

Deloitte.

The University of Waterloo
Faculty of Mathematics
Business Process Review.

July 2012

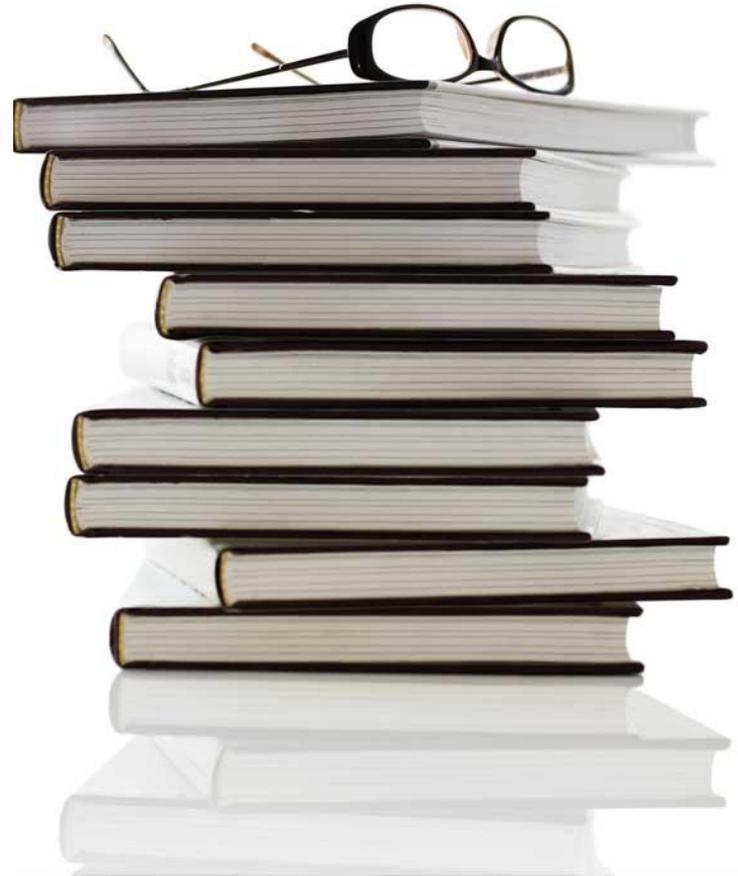


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Executive summary

Introduction

Deloitte conducted a review of the Faculty of Mathematics (“Faculty of Math” or “FoM”) at the University of Waterloo (“The University”) in April 2012 and May 2012. The purpose of the review was to assess the adequacy of processes and related internal controls that mitigate business risks and to identify improvement opportunities with respect to process efficiency and effectiveness. Specifically the scope of the review included processes and controls, organizational structure and staffing, finance and reporting, privacy of student information and computing support. The audit was conducted in accordance with Deloitte’s Internal Audit methodology. Business risks that could impact the Faculty were determined through discussions with both management and staff from the Dean’s Office and management and staff from the following departments and research centres:

Academic Units

- Applied Mathematics Department
- Combinatorics and Optimization Department
- David R. Cheriton School of Computer Science
- Pure Mathematics Department
- Statistics and Actuarial Science Department

Research Centers

- Centre for Applied Cryptographic Research
- Centre for Computational Mathematics in Industry and Commerce
- Business and Industrial Statistics Research Group
- Institute for Computer Research
- Institute of Insurance and Pension Research
- WatRISQ
- Institute for Quantum Computing
- Survey Research Centre

The Faculty of Mathematics consists of five academic departments as well as an information technology support unit and numerous research centres and institutes. The Faculty has approximately 6,000 undergraduate and graduate students served by 200 faculty members. The academic and research groups report to the Dean of the Faculty of Math through the Associate Deans and Directors who are each responsible for their units / departments. In addition to the academic units identified above, the faculty also houses a Math Business program and several joint programs in partnership with other faculties (e.g., Arts, Engineering). The faculty has an annual expenditure of approximately \$44.3 million to deliver their programs.

Executive summary (cont'd)

Key observations

Deloitte's review of the Faculty of Mathematics business processes and information technology/computing support functions identified the following observations:

High Priority:

- **Information Technology - IT Governance Framework, Policy and Process:** IT ownership and accountability is not consistently understood and applied within the day to day operations of the Institution.
- **Information Technology - IT Strategy:** Currently, (Computer Science Computing Facility) CSCF and Math Faculty Computing Facility (MFCF) are individual IT units that perform IT strategic planning informally due to the individual IT environment's needs for a reactive support model to meet the business defined requirements.
- **Information Technology - IT Operations:** Currently MFCF and CSCF formally operate as independent IT operational units. It was noted that MFCF and CSCF offer similar services such as user support, integrated Faculty IT support and infrastructure support.
- **Information Technology - IT Procurement:** Multiple governance documentation examples defined by both the Faculty of Math and the Institution outlining purchasing requirements, such as Policy 17, Procedure 1 and wiki pages, exist in the current environment.
- **Information Technology - Repository of Applications, Databases and License Management:** MFCF maintains a documented inventory of applications and databases; however, application and database owners are not clearly identified. CSCF does not maintain a documented inventory of applications and databases.

Medium Priority:

- **Business Processes - Long term plans and risk assessment:** Through corroborative inquiry and review of Undergraduate Outreach communications, Internal Audit noted that while the Department realizes the importance of international students to the faculty, a long term plan or strategic priorities is not in place.
- **Business Processes - Privacy of student information:** Internal Audit noted that policy sections, assignment grading and assignment return procedures were not consistently included in the course outlines communicated to students.

(cont'd...)

Executive summary (cont'd)

Key observations

Medium Priority (cont'd...):

- **Business Processes - Position Descriptions of Staff members:** Internal Audit obtained and reviewed Position Descriptions for administrative and financial personnel in the Faculty of Math. It was noted that several key administrative and financial staff members' Position Descriptions do not accurately reflect their current role.
- **Business Processes - Duties of Administrative Officer and Financial Officer:** Through review of the Faculty of Math – School of Computer Science organization structure and interviews with key administrative and finance process owners, Internal Audit noted that there are instances for which the duties of the Administrative Officer overlap with those of the Financial Officer.
- **Business Processes - Coordination of Scholarship process within the Faculty of Math:** The extent of involvement and responsibility for scholarship administration and reporting is not clearly established within the Faculty of Math processes.
- **Business Processes - Inconsistent reporting and monitoring process:** Through corroborative inquiry with key administrative and financial process owners, Internal Audit noted that the process of reporting and monitoring is not consistent across various departments / units at the Faculty of Math.
- **Information Technology - Network Diagrams:** CSCF and MFCF currently do not maintain comprehensive network diagram documentation.
- **Information Technology - Satellite Campuses:** Based on the task force report requiring IT liaisons with satellite campuses, it was noted that that the UW satellite campus in Dubai has an isolated IT environment in which there is little to no involvement by either of the Faculty of Math's computing units.

Executive summary (cont'd)

Conclusion

Based on our review of the Faculty Mathematics business and computing support processes, we noted moderate process control and efficiency weaknesses. A majority of the weaknesses should be addressed in the near term as they expose the Faculty of Mathematics to significant risks and could impair the Faculty's ability to effectively execute its processes and meet its objectives.



The following scale depicts our overall conclusion for this review:

- A Operating at a Leading Practices Level
- B Minor Process Control or Efficiency Weaknesses Identified
- C Moderate Process Control or Efficiency Weaknesses Identified
- D Significant Process Control or Efficiency Weaknesses Identified Impairing the Effectiveness of the Process
- E Significant Control Weaknesses Identified, Impairing the Overall Effectiveness of the Department or Location
- F Significant Control Weaknesses Identified, Impairing the Overall Effectiveness of the Organization

Summary observations matrix

Summary observations matrix

Internal Audit's observations with respect to Faculty of Math Review are contained within the following Summary Observations Matrix. The observations are ranked according to the following priority legend:

 Item is high priority and should be given immediate attention due to the existence of either a significant internal control risk or an operational improvement opportunity.

 Item is medium priority and should be addressed in the near term.

 Item is not critical but should be addressed to either improve internal controls or process efficiency.

High Priority Observations

Control improvement opportunity

1. Information Technology/Computing Support - Governance Framework, Policy and Process

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>The IST, CSCF and MFCF IT units informally adhere to varying levels of policy, procedure and guideline documentation which are published within a number of webpage locations across the University of Waterloo network. Currently, IT ownership and accountability is not consistently understood and applied within the day to day operations of the Institution.</p> <p>While some examples of formally documented policies and processes do exist, no Institutionally defined governance framework is in place defining the IT ownership and accountability for IT operations between IST, CSCF and MFCF.</p> <p>(cont'd...)</p>	<p>The lack of an IT governance framework, defining policy and process ownership and accountability may result in operational risks to the Institutional and Faculty of Math IT environments due to the lack of an IT governance framework. This may result in adverse impacts to the confidentiality, availability and integrity of the current IT operations.</p>	<p>UW-FOM1.01</p> <p>A formal process should be undertaken by the University of Waterloo to formally document and define the IT ownership, accountability and governance framework requirements for IT operation across the Institution. An example framework would be the leading practice CobIT framework, maintained by the Information Systems Audit and Control Association (ISACA). The framework should clearly define which IT components and governance documentation, including policy, procedures and guidelines will be the responsibility of central IT (IST) vs. which will continue to be accountable to the individual Faculty IT units.</p>	<p>UW-FOM1.01</p> <p>Management agrees that formal documentation does not exist. The division of responsibility and accountability among the units is understood at management level. The various committees (UCIST, CTSC) that are in place provide for the necessary communication among the various groups. There are also regular meetings of the MFCF and CSCF Directors. A summary of CSCF management discussions is sent regularly to all CSCF staff.</p> <p>Management will complete documentation of the Math division of responsibility. Management will work with the CIO to develop the University framework. The new CIO will take office in July and will lead the development of campus-wide priorities.</p>	<p>UW-FOM1.01</p> <p>David Wallace, Chief Information Officer, University of Waterloo</p> <p>Wayne Oldford, Associate Dean Computing, Faculty of Mathematics</p> <p>Some progress by April 30, 2013 Math portion completed by December 31, 2012</p>

Control improvement opportunity

1. Information Technology/Computing Support - Governance Framework, Policy and Process (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
The existing governance documentation maintained by the Institution, CSCF and MFCF is stored across multiple locations resulting in ease of use difficulties based on the decentralized ownership model. It was noted that some standard governance framework documentation such as a systems development lifecycle, change management methodology and project management methodology were not formally documented at the Faculty of Mathematics level for either MFCF or CSCF.		UW-FOM1.01 (cont'd) As a result of this process, MFCF and CSCF should formally document the governance framework requirements as defined by the Institutional process outlined above. A single point of reference (location) should be defined and implemented to maintain all of the CSCF and MFCF governance framework documentation. This should either be in a central location for use by all of the University of Waterloo IT units/stakeholders or as an individually maintained location within the Faculty of Math, with references to the centrally maintained governance framework documentation as required.		

Control improvement opportunity

2. Information Technology/Computing Support - Strategy

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Currently, CSCF and MFCF are individual IT units that perform IT strategic planning informally due to the individual IT environment's needs for a reactive support model to meet the business defined requirements. Also, there is no formally documented IT strategic planning process for the overall University of Waterloo that would include the CSCF and MFCF IT units.</p> <p>(cont'd...)</p>	<p>The lack of formally documented IT strategies prevents the Faculty of Math from achieving a clear direction for its technology objectives and goals. While the current service model requires reactive operational support, it can create challenges within the IT units for achieving economies of scale if the IT vision for both units is not clearly documented, shared and followed.</p>	<p>UW-FOM2.01 A formally documented IT strategic plan should be defined by the Institution that includes the Faculties and their IT units to ensure synchronization and alignment.</p> <p>Where independent initiatives and priorities remain, MFCF and CSCF should jointly define the overall IT strategy and Faculty of Math resource allocation to their respective IT units to achieve the maximum economies of scale possible. A review of the Faculty IT unit's initiatives and priorities should be performed annually.</p>	<p>UW-FOM2.01 Management agrees, however, it is not the highest priority for the Faculty.</p> <p>Management will work toward developing a strategic plan to align with the Faculty of Mathematics strategic priorities. The Faculty's own strategic planning process is still underway. Until this planning process is completed and an implementation plan is developed, we will not be completing plans for the computing support units.</p>	<p>UW-FOM2.01 Wayne Oldford, Associate Dean Computing, Faculty of Mathematics</p> <p>David Taylor, Director, Cheriton School of Computer Science</p> <p>Some progress by August 31, 2013</p>

Control improvement opportunity

2. Information Technology/Computing Support - Strategy (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
	<p>This may result in:</p> <ul style="list-style-type: none"> • Unnecessary, variable and unsustainable technology within each of the Faculty of Math IT units; • Potential loss of opportunities for procurement discounts across the Institution and the Faculty of Math; • Unknown staffing needs that may require further attention; • Redundant specialized IT skillsets within each of MFCF and CSCF; and • Duplicate IT initiatives and projects across the Institution and within the individual Faculty of Math IT units. 	<p>UW-FOM2.01 (cont'd)</p>	<p>UW-FOM2.01(cont'd)</p> <p>The specialized nature of Computer Science as a discipline requires a dedicated computing support unit. Differing requirements may mean that there are different visions for CSCF and MFCF.</p> <p>It should be noted that implementation of strategic changes (organizational change) may be difficult. Current HR policies and past practices make it very difficult to reorganize without running into human resource issues, ranging from unhappy staff members to allegations of constructive dismissal.</p>	

Control improvement opportunity

3. Information Technology/Computing Support - Operations

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Currently MFCF and CSCF formally operate as independent IT operational units. It was noted that MFCF and CSCF offer similar services such as user support, integrated Faculty IT support and infrastructure support. Services such as research support are unique to each of the IT units; Through inquiry, it was noted that there is currently a resource strain across both of the MFCF and CSCF IT units with no defined plan in place to refill these positions. A previous example of MFCF and CSCF working collaboratively together when resourcing availability concerns arose was observed.</p>	<p>The continued operation of fully independent services may be contributing to a resource strain based on the current funding and resources available to the Faculty of Math IT unit operations. Based on past experience, the two IT units have been able to collaboratively achieve economies of scale and to alleviate the existing resource strain.</p>	<p>UW-FOM3.01 Where possible MFCF and CSCF should work together to pool resourcing on common service delivery areas such as user and infrastructure support. A formally documented process for executing resource pooling should be defined jointly between CSCF and MFCF management along with the Dean of the Faculty of Math. Identification of potential pooling areas should be considered when developing and reviewing the Faculty of Math IT independent initiatives and priorities as defined above.</p>	<p>UW-FOM3.01 Management agrees that the units should collaborate wherever possible, and that not all current collaborations are fully documented.</p> <p>MFCF and CSCF operate as collaborating IT units with individual constituencies. Where possible, MFCF and CSCF work together to pool resourcing on common service delivery areas. Examples of current collaboration include: data storage, machine rooms, help centre, web pages, account management.</p> <p>Some of these collaborations are formally documented (help centre; web pages) while others are not. Management will produce documentation for existing collaborations, and for new collaborations as needed. The specialized nature of Computer Science as a discipline means that not all projects can be shared.</p>	<p>UW-FOM3.01 Wayne Oldford, Associate Dean Computing, Faculty of Mathematics</p> <p>August 31, 2013</p>

Control improvement opportunity

4. Information Technology - Procurement

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Multiple governance documentation examples defined by both the Faculty of Math and the Institution outlining purchasing requirements, such as Policy 17, Procedure 1 and wiki pages, exist in the current environment. The existing procurement guidance and documentation does not clearly outline all considerations and requirements for making purchases within one overall document. The existing documentation is currently stored and maintained in multiple locations, which results in difficulty understanding which policy should apply in specific instances.</p>	<p>Decentralized ownership of procurement guidance may result in inconsistent application of procurement rules and processes. This may result in duplicate purchases on items such as application licenses or non-adherence to centrally defined procurement requirements (e.g. Procedure 1).</p>	<p>UW-FOM4.01 Centralization of procurement policies, procedures and guidelines should be defined and documented. The Purchasing department should be responsible for maintaining all procurement regulations, University-wide, with adoption by the individual Faculties.</p>	<p>UW-FOM4.01 Management agrees that the documentation is not centralized.</p> <p>All IT purchases within the Faculty are conforming to Policy 17 and Procedure 1. As such, management does not agree that this is a high risk for the faculty or for the institution.</p> <p>The recommendation is for University-wide documentation. The new CIO will take office in July, and will lead the development of campus-wide priorities. In the interim, CSCF will create a list of procurement information which will then be shared with Procurement Services for potential campus-wide use.</p>	<p>UW-FOM4.01 David Wallace, Chief Information Officer, University of Waterloo</p> <p>August 31, 2013</p>

Control improvement opportunity

5. Information Technology - Repository of Applications, Databases and License Management

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>MFCF maintains a documented inventory of applications and databases; however, application and database owners are not clearly identified. CSCF does not maintain a documented inventory of applications and databases.</p> <p>Central IT and Purchasing is consulted when either CSCF or MFCF acquire licenses; however, this is not a formally documented process. Independent lists of in use software licenses are maintained by both CSCF and MFCF; however, the University of Waterloo does not maintain formal central ownership and oversight of software licenses for the overall Institution.</p>	<p>There is an increased risk that duplicate or additional software and database licenses could be obtained based on the lack of a centrally maintained repository accessible to the entire Institution and the IT unit stakeholders.</p>	<p>UW-FOM5.01</p> <p>CSCF and MFCF should work with IST, other Faculty IT units and the central Purchasing department to establish a campus wide repository/website showing a list of in use system licenses. Purchasing/IST should be responsible for maintaining this system license repository/website. Access to the repository/website should be made available to the Institutional IT units for consultation when purchasing system licenses.</p>	<p>UW-FOM5.01</p> <p>Management agrees that there is no single central repository for licenses. All documentation for licenses for applications and databases in support of the Faculty's mission are maintained by MFCF and CSCF. MFCF and CSCF consult each other and IST prior to entering into any new license agreements. The current repository within the Mathematics Faculty is in the form of paper files, which we believe is sufficient for purposes within the Faculty.</p> <p>The recommendation is for University-wide documentation, which is not under the control of the Mathematics faculty. If IST were to develop a central repository, the Mathematics Faculty would certainly participate.</p> <p>The new CIO will take office in July, and will lead the development of campus-wide priorities.</p>	<p>UW-FOM5.01</p> <p>David Wallace, Chief Information Officer, University of Waterloo</p> <p>Wayne Oldford, Associate Dean Computing, Faculty of Mathematics</p> <p>August 31, 2013</p> <p>Math Faculty portion: Completed to our satisfaction.</p>

Medium Priority Observations

Control improvement opportunity

6. Business Processes - Long term plans and risk assessment

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Internal Audit noted that the Undergraduate Admissions and Outreach Department is responsible for managing international student recruitment for the Faculty of Math. International students are considered crucial for the Faculty as well as the University due to the fee sharing structure currently in place. The Faculty of Math accounts for a significant portion of international students at the University due to strategic partnerships with foreign schools and universities along with a well-established recruitment program.</p> <p>Through corroborative inquiry and review of Undergraduate Outreach communications, Internal Audit noted that while the</p> <p>(cont'd...)</p>	<p>In the absence of a long term plan and priority setting framework there is risk that due to fluctuations for international student enrolments, the Faculty of Math may be unable to meet student intake projections and negatively impact the Faculty budget.</p>	<p>UW-FOM6.01 Management should work with Central Undergraduate Admissions and Outreach and develop a strategy for attracting and retaining high-quality international students.</p> <p>Management should also perform a risk assessment exercise to determine key risks to the Faculty of Math outreach process and develop means to mitigate and manage the identified risks.</p>	<p>UW-FOM6.01 Management agrees that this is of critical importance to the Faculty, and has actively addressed it as a high strategic priority over the last two years. This has included a staffing reorganization to create the position of Director, Undergraduate Recruitment and International, and the addition of two new staff recruiters that report to the Director. The Director has been charged with the responsibility of creating strategies for recruitment of high quality students for outside Ontario, while increasing the diversity of our student base. We have made recent significant progress toward this objective, including significant new cohorts of undergraduate students from Azerbaijan, Malaysia and Indonesia, in addition to our traditional sources of China, Pakistan and Trinidad.</p>	<p>UW-FOM6.01 André Jardin, Director, Undergraduate Recruitment and International</p> <p>June 30, 2013</p>

Control improvement opportunity

6. Business Processes - Long term plans and risk assessment (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
Department realizes the importance of international students to the faculty, a long term plan or strategic priorities is not in place. The Department has recently undergone a re-organization and has added another staff member for recruiting and outreach activities.			UW-FOM6.01 The Director works closely with our faculty members through the Centre for Education in Mathematics and Computing, so that our recruiting efforts are coordinated with our outreach – the latter includes math and CS competitions written by more than 200,000 school children in more than 50 countries. We are actively working for more future recruiting success in India, including recently signing an agreement for CEMC visits and competitions in a large group of India's top schools. We will formalize our plan for these ongoing efforts over the next 12 months.	

Control improvement opportunity

7. Business Processes - Privacy of student information

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Internal Audit noted that the applicable policies for privacy of student information within the Faculty of Math are primarily governed by two (2) policies; The University's Privacy Policy (Policy 8) and Assignment Return Policy.</p> <p>While the Policy 8 addresses general concerns around release of any information deemed confidential, the Assignment Return Policy specifically addresses the means through which assignments should be returned to students. Under the policy, unsupervised distribution of assignments is prohibited unless there are no objections from the students. TAs and Faculty members are required to provide alternate delivery mechanism to students</p> <p>(cont'd...)</p>	<p>Liability to the University if academic information is released to the wrong person.</p>	<p>UW-FOM7.01</p> <p>The onboarding process for Faculty members and TAs should include a provision wherein they are required to confirm and acknowledge their understanding of the University's Privacy policy and Assignment Return policy.</p> <p>Privacy Coordinators should include members of the Instructional Support Groups during their visits and interactions with Faculties in order to ensure that the importance of privacy is known by staff members and TAs who handle student information on a daily basis.</p> <p>Faculty of Math Management should work with University Privacy Coordinators in order to develop a set of guidelines and practices that should be included in all Faculty course outlines. The wording and message should be consistent in order to afford students the opportunity to choose alternate means of return in the event they are not satisfied with the return procedure stated in the course outline.</p>	<p>UW-FOM7.01</p> <p>Management agrees.</p> <p>The Dean's Office will review current methods and guidelines for course outlines.</p>	<p>UW-FOM7.01</p> <p>David McKinnon, Associate Dean Undergraduate Studies, Faculty of Mathematics October 31, 2012</p>

Control improvement opportunity

7. Business Processes - Privacy of student information (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>who prefer to receive their assignments in confidence as opposed to in public</p> <p>Upon reviewing the privacy safeguards and performing walkthroughs with members of the Instructional Support Group, Internal Audit noted that the University requires TAs to attend orientation sessions as well as bi-weekly meetings wherein information on privacy of student grading and any pertinent issues are discussed and resolved. The TAs also sign off on the TA application form that contains a link to the University's privacy policy (Policy 8) as well as Assignment return policy. However, there is no requirement for the TAs to read and sign off (i.e., acknowledge) the actual policies.</p> <p>(cont'd...)</p>		<p>UW-FOM7.01 (cont'd) For example, wording to be considered for inclusion in the course outlines such as:</p> <ul style="list-style-type: none">• Assignments will be returned in class by having students retrieve their own work by alphabetical order.• Unclaimed assignments will be retained in the Faculty Office until term end and shredded according to University Confidential Shredding policy. Students may collect these assignments within Faculty office hours.		

Control improvement opportunity

7. Business Processes - Privacy of student information (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Internal Audit obtained course outlines for Faculty of Math course offerings for 2012 and selected seven (7) samples for detailed testing.</p> <p>Upon review, it was noted that the outlines were not consistent in terms of inclusion of a policy section, assignment grading and return. Furthermore, out of seven (7) outlines reviewed, Internal Audit noted that two (2) outlines did not clearly communicate the means through which assignments will be returned when not claimed in class while one (1) did not contain any reference to assignment return.</p>				

Control improvement opportunity

8. Business Processes - Position Descriptions of Staff members

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Internal Audit obtained and reviewed Position Descriptions for administrative and financial personnel in the Faculty of Math. It was noted that several key administrative and financial staff members' Position Descriptions do not accurately reflect their current role:</p> <ul style="list-style-type: none"> • Administrative Officer – School of Computer Science • Administrative Manager – Math Business & Accounting Program • Administrative Coordinator – Graduate Studies <p>(cont'd...)</p>	<p>There is risk that roles and responsibilities may not be performed with management's intention in the event that all relevant duties are not specifically noted on the employee's Position Description.</p>	<p>UW-FOM8.01 Management should continue with their efforts to revise and update the Faculty Position Descriptions. A project description identifying which positions require revision along with a timeline for completion should be put in place.</p>	<p>UW-FOM8.01 Management agrees. The Dean's Office has previously established this as a priority as a result of work being done on Strategic Workforce Planning. Out of 117 staff positions in the faculty, 29 position descriptions have been updated within the past year. They are now in the accountability-based format recently developed by Human Resources.</p>	<p>UW-FOM8.01 Jack Rehder, Executive Officer, Faculty of Mathematics May 31, 2013</p>

Control improvement opportunity

8. Business Processes - Position Descriptions of Staff members (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Upon review of the organization structure and conducting interviews with the Executive Officer of the Faculty of Math, Internal Audit discerned that the recent changes to the reporting structure of some departments resulted in corresponding changes in the job descriptions such as additional duties, reviewer status for P-Card, merging of communications and publishing units, etc.</p> <p>Internal Audit also notes that the Administrative Officers are currently in the process of updating Position Descriptions for key positions including their own. However, a formal timeline and coordination with University Human Resources is no in place.</p>		<p>UW-FOM8.01 (cont'd)</p>	<p>UW-FOM8.01 (cont'd)</p> <p>Management plans to revise an additional 58 position descriptions within the next 12 months. The plan is already in place, and the Dean's Office already has an agreement with Human Resources to process these job description updates as they are received.</p> <p>The remaining 30 staff position descriptions are in MFCF and CSCF. They will not be updated at this time, as we first need to establish the strategic priorities in those areas before we revise position descriptions.</p>	<p>UW-FOM8.01 (cont'd)</p>

Control improvement opportunity

9. Business Processes - Duties of Administrative Officer and Financial Officer

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Through review of the Faculty of Math – School of Computer Science organization structure and interviews with key administrative and finance process owners, Internal Audit noted that there are instances for which the duties of the Administrative Officer overlap with those of the Financial Officer.</p> <p>Some of the overlapping responsibilities include</p> <ul style="list-style-type: none"> • Review and validation of research grant related expenses that are governed by Tri-Council guidelines. • Review and approval of purchasing activities in the Math – School of Computer Science. <p>(cont'd...)</p>	<p>There is risk of inefficiency and confusion in the performance of job duties for staff due to the overlap of roles and responsibilities.</p>	<p>UW-FOM9.01</p> <p>Management should review the position descriptions of the Administrative Officer and the Financial Officer and make clear distinction between their respective roles and responsibilities. Existing relationships between the Administrative Officer and Financial Officer which are in place within other University Schools should be considered as these roles are clarified. For example, the Administrative Officer, while retaining the responsibility of overall management including financial planning and reporting should be able to delegate review and approval of expenses and research account transactions to the Financial Officer within the signing authority practices of the University.</p>	<p>UW-FOM9.01</p> <p>Management agrees.</p> <p>Management will perform an evaluation of roles and responsibilities and provide recommendations to the Dean to ensure appropriate delineation of duties and process ownership.</p> <p>Management will ensure sufficient resources are allocated to the financial review activities. Reporting relationships will be reviewed, and changes will be made if warranted.</p>	<p>UW-FOM9.01</p> <p>Jack Rehder, Executive Officer, Faculty of Mathematics</p> <p>David Taylor, Director, Cheriton School of Computer Science</p> <p>December 31, 2012</p>

Control improvement opportunity

9. Business Processes - Duties of Administrative Officer and Financial Officer (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>In the above instances, it was noted that queries and requests for review / approval from the Administrative Support staff are received by both employees.</p> <p>In addition, Internal Audit noted that the Financial Officer reports directly to the Director and Associate Director of the School of Computer Science. This arrangement is different from other University Schools and Institutes such as the School of Pharmacy, the School of Architecture where the Financial Officer reports directly to the Administrative Officer.</p>				

Control improvement opportunity

10. Business Processes - Coordination of Scholarship process within the Faculty of Math

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>The Faculty processes scholarships valued at \$1.8 – 1.9 million annually from operating funding and \$300,000 – 400,000 from Faculty administered trusts and endowments. Internal Audit interviewed key process owners in the Faculty of Math Undergraduate and Graduate Studies Offices and reviewed the roles and responsibilities of key process owners in the departments.</p> <p>Numerous manual spreadsheets and databases are in use across the Faculty to track and record scholarships.</p> <p>The University’s central Undergraduate and Graduate Offices are also responsible for centrally managing the scholarship process through the main trust and endowment accounts.</p>	<p>There is a risk of inefficiency across the Faculty due to potential duplication of efforts or suboptimal use of human resources within the scholarship administration processes.</p>	<p>UW-FOM10.01 Management should review the scholarship process to obtain a detailed understanding of:</p> <ul style="list-style-type: none"> • The scholarship transaction process flow • Systems (e.g., spreadsheets, databases) in place for scholarship administration • Staff who have an element of scholarship administration • Identify differences and linkages between the undergraduate and graduate scholarship processes • Consider implementing a process to centralize common aspects of scholarship administration. 	<p>UW-FOM10.01 Management agrees.</p> <p>The Dean’s Office will undertake to review the scholarship processes in both graduate and undergraduate. The process will be documented in a central location available to all. The review will include understanding of systems, template, and communication methods used.</p> <p>As a result of the review, management will consider whether there are any aspects of the process that can be streamlined.</p>	<p>UW-FOM10.01 Jack Rehder, Executive Officer, Faculty of Mathematics</p> <p>October 31, 2012</p>

Control improvement opportunity

11. Business Processes - Inconsistent reporting and monitoring process

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Through corroborative inquiry with key administrative and financial process owners, Internal Audit noted that the process of reporting and monitoring is not consistent across various departments / units at the Faculty of Math.</p> <p>Upon performing walkthroughs of the reporting process and review of reconciliation spreadsheets, Internal Audit noted that Administrative Officers, Managers as well as Financial Officers often develop extensive spreadsheets with manual entry and extraction of financial information. Such measures are normally undertaken due to FORE reporting system's</p> <p>(cont'd...)</p>	<p>The lack of a consistent means of financial monitoring and review may result in errors not being uncovered in a timely manner. In addition, there is risk of inefficiencies in training and development for staff in the event of employee turnover.</p>	<p>UW-FOM11.01 Management should identify and implement a standard guideline for financial monitoring and reporting expectations within the Faculty of Mathematics. The guideline should consider:</p> <ul style="list-style-type: none"> •Frequency of meetings between the Associate Dean/Director/Chair and Administrative staff to review the financial results •Documentation to be retained showing evidence of review and/or sign off on the monthly FORE financial reports •Controls in place to ensure that manually prepared reports reconcile with the source FORE data <p>Where possible the University's guideline for financial reporting should be considered as a basis for performing the monthly FORE review and reconciliation.</p>	<p>UW-FOM11.01 Management agrees.</p> <p>The Dean's Office will develop formal process documentation for financial monitoring and reporting expectations as outlined in the recommendation. The Dean's Office will place the process documentation in a central location (similar to budget process documentation) to ensure ease of access.</p>	<p>UW-FOM11.01 Udaya Wettasinghe, Faculty Finance Officer, Faculty of Mathematics</p> <p>October 31, 2012</p>

Control improvement opportunity

11. Business Processes - Inconsistent reporting and monitoring process (cont'd)

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>limitations to produce reporting in required details / formats. The University's Finance Department roles and responsibilities for all departments indicate that financial statements are to be reviewed monthly for accuracy and completeness.</p> <p>Numerous financial reporting and monitoring approaches and timing for the frequency of communication with the Associate Dean / Director / Chair were identified. A formal document noting the expectations for financial monitoring and reporting with the Faculty is not in place. The approaches in use were not all performed monthly across the Faculty departments.</p>		<p>UW-FOM11.01 (cont'd)</p>	<p>UW-FOM11.01(cont'd)</p>	<p>UW-FOM11.01(cont'd)</p>

Control improvement opportunity

12. Information Technology - Network Diagrams

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>CSCF and MFCF currently do not maintain comprehensive network diagram documentation. Through discussion, it was noted that IST is now responsible for the support of the University network infrastructure.</p>	<p>The lack of a comprehensive network diagram may result in varying levels of knowledge over the current state IT architecture. This may create confusion when providing support or determining the impact of various initiatives across the Faculty of Mathematics.</p>	<p>UW-FOM12.01 A comprehensive network diagram indicating all IT infrastructure utilized by the MFCF and CSCF IT units should be documented in partnership with IST. Go-forward maintenance of network documentation should be maintained by IST. Procedures for the periodic review and maintenance of the diagram should be implemented and adhered to.</p>	<p>UW-FOM12.01 Management agrees that there is no static network diagram. However, all machines on Math Faculty networks can be dynamically diagrammed through the University's network management software (ONA). These dynamic diagrams are used by MFCF and CSCF in conjunction with machine databases to manage the network effectively within the Faculty.</p> <p>The new CIO will take office in July, and will lead the development of campus-wide priorities.</p>	<p>UW-FOM12.01 David Wallace, Chief Information Officer, University of Waterloo</p> <p>August 31, 2013</p>

Control improvement opportunity

13. Information Technology - Satellite Campuses

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Based on the task force report requiring IT liaisons with satellite campuses, it was noted that that the UW satellite campus in Dubai has an isolated IT environment in which there is little to no involvement by either of the Faculty of Math's computing units. There are no liaisons assigned to the satellite campus, as required by the task force report, and there is little to no awareness as to whether the IT activities of the Dubai campus are compatible with or could leverage the local University systems.</p>	<p>There is increased risk of compatibility issues if IT infrastructure at the satellite campus continues to grow and evolve independently, based on the limited interaction with main campus staff.</p>	<p>UW-FOM13.01 Based on the task force report, IT liaisons should be appointed within the University of Waterloo environment and they should be tasked with familiarizing themselves with the IT operations at the Dubai satellite campus. Cross campus collaboration for IT strategy and initiatives should be defined and managed centrally within the University.</p>	<p>UW-FOM13.01 Management agrees that there is some risk that the IT infrastructure may grow and evolve independently. With respect to teaching services, CSCF provides teaching services (such as course accounts and marking systems) for the Dubai campus that mirror those provided for students on the Waterloo campus. In addition, there is always a CS instructor present in Dubai that acts as a liaison. Management will designate a point person from the Faculty of Mathematics to work with the University liaison group.</p>	<p>UW-FOM13.01 Wayne Oldford, Associate Dean Computing, Faculty of Mathematics David Wallace, Chief Information Officer, University of Waterloo Math Faculty point person designated: December 31, 2012 University liaison team established: April 30, 2013</p>

Low Priority Observations

Control improvement opportunity

14. Information Technology – Critical Skills and Capabilities

Observation	Implication	Recommendation	Management comments and action plan	Responsible party and timing
<p>Upon review of CSCF's and MFCF's "Who Does What" webpages, the skills and capabilities of a small number of IT personnel were not included.</p>	<p>The lack of complete documentation outlining all active IT personnel's skills and capabilities may result in stakeholders being unaware of support capabilities that exist.</p>	<p>UW-FOM14.01 CSCF and MFCF should review the current skills and capabilities documentation to ensure it is up to date and accurate based on the current employee skillsets.</p> <p>Requirements for periodically reviewing and maintaining internal documentation of skills and capabilities should be defined and adhered to.</p>	<p>UW-FOM14.01 Management agrees.</p> <p>Documentation will be updated, and a periodic review period will be established.</p>	<p>UW-FOM14.01 Wayne Oldford, Associate Dean Computing, Faculty of Mathematics</p> <p>August 31, 2012</p>

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