Level\)](#)

**One of**

- [MATH 104 Introductory Calculus for Arts and Social Science](#)
- [MATH 116 Calculus 1 for Engineering](#)
- [MATH 117 Calculus 1 for Engineering](#)
- [MATH 127 Calculus 1 for the Sciences](#)

MATH 137 Calculus 1 for Honours Mathematics  
MATH 147 Calculus 1 for Honours Mathematics (Advanced Level)

One of

MATH 118 Calculus 2 for Engineering  
MATH 119 Calculus 2 for Engineering  
MATH 128 Calculus 2 for the Sciences  
MATH 138 Calculus 2 for Honours Mathematics  
MATH 148 Calculus 2 for Honours Mathematics (Advanced Level)

One of

MATH 212/ECE 206 Advanced Calculus 2 for Electrical Engineers  
MATH 217 Calculus 3 for Chemical Engineering  
MATH 227 Calculus 3 for Honours Physics  
MATH 237 Calculus 3 for Honours Mathematics  
MATH 247 Calculus 3 for Honours Mathematics (Advanced Level)

One of

AMATH 250 Introduction to Differential Equations  
AMATH 251 Introduction to Differential Equations (Advanced Level)  
MATH 211/ECE 205 Advanced Calculus 1 for Electrical and Computer Engineers  
MATH 213 Advanced Mathematics for Software Engineers  
MATH 218 Differential Equations for Engineers  
MATH 228 Differential Equations for Physics and Chemistry

2.5 additional units of AMATH courses at least 1.5 of which are at the 300- or 400-level

### Notes

1. The Applied Mathematics Minor is not available to students outside the Faculty of Mathematics pursuing Mathematical Physics or a Joint Honours academic plan with Mathematics or a Mathematics Minor.
2. Other Linear Algebra, Calculus and Differential Equations courses than those listed above may be used to satisfy the "One of" requirements above, with approval of the Applied Mathematics advisor.

**Motion 3.2-3.4:** This is a retroactive motion effective 1 Sept 2019 to create an Applied Mathematics Engineering Specialization with three themes and to inactivate three add-on plans created in error; these motions are needed in order to correct academic plan motions previously approved (September 1, 2019).

**Corrections:**

1. Plan to be updated: Engineering Specialization. This is an add-on plan to Honours Applied Mathematics. The Plan description is below, effective 01-SEP-2019:

Enrolment in this Specialization is limited; a minimum cumulative average of 70% is strongly recommended.

The Engineering Specialization has the same requirements as Honours Applied Mathematics, with the following additional requirements in one of three areas:

Theme: Fluids and Heat

etc.

Theme: Communication and Control

etc.

Theme: Heat and Mass Transfer

etc.

2. Inactivate plans that should not have been created:

- Engineering Specialization: Fluids and Heat
- Engineering Specialization: Communication and Control
- Engineering Specialization: Heat and Mass Transfer

3. Undergraduate Calendar clean up:

- 2021-22 Calendar: The 3 pages to be consolidated to one page listing the correct name of the single new Specialization with 3 theme areas.
- 2020-21 and 2019-20 Calendars: A note will be added to each of the three Specializations pages to indicate the plan was inactivated and to see the 2021-22 Calendar for up-to-date information.

**Background and rationale:**

Discovery of correction needed: In January 2021, when it came time to grant the first specialization to a graduating student, it was discovered that what was approved (and listed in the Undergraduate Calendar) had never been the original intention, which was to keep it as a single Specialization (it was a single Option), but with a new name, that could be completed three different ways/theme areas, instead of two.

A bit about the previous submissions: At October 2018 Senate Undergraduate Council, the following motion was submitted and approved effective September 1, 2019, for appearance in the 2019-20 Undergraduate Calendar [note, other plans have been removed from the original motion as they do not pertain to this correction].

New Plans

2. Plan Changes
- 2.1. Applied Mathematics
- 2.1.1. Effective September 1, 2019

To change the following Applied Mathematics plans to a Plan 10 (Applied Mathematics) and a Plan 20 (option/specialization). The structure changes are as follows:

Current Structure	Existing Plan 10	Structure – Plan 20
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Applied Mathematics with Engineering Electives (name change of plan – to be inactivated)	Applied Mathematics	Engineering Specialization: Fluids and Heat
Applied Mathematics with Engineering Electives (name change of plan – to be inactivated)	Applied Mathematics	Engineering Specialization: Communication and Control
Applied Mathematics with Engineering Electives (name change of plan)	Applied Mathematics	Engineering Specialization: Heat and Mass Transfer (new specialization)

*Rationale: Changing Applied Mathematics Option plans to a Plan 10 (Applied Mathematics) and a Plan 20 (options and specialization) to simplify plans in the Faculty. Students can choose which calendar they would like to follow. We have spoken with Engineering and they support the name change since this plan is based in Math and is only open to math students.*

*RO action: change to Plan 10/20 – new plan codes*

*MUO action: AA, AP, co-op chart, list of plans, Combination page*

Note that the plans were accidentally delayed being sent to Senate and went to the September 2019 meeting, with an amendment to change the type of credential from Options to Specializations, to meet the new common language and plan definition requirements.

Motion 5, to inactivate the plans in the left column and create new plans in the third column:

Current Structure	Existing Plan 10	Structure – Plan 20
Applied Mathematics with Engineering Electives	Honours Applied Mathematics	<ul style="list-style-type: none"> <li>• Fluids and Heat</li> <li>• Communication and Control</li> <li>• Heat and Mass Transfer</li> </ul>

- **Engineering Specialization:** Fluids and Heat (new page will be created)
- **Engineering Specialization:** Communication and Control (new page will be created)

And motion 8 (creation of new specialization)

- **Engineering Specialization: Heat and Mass Transfer (new specialization and new page)**

Interpretation of approved motions (as above): Due to how the motions were presented and terminology used throughout, the motions were understood by all, during and after the approval process, to represent:

- the inactivation if the existing Applied Mathematics with Engineering Electives Option, which could be completed either by the Fluids and Heat or the Communication and Control “specializations” within the Option; **and**
- the relabeling of the old option into 3 separate incarnations of the Engineering specialization:
  - Engineering Specialization: Fluids and Heat
  - Engineering Specialization: Communication and Control
  - Engineering Specialization: Heat and Mass Transfer (new “specialization”)

**Motion 3.5:** Effective 1 Sept 2022, add the following language changes that communicates to students they can only choose one theme with their related constraints on course selection.

Current Calendar Text	Proposed Changes
<p>Enrolment in this Specialization is limited; a minimum cumulative average of 70% is strongly recommended.</p> <p>The Engineering Specialization has the same requirements as Honours Applied Mathematics, <b>with the following additional requirements in one of three areas:</b></p> <p>Theme: Fluids and Heat etc.</p> <p>Theme: Communication and Control etc.</p> <p>Theme: Heat and Mass Transfer etc.</p>	<p>Enrolment in this Specialization is limited; a minimum cumulative average of 70% is strongly recommended.</p> <p><b>The Engineering Specialization has three theme areas: Fluids and Heat, Communication and Control, Heat and Mass Transfer. Students must choose one.</b></p> <p>The Engineering Specialization has the same requirements as Honours Applied Mathematics, <b>with the constraints on course selection for each theme as given below:</b></p> <p><b>Theme 1:</b> Fluids and Heat etc.</p> <p><b>Theme 2:</b> Communication and Control etc.</p> <p><b>Theme 3:</b> Heat and Mass Transfer etc.</p>

## Update to the Computational Fine Art Specialization

**Motion 3.6:** Effective 1 September 2022, redesign the specialization requirements following the calendar text below. These changes make the computational art specialization more streamlined and more flexible for CS students; the changes were done in consultation with Fine Arts. CS students will have more choices when taking required FINE courses and encounter fewer scheduling problems. The number of units remains the same.

Current	Proposed
<p>All of:</p> <ul style="list-style-type: none"><li>• CS 349 User Interfaces</li><li>• CS 383/FINE 383 Computational Digital Art Studio</li><li>• CS 488 Introduction to Computer Graphics</li><li>• FINE 100 Studio Fundamentals</li><li>• FINE 101/VCULT 101 Art History and Visual Culture</li><li>• FINE 229 Hybrid Digital Media</li><li>• FINE 257 Video, New Media &amp; the Digital Turn</li></ul> <p>Link: <a href="http://ugradcalendar.uwaterloo.ca/page/MATH-Computer-Sci-Computational-Fine-Art-Spec/?ActiveDate=9/1/2020">http://ugradcalendar.uwaterloo.ca/page/MATH-Computer-Sci-Computational-Fine-Art-Spec/?ActiveDate=9/1/2020</a></p>	<p><b>All of the three CS courses:</b> CS 349 User Interfaces CS 383/FINE 383 Computational Digital Art Studio CS 488 Introduction to Computer Graphics</p> <p><b>One first-year studio course from:</b> FINE 100 Studio Fundamentals <b>FINE 130 Introduction to Digital Imaging</b></p> <p><b>One second-year studio course from:</b> <b>FINE 228 Design and imaging</b> <b>FINE 229 Hybrid Media</b> <b>FINE 247 Expanded Media: Interaction</b></p> <p><b>One art theory course from:</b> FINE 257 Video, New Media &amp; the Digital Turn <b>VCULT 200 Visual Studies Across the Discipline</b></p>

## Update to the Human-Computer Interaction (HCI) Specialization

**Motion 3.7:** Effective 1 September 2022, add “**SE 463**” as an equivalent course to “**Software Requirements Specification and Analysis CS 445/ECE 451**”, add “**SE 464**” as an equivalent course to “**Software Design and Architectures CS 446/ECE 452**”, and add “**SE 465**” as an equivalent course to “**Software Testing, Quality Assurance and Maintenance CS 447/ECE 453**”. These changes allow Software Engineering (SE) students to take HCI Specialization. SE has been consulted and agree that the SE versions of the courses cover similar content.

Current Calendar: <http://ugradcalendar.uwaterloo.ca/page/MATH-Computer-Sci-Human-Computer-Interaction-Spec>

## Update to the Software Engineering (SE) Specialization

**Motion 3.8:** Effective 1 September 2022, remove “CS 485 Statistical and Computational Foundations of Machine Learning” from the “two of” 400 level plan requirements and add “CS 480 Introduction to Machine Learning” in its place. The School of CS has reviewed its Machine Learning courses and CS 485 becomes a 2nd course. Add also “CS 442 Programming Languages” and “CS 451 Intensive Distributed Computing” to the “two of” 400 level plan requirements.

Current Calendar: <http://ugradcalendar.uwaterloo.ca/page/MATH-Computer-Sci-Software-Engineering-Spec>

## **Mathematics Business and Accounting Programs**

**Motion 3.9 and 3.10:** Effective 1 September 2022, for both the “Mathematics/Information Technology Management” and the “Mathematics/Business Administration” plans, allow the “BUS 352W Introduction to Marketing Management” plan requirement to be fulfilled by taking either BUS 352W or “MGMT 244/ARBUS 302 Principles of Marketing.” MGMT 244/ ARBUS 302 covers almost the same topics as BUS 352W. The change gives the student more scheduling flexibility. The motion was discussed and agreed with the University of Waterloo Department of Economics.

### **CS Double Degree Plan Changes**

**Motion 3.11:** Effective 1 September 2022, replace the sentence “The double degree program cannot be combined with any other major, minor, option, or specialization.” with “The double degree program cannot be combined with any other major.” in the calendar of the overview of the Bachelor of Business Administration/Bachelor of Computer Science (BBA/BCS) program. This change removes contradicting text; refer to motion 3.12. The program may not be combined with another major, although minors, options, and specializations are permitted. **Calendar Text:** <http://ugradcalendar.uwaterloo.ca/page/MATH-Bus-Admin-Computer-Sci-Double-Deg-Overview-1>

### **CS Double Degree Plan Notes Change**

**Motion 3.12:** Effective 1 September 2022, edit note 3 and add three notes to the Notes section of the Degree Requirements for the Bachelor of Business Administration/Bachelor of Computer Science (BBA/BCS) program as prescribed below to clarify that students in the program may have minors or specializations etc. and to make consistent with changes in the notes of the Bachelor of Business Administration/Bachelor of Mathematics (BBA/BMATH) program.

#### **Notes**

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- 4. The degrees in the double degree program must be completed simultaneously.**
- 5. Students admitted by Laurier to the Business Administration and Computer Science double degree program are not eligible to transfer to single degree programs at the University of Waterloo until completion of the first year of the Business Administration and Computer Science double degree program. Eligible students must be in good financial standing with Wilfrid Laurier University, be academically eligible to transfer, and meet the University of Waterloo admission standards. Admission to co-op at Waterloo is not guaranteed.**
- 6. Admission to the double degree program is direct-entry. The double degree program is a restricted-enrolment plan and Year 2 transfer to the program is not possible.**

## **Mathematics/Chartered Professional Accountancy - Finance Specialization**

**Motion 3.13:** Effective 1 September 2022, change catalog number from AFM 492 to AFM 276 and add AFM 326, AFM 333, AFM 426, SFM 310, and SFM 412 to the description section of the Degree Requirements for the MATH/CPA Finance Specialization as prescribed below due to amendments made by the School of Finance and Accounting. Note 2 is removed as it is already noted in Math/CPA requirements. Sustainable and Financial Management (SFM) is the new joint ARTS/ENV program that will come into existence in September 2022.

### **Current Calendar:**

This plan has the same requirements as Honours Mathematics/Chartered Professional Accountancy, with the following additional requirements:

#### ACTSC 231 Introductory Financial Mathematics

Three of

AMATH 350 Differential Equations for Business and Economics

CS 335 Computational Methods in Business and Finance

CO 372 Portfolio Optimization Models

MATBUS 470 Derivatives

MATBUS 471 Fixed Income Securities

MATBUS 472 Risk Management

STAT 334 Probability Models for Business and Accounting

STAT 341 Computational Statistics and Data Analysis

Two of

AFM 492 AFM 276 Financial Statement Analysis

AFM 321 Personal Financial Planning

AFM 322 Derivative Securities

AFM 324 Wealth Management

AFM 326 and AFM 426 Student Venture Fund (0.25 credits each)

AFM 328 and AFM 329, or AFM 328 and AFM 428, or AFM 329 and AFM 429 Investment Management (0.25 unit each)

AFM 333 International Business

AFM 334 International Study Experience

AFM 377 Private Equity and Venture Capital

AFM 415 Special Topics or AFM 416 Special Topics in Finance or AFM 417 Special Topics in Accounting

AFM 423 Topics in Financial Econometrics

AFM 424 Equity Investments

AFM 434 Governance and Enterprise Risk Management for Global Organizations

AFM 470 Financial Management of High Growth Companies

AFM 477 Mergers and Acquisitions

**AFM 478 International Financial Management**  
**SFM 310 Sustainability in Capital Markets**  
**SFM 412 Investor Behaviour**

Two additional math courses (1.0 unit).

### Notes

1. Additional CO courses may be required to meet CO 372 prerequisite.
2. ~~In order to meet the requirements of both the Faculty of Mathematics and the School of Accounting and Finance, the Mathematics/CPA—Finance Specialization requires the successful completion of 42 courses.~~

## **Business Administration and Mathematics Double Degree**

**Motion 3.14:** Effective Sept 1 2022, add notes 6, 7, and 8 to the Notes section of the Degree requirements as prescribed below. Notes 6 and 7 are required due to amendments to the BBA/BMath plan on the WLU side by the Laurier School of Business and Economics. Note 8 clarifies that in order to qualify to take a UW course, Laurier students are required to complete a minimum of 3.0 credits at Laurier (transfer credits excided) which means that Laurier students cannot take UW courses in first year. It is also very difficult for UW students to complete Laurier first year required courses during Year 1. In general, the whole process requires a substantial time commitment for advisors. Laurier School of Business and Economics.

### Notes

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6. Double degree program must be completed simultaneously, and one degree cannot be delayed as a sequential degree.
7. Students admitted by Laurier to this program are not eligible to transfer to any single degree program at Waterloo until after completion of the first year of the program to which they were admitted. Students must be in good financial standing with Laurier to be eligible to transfer programs. Eligible students must meet Waterloo admission standards and be in good or excellent academic standing. Admission to co-op at Waterloo is not guaranteed.
8. Admission to the double degree program is direct-entry. The double degree program is a restricted-enrolment plan and Year 2 transfer to the program is not possible.

#### **4.1 For Information: ELAS to BASE Transition**

Prospective students who do not meet the minimum English language proficiency requirement can be provisionally admitted provided they complete successfully a term of remedial English that brings them to the appropriate level. Operationally, we have enrolled a number of students over the past three decades in a non-degree term during which most have taken Math 137 and English classes at Conestoga College. This has been advertised as the Math/English as a Second Language (Math/ELAS). This program has been integral to our students' success for more than three decades.

Conestoga College has been an incredible partner in preparing math and computer science students for their time at Waterloo. However, our current contract came to an end at the end of April. We have identified an opportunity to leverage a University of Waterloo-based program that has proven successful for the other faculties.

Beginning Spring 2021, we will partner with Renison University College to provide on-campus English language education to support our incoming Faculty of Mathematics students. They would still be enrolled in a non-degree term, and still take Math 137 for the most of them, but the provider is now Bridge to Academic Success in English (BASE) instead of ELAS.

# Senate Undergraduate Council - Effective Dates Chart

Meetings: 2021 - 2022

SUC meeting dates	EARLIEST EFFECTIVE DATE		EARLIEST EFFECTIVE DATE		SENATE meeting dates
	Motions for COURSES not listed in UG Calendar (see Note 3)	Motions for COURSES listed in UG Calendar (see Note 3)	Plans/programs, regulations: New, changes, inactivations	New entry programs (enrol in 1A)	
September 2021	Sept 2022	Sept 2022	Sept 2022	Sept 2023	October 2021
October 2021	Sept 2022	Sept 2022	Sept 2022	Sept 2023	November 2021
November 2021	Sept 2022	Sept 2023	Sept 2023	Sept 2023	December 2021
December 2021	Sept 2022	Sept 2023	Sept 2023	Sept 2023	January 2022
January 2022	Sept 2022	Sept 2023	Sept 2023	Sept 2023	February 2022
February 2022	Sept 2022	Sept 2023	Sept 2023	Sept 2023	March 2022
March 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2023	April 2022
April 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2023	May 2022
May 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2024	June 2022
June 2022	Sept 2023	Sept 2023	Sept 2023	Sept 2024	September 2022

**Notes:**

1. Dates listed above are the earliest effective date **possible** for any given motion; option to use later dates exists.
2. If an **earlier** effective date is desired, consultation with the Office of the Registrar is **required** to ensure it is feasible; a rationale for the exception is required.
3. Courses appearing in **ANY plan pages** of the Undergraduate Calendar are considered "listed in the UG Calendar" (whether "required" or part of an electives list).
4. For changes to courses not requiring SUC approval: the earliest effective date is September 1 that matches SUC meeting (of when the change is requested). For example, a change requested on March 1, would follow a Sept 2023 effective date.
5. Motions for courses are approved at SUC on behalf of Senate.

Last opportunity to	SUC meeting
Make changes to 2022-2023 Calendar (plans/regulations)	October 2021
Make changes to 2022-2023 Calendar (courses listed in Calendar)	October 2021
Make changes to 2022-2023 Calendar (courses not listed in Calendar)	February 2022
Create new entry program for fall 2023	April 2022
Make changes to 2023-2024 Calendar (plans/regulations)	October 2022
Make changes to 2023-2024 Calendar (courses listed in Calendar)	October 2022
Make changes to 2023-2024 Calendar (courses not listed in Calendar)	February 2023

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

**to be added to the Undergraduate Awards Database**

**- submitted for May 11, 2021 meeting of Senate Undergraduate Council -**

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### **ENTRANCE AWARDS**

#### **Class of 1994 Engineering Scholarship**

A scholarship, valued at \$2,000, will be provided annually to a full-time undergraduate student enrolled in Year One of any program in the Faculty of Engineering (excluding the School of Architecture). Selection to be based on academic excellence combined with extracurricular and leadership involvement assessed through the Admission Information Form. This fund is made possible by a donation from the Class of 1994 to support the next generation of engineers.

*Method of Financing: one-time donation (to support scholarship for five years)*

#### **Tom Curry and Family Award**

An award, valued at up to \$1,200, is awarded annually to a full-time undergraduate student enrolled in Year One of any program in the Faculty of Environment who has demonstrated financial need, as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by a donation from alumnus J. Thomas Curry, to inspire and support the next generation of students to chart their path and shape their future through higher education.

*Method of Financing: endowment*

#### **Tom and Sharee Fahidy Entrance Scholarship**

A scholarship, valued at \$2,500, will be awarded annually to a full-time undergraduate student enrolled in Year One of the Chemical Engineering program. Selection is based on academic excellence combined with extracurricular and leadership involvement assessed through the Admission Information Form. This fund is made possible by a donation from Tom and Sharee Fahidy who would like to honour the 35+ career Tom had in the Department of Chemical Engineering and to recognize the academic achievements of future students.

*Method of Financing: one-time donation plus monthly donations (on-going pledge)*

#### **Rich Media - Aivars Petersons Memorial Award**

One award, valued at \$2,000, will be provided annually to an outstanding undergraduate student entering Year One of any program in the David R. Cheriton School of Computer Science (excluding Software Engineering). Selection will be based on a combination of academic excellence and financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by a donation from Rich Media in memory of Aivars Petersons.

*Method of Financing: annual donation (five-year pledge)*

#### **Scotiabank Entrance Scholarship for Black and Indigenous Students**

One scholarship, valued at \$10,000, will be awarded annually to a Black or Indigenous student entering Year One of any program within the Faculty of Mathematics (excluding Software Engineering). For the purpose of this scholarship, an Indigenous person is a person who self identifies as First Nations (Status/Non-Status), Métis, or Inuit as defined in the Canadian Constitution Act 1982. Selection is based on a combination of academic excellence (minimum admission average of 80%), and extracurricular involvement and/or volunteer activities. Preference will be given to students who are attempting to advance Black or Indigenous initiatives in their community. Interested students should submit an online application by April 1. This fund is made possible by a donation from Scotiabank with the goal to support marginalized students.

*Method of Financing: annual donation (four-year pledge)*

#### **Scotiabank Women in Computer Science Entrance Scholarship**

A scholarship, valued at \$10,000, will be awarded annually to a full-time female undergraduate student entering Year One in any program in the David R. Cheriton School of Computer Science (excluding Software Engineering), wherein women are underrepresented. Selection will be based on academic achievement (minimum 80% admission average), Admission Information Form, and contest scores as assessed through CEMC. This fund is made possible by a donation from Scotiabank with the goal to support female students who are studying Computer Science.

*Method of Financing: annual donation (four-year pledge)*

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### **Bruce Sharp P.Eng Memorial Engineering Bursary**

A bursary, valued at up to \$1,200, will be awarded annually to a full-time undergraduate student enrolled in Year One of the Mechanical Engineering program who has a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Entrance Bursary application by April 15. This fund is made possible by donations made in memory of Bruce Sharp, P.Eng., from Bruce's wife and life partner, Toni E. Ritchie, and gifts received from family, friends, and professional colleagues.

*Method of Financing: endowment*

### **Kevin Strain International Entrance Scholarship**

One scholarship, valued at \$15,000 over two academic years, will be awarded annually to an international undergraduate student entering Year One of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science. Selection will be based on academic excellence (minimum 80% admission average) among students who are studying on an international study visa. Recipients will receive \$3,750 per term from 1A to 2B if they remain studying on an international visa. This fund is made possible by a donation from alumnus Kevin Strain (MAcc '90).

*Method of Financing: annual donation (three-year pledge)*

## **AWARDS FOR CURRENT STUDENTS**

### **Harvey Bains and Ben Kaak Award**

One award, valued at \$15,000, will be provided annually to a deserving full-time undergraduate student entering Year Two of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science. Selection will be based on a combination of academic achievement (minimum 80% cumulative average), financial need, and volunteer activities at school or within the community. Interested students should apply online by October 1. This fund is made possible by a donation from Harvey Bains and alumnus Ben Kaak (BA '82).

*Method of Financing: residual funds from a previous donation*

### **Harvey Bains and Ben Kaak Undergraduate Bursary**

A bursary, valued at \$5,000, will be awarded annually to a full-time undergraduate student enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science who has a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Waterloo Full-time Bursary online application and demonstrate academic excellence (minimum 75% cumulative average). This fund is made possible by a donation from Harvey Bains and alumnus Ben Kaak (BA '82).

*Method of Financing: annual donation (five-year pledge)*

### **Joanna Duong Chang Memorial Award**

An award, valued at \$2,000, will be provided annually to a full-time female undergraduate student enrolled in Year Two, Three, or Four of a program in the Faculty of Mathematics wherein women are underrepresented. Selection is based on academic excellence (minimum 75% cumulative average) and a demonstrated passion for entrepreneurship as evidenced by extracurricular activities such as the completion of a business project, participation in entrepreneurial competitions, etc. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence both in the classroom and in their entrepreneurial endeavours. Interested students should submit an online application by November 1. This fund is made possible by a donation from the memorial foundation established by Stanley Chang (BMath '00) and his family, in memory of his late wife, Joanna Duong Chang (BMath '04). Joanna was the founder of the highly successful fashion company Henkaa, which produces convertible apparel and accessories for women. Joanna is remembered for her exceptional generosity, tremendous business acumen, and as the 2016 Young Alumni Achievement Award Winner in the Faculty of Mathematics.

*Method of Financing: annual donation (five-year pledge)*

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

**to be added to the Undergraduate Awards Database**

**- submitted for May 11, 2021 meeting of Senate Undergraduate Council -**

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### **Linda and Scott Davis Award**

An award, valued at \$1,500, will be provided annually to a full-time undergraduate student enrolled in Year Two or Three of any program in the Faculty of Environment. Selection is based on academic achievement (minimum 75% cumulative average) combined with extracurricular or volunteer activities. Students will also be required to provide an essay describing the impact this award will have on their ability to pursue their educational goals. Interested students should submit an online application by November 15. This fund is made possible by a donation from Linda and Scott Davis to support students in the Faculty of Environment.

*Method of Financing: annual donation (six-year pledge renewal)*

### **Dupont-Peppler Award for Black or Indigenous Students**

One award, valued at up to \$1,000, will be provided annually to a full-time Black or Indigenous undergraduate student enrolled in Year Three or Four of the Faculty of Arts or the Faculty of Engineering. To be eligible for consideration, students must be Canadian Citizens or Permanent Residents. Selection is based on academic achievement (minimum 75% cumulative average) and an essay describing the impact this award will have on their ability to pursue their educational goals. Preference will be given to students who are part of the first generation in their family to attend postsecondary education. Interested students should submit an application by October 1. This fund is made possible by a donation from Ian (BASc '94) and Donna (BA '94) LeGrow. The award is named after the location of Ian and Donna's first apartment together on the corner of Dupont and Peppler Streets in Waterloo.

*Method of Financing: endowment*

### **Faculty of Mathematics Co-op for Social Good Awards**

One or more awards, valued at up to \$3,000 each, will be provided to full-time undergraduate students enrolled in a co-op program in the Faculty of Mathematics embarking on an unpaid, underpaid and/or flexible work term with a charity or not-for-profit organization in the community, in Canada, or abroad. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Preference will be given to students with placements in the social service sector and/or to students who have been involved in extracurricular or volunteer activities in the service of others. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

*Method of Financing: pooled donations (on-going based on availability of funds)*

### **Faculty of Mathematics First Co-op Support Awards**

One or more awards, valued at up to \$3,000 each, will be provided to full-time undergraduate students enrolled in a co-op program in the Faculty of Mathematics embarking on their first co-op work term which is deemed to be unpaid, underpaid and/or flexible according to Co-operative Education. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

*Method of Financing: pooled donations (on-going based on availability of funds)*

### **Faculty of Mathematics International Student Work Term Support Awards**

One or more awards, valued at up to \$3,000 each, will be provided to full-time international undergraduate students enrolled in a co-op program in the Faculty of Mathematics who are embarking on a work term which is deemed to be unpaid, underpaid and/or flexible according to Co-operative Education. Selection is based on the level of need, as determined by an assessment of the salary and/or compensation being received, a statement describing why the student is pursuing this co-op employment opportunity as well as the student's statement of anticipated expenses during the work term. Interested students should submit an online application by April 1/August 1/December 1 to the Office of the Associate Dean of Co-op for the Faculty of Mathematics. Awards are limited. Decisions made by the selection committee are final.

*Method of Financing: pooled donations (on-going based on availability of funds)*

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

**to be added to the Undergraduate Awards Database**

**- submitted for May 11, 2021 meeting of Senate Undergraduate Council -**

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### **Herbert Fernando Memorial Award**

Two awards, valued at \$500 each, are available annually for Black or Indigenous undergraduate students enrolled in a field-based course in the Department of Biology, in the Faculty of Science. Selection is based on academic excellence in ecology-based courses (minimum 3 courses taken). To be considered, interested students are asked to self-identify their eligibility by completing an online form through the Department of Biology by January 15. This award is made possible by donations from faculty, staff, alumni, and friends of the University and of Professor Herbert Fernando, who supported diversity and equity for students in the Department of Biology.

*Method of Financing: annual donation (five-year pledge)*

### **Fleming Family Biology Co-op Award**

An award, valued at \$2,500, will be provided annually to a full-time undergraduate co-op student enrolled in Year Two of the Biology program in the Faculty of Science who is beginning their first co-op work experience. Selection is based on academic achievement (minimum 75% cumulative average) among students who are pursuing a position that is being compensated below the Faculty of Science co-op salary average. No application required. This fund is made possible by a donation from the Fleming family to recognize outstanding students and help to alleviate some of the pressures of finding the first co-op position.

*Method of Financing: annual donation (five-year pledge)*

### **Haitham Kamil Engineering Bursary**

Up to two bursaries, valued at \$2,000 each, will be awarded annually to full-time undergraduate students enrolled in Year Two, Three, or Four of any program in the Faculty of Engineering who have a demonstrated financial need as determined by the University of Waterloo. To be considered, students must complete the Full-time Bursary application by October 15. This fund was created by Haitham Kamil to support students in need in the Faculty of Engineering.

*Method of Financing: one-time donation (to support bursary for three years)*

### **Kearns Family Aviation Award**

Two awards, valued at \$1,000 each, will be provided annually to full-time undergraduate students enrolled in Year One of the Aviation program in the Faculty of Environment or the Faculty of Science. The successful recipients will have achieved the two highest grades in AVIA 100 (Introduction to Aviation). This fund is made possible by a donation from Suzanne, Mike, Katie, Sam, and Andy Kearns to support students in Waterloo Aviation.

*Method of Financing: one-time donation (to support awards for five years)*

### **Rico Mariani Scholarship for Black and Indigenous Students in Computer Science**

One scholarship, valued at up to \$2,000, will be awarded annually to an outstanding Black or Indigenous undergraduate student enrolled in Year Two, Three, or Four in the David R. Cheriton School of Computer Science. Selection will be based on academic excellence (minimum 80% cumulative average) and extracurricular involvement. Preference will be given to students making an effort to advance Black or Indigenous initiatives either on campus (e.g., involvement in UW BASE, African, or Caribbean Student Associations, Indigenous Student Association, etc.) or in the community. Interested students should submit an online application by October 15. This fund is made possible by Rico Mariani (BMath '88) who is committed to removing barriers for Black and Indigenous students in Computer Science.

*Method of Financing: endowment*

### **Rexall Pharmacy Group Community Involvement Award**

An award, valued at \$3,000, will be provided annually to a full-time Black or Indigenous undergraduate student enrolled in Year Two, Three, or Four of the PharmD program in the School of Pharmacy. Selection will be based on academic excellence (minimum 75% cumulative average) and demonstrated exemplification of Rexall's iCARE values of integrity, accountability, respect, and excellence through volunteer involvement in the community. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence in the classroom and community. Interested students should submit an online application by May 1. This fund is made possible by a donation from Rexall Canada.

*Method of Financing: annual donation (five-year pledge)*

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

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**- submitted for May 11, 2021 meeting of Senate Undergraduate Council -**

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### **Kevin Strain Undergraduate Award**

Two awards, valued at \$7,500 each, will be provided annually to full-time undergraduate students enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics or Science. Candidates must be in good academic standing (minimum 70% cumulative average). Preference will be given to students who have immigrated to Canada or who are second-generation Canadians and who have financial need; to that end, candidates will be invited to explain what it would mean to them to receive this award. Interested students should submit an online application by October 1. This fund is made possible by a donation from alumnus Kevin Strain (MAcc '90).

*Method of Financing: annual donation (three-year pledge)*

### **Pearl Sullivan Emerging Global Leadership Award**

An award, valued at \$50,000, will be presented annually to an outstanding undergraduate student leader who is graduating from any program in the Faculty of Engineering (excluding the School of Architecture). This award recognizes a student who has a proven record of leadership through participation in extracurricular and volunteer activities at the University of Waterloo, and who demonstrates the potential to grow as a leader, inspire others to action, and to make a difference in their community. Candidates must have a minimum overall average of 80%. Interested students should submit an application by March 1 to the Faculty of Engineering. This fund is made possible by a donation from Sanjay Malaviya in honour and remembrance of Pearl Sullivan, former dean of Waterloo Engineering, and the first woman serve in that role. Under her leadership, Sullivan ensured that Waterloo continued as a global leader in engineering education.

*Method of Financing: annual donation (four-year pledge)*

## **STUDENT-ATHLETE AWARDS**

### **Barbad Bidarian Athletic Excellence Award for Men's Basketball**

Two awards, valued at \$4,000 each, are given to members of the varsity men's basketball team. Preference will be given to student-athletes enrolled in Computer Science or more generally, the Faculty of Mathematics. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Men's Basketball, and their community. This award is supported by University of Waterloo alumnus, Nakisa Bidarian, in memory of his brother Barbad Bidarian. Barbad, who attended Ohio State University, was a successful student and athlete with numerous interests, including a passion for basketball, track & field, music, art, and Computer Science.

*Method of Financing: annual donation + matching funds (three-year pledge)*

### **Barbad Bidarian Athletic Excellence Award for Track & Field**

Two awards, valued at \$4,000 each, are given to members of the varsity track & field team. Preference will be given to student-athletes enrolled in Computer Science or more generally, the Faculty of Mathematics. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Track & Field, and their community. This award is supported by University of Waterloo alumnus, Nakisa Bidarian, in memory of his brother Barbad Bidarian. Barbad, who attended Ohio State University, was a successful student and athlete with numerous interests, including a passion for basketball, track & field, music, art, and Computer Science.

*Method of Financing: annual donation + matching funds (three-year pledge)*

### **Paul Craven Engineering and Athletics Excellence Awards**

Three awards will be provided annually to full-time undergraduate student athletes enrolled in the Faculty of Engineering who are members of a varsity team. Two awards, valued at \$4,500 each, are designated to first-year students while one award, valued at \$3,000, is designated to an upper-year student. Preference will be given to student athletes on the Warrior men's volleyball team. This fund is made possible by a donation from Paul Craven, '84 Systems Design Engineering alumnus who was also Waterloo's Student Athlete of the Year in 1984.

*Method of Financing: annual donation (five-year pledge)*

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

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**- submitted for May 11, 2021 meeting of Senate Undergraduate Council -**

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### **Hawkshaw Family Men's Hockey Excellence Award**

One award valued at \$2,000, or two awards valued at \$1,000, are given to members of the varsity men's hockey team. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Men's Hockey, and their community. This fund is made possible by a donation from alumnus Ron Hawkshaw (BA'75).

*Method of Financing: annual donation (five-year pledge)*

### **Biuck Morad Athletic Excellence Award**

Two awards, valued at \$3,000 each, are given to exceptional student-athletes enrolled in the School of Accounting and Finance, or more generally the Faculty of Arts, who best display the values and mission of the interuniversity athletics program. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence both in the classroom and on their respective field of play. Recipients must be qualified student-athletes, enrolled in full-time studies both at the time of application and payment of the award, with a minimum academic average of 80%. An application is required by November 1. This award is supported by University of Waterloo alumnus, Nakisa Bidarian (BA'01, Economics), in memory of his grandfathers, Biuck Agha "Babje" Ashtaryeh and Morad Ali "Agha Jhune" Bidarian, who instilled in him the core values of integrity, excellence, and family.

*Method of Financing: annual donation + matching funds (three-year pledge)*

### **Prudham Family Football Excellence Award**

One or more awards, valued at up to \$4,500, will be given annually to varsity athletes on the football team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by University of Waterloo alumnus Brian Prudham.

*Method of Financing: annual donation + matching funds (five-year pledge renewal)*

### **Prudham Family Field Hockey Excellence Award**

One or more awards, valued at up to \$4,000, will be given annually to varsity athletes on the women's field hockey team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by University of Waterloo alumnus Brian Prudham.

*Method of Financing: annual donation + matching funds (five-year pledge)*

### **Somerville Family Football Excellence Award**

Two or more awards, valued at up to \$4,500 each, will be given annually to members of the varsity football team. This award recognizes leadership, athletic talent, and contribution to the Department of Athletics and Recreation, Warriors Football, and their community. This fund is made possible by a donation from alumnus Greg Somerville (BA'78).

*Method of Financing: annual donation (five-year pledge)*

### **Bancroft Wright Memorial Award**

One award, valued at \$4,500, is given to a member of the varsity women's basketball team. Preference will be given to student-athletes who have overcome adversity, possess excellent teamwork and leadership qualities, and serve their community through volunteer activities. This fund is made possible by a donation from Allan Bush in memory of his close friend Bancroft Wright. Bancroft was a fixture in the women's basketball community throughout the Tri-County Region, and his daughters Candice and Courtney are currently assistant coaches with Warriors Women's Basketball.

*Method of Financing: annual donation + matching funds (five-year pledge)*

## **NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES**

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### **INTERNATIONAL EXPERIENCE AWARDS**

#### **Eric Breugst International Exchange Award**

Two awards, valued at \$1,000 each, will be awarded annually to full-time undergraduate students enrolled in Year Three or Four of any program in the Faculty of Arts (excluding the School of Accounting and Finance) who will be participating in an eligible international exchange/study abroad program. Candidates must have a minimum overall average of 70%. Preference will be given to students with financial need for the term(s) abroad. Interested students should submit an application by July 15. This fund is made possible by a donation from Eric Breugst, who served the Faculty of Arts as an academic advisor for twenty-five years. He wishes to support the University of Waterloo's efforts to educate globally literate and world-ready graduates.

*Method of Financing: annual donation (five-year pledge)*

#### **Marga I. Weigel International Experience Award**

Several awards, valued at up to \$2,500 each, will be awarded annually to students registered full time in an undergraduate program in any Faculty, excluding the Faculty of Engineering. Students must be in good academic standing and participating in an approved, for credit, international experience in Germany or Austria which may include study abroad, exchange, summer or short-term programs, or low-paying co-op/internship terms. Preference will be given to candidates who have taken a German language or culture course. Upon their return, recipients will be encouraged to provide a summary (1-2 page maximum) of their experience abroad to be shared with the donor. Candidates must complete the general International Experience Award application form by March 15, July 15 or November 15. This award was made possible through the generosity of University of Waterloo Arts alumna Dr. Marga I. Weigel (BA '71, MA '73 and PhD '80 with a major in German literature).

*Method of Financing: annual donation (ten-year pledge)*