UNIVERSITY OF REGINA

FACULTY OF SCIENCE

Annual Report

January 1, 2004 – December 31, 2004

(www.uregina.ca/science/faculty/index.htm)

DEAN'S COMMENTS

The Faculty of Science at the Faculty Council September 2004 meeting approved the document Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010. This document will serve as the framework guiding decision-making and resource allocation in the Faculty for the next five years. An executive summary of this document follows. The intensive recruitment phase for the Faculty is completed and the Faculty will now face the challenge of retaining these new colleagues who are shaping the research directions and programs of the Faculty, in new and innovative ways, promoting both independent and integrated collaborative research, and teaching programs in the Faculty and the University, Provincially, Nationally and Internationally. Our faculty members have attracted significant external research and infrastructure funding through the Natural Sciences and Engineering Research Council of Canada (NSERC), the Social Sciences and Humanities Research Council of Canada (SSHRC), the Canada Foundation for Innovation (CFI), Western Economic Diversification (WED), other government funding councils and the private sector. The Faculty has continued to expand and develop the research enterprise and the infrastructure to support these programs because of the funding success of the faculty members. The Faculty of Science boasted a 100% success rate with NSERC this year, supporting both new and existing faculty members research programs. The Faculty was successful this year in securing CFI funding and NSERC Research, Technology and Innovation (RTI) grants to support new laboratories and research facilities. The Faculty of Science looks forward to the increased infrastructure and space that the new laboratory building on campus will provide. This new building and the research facilities contained within will be a powerful retention tool for the high quality faculty members that were recently recruited.

The Faculty of Science is increasing the opportunity for students to follow a wide variety of career options by developing new programs both within Science and in collaboration with other faculties at the University of Regina and with the Saskatchewan Institute of Applied Science and Technology (SIAST). These partnerships allow us to expand our program offerings using existing resources to build capacity and provide new opportunities for our students and the residents of Saskatchewan, Canada and abroad. The Faculty of Science is exploring collaborative opportunities with international institutions particularly in China.

The Faculty of Science is an active participant and contributor to the local community and the Province of Saskatchewan. The Department of Mathematics and Statistics hosted Math Camp 2004 that attracted participants from across the Province. Math Central is a community based interactive math website. Many of our faculty members and students have been invited to elementary and high school classrooms. Others have given demonstrations and presentations to various community organizations or sit as board members or volunteers on a number of community based organizations. The Faculty of Science is a continuing supporter of the Saskatchewan Science Centre and the Virtual Science Fair which is open to elementary and secondary students across the country.

The Faculty of Science is proud of its accomplishments over the past year. I would like to take this opportunity to thank the faculty and staff for their dedication and support. In particular I would like to thank the two Assistant Deans (Drs. David Chandler and Scott Wilson) and the Faculty Administrator (Audrey Perra), Science Operations (Lee Aument) and the Department Heads (Drs. William Chapco, Biology; Andrew Wee, Chemistry and Biochemistry; Brien Maguire, Computer Science; Janis Dale, Geology; Harley Weston, Mathematics and Statistics; George Lolos, Physics) for their assistance in compiling this report. I would also like to thank Sandy Barker and Sorcha O'Rorke in the Student Program Centre, Janet Campbell, Office of Research Services, and Lori Baiton, Faculty of Graduate Studies and Research for providing the necessary data. Finally I would like to thank Marlene Miller for her effort in formatting this document. If you have any comments please do not hesitate to send them to the Dean's Office.

Dr. Katherine Bergman
Dean of Science

Executive Summary

High quality, original research and teaching are the fundamental cornerstones of a university. These activities distinguish the University from government research facilities, industry, colleges and technical institutes. In this context, the Faculty of Science is driven by curiosity, creativity and imagination, for knowledge and an understanding of our environment. This drive is fulfilled by the creation, enhancement and dissemination of knowledge. The catalyst for these activities is curiosity even where it may ultimately lead to a direct practical or economical application. Curiosity driven research is critical to the development of practical applications. Recruiting and retaining the best faculty and students are the most important goals for future success. High quality and innovative researchers are self-motivating. The role of the Faculty is to provide these researchers with an environment that is flexible and facilitates their research programs through the provision of adequate financial and human resources. Students are an important part of the success of these research programs.

The Faculty of Science will continue to promote an environment of individual responsibility and teamwork encouraging collaboration among faculty, students and staff. As a result, individual and/or collaborative research and teaching are expected and will be supported. The mandate of the Faculty of Science is to develop scientific and technological expertise within Saskatchewan, and to provide a supportive environment for retaining this expertise. Excellence in discipline-based research provides a solid foundation for collaboration and allows opportunities for interdisciplinary/collaborative research to grow as trends and needs dictate. At the same time, discipline-based research serves the long-term interests of student education, because research informs teaching. A strong research program enhances our teaching programs, discipline-based or interdisciplinary, at the undergraduate and graduate level. The Faculty has an established record of excellence in discipline-focused and interdisciplinary/collaborative research and teaching programs.

The Faculty of Science is committed to the following core values and principles, and will continue to build and expand based on these principles:

1. *Research and Teaching* are key activities of the Faculty of Science and it is important that these be of the highest quality;
2. *A Respectful Workplace* fosters an environment of individual responsibility and teamwork respecting academic and cultural diversity, and promoting cooperation and collaboration, among faculty, students and staff;
3. *Safety* means promoting a safe workplace environment that is compliant with the relevant legislation;
4. *Collegial governance* arises from the University of Regina and the Faculty of Science operating under a model of shared responsibility where it is expected that faculty and staff will contribute to the governance of the University and the Faculty;
5. *Accountability* to the relevant internal and external communities is the ultimate responsibility.

The Faculty of Science plans to develop its strength further, guided by the above principles. In so doing, it will meet its commitment to its faculty members, students, staff, the University and the Province of Saskatchewan.

FACULTY PRIORITIES OVER THE NEXT FIVE YEARS

Over the past six years the Faculty of Science has been through an intensive phase of active recruitment and infrastructure upgrading, and has been successful in attracting high quality personnel to drive the research and teaching enterprises. These last six years have been exciting times in the Faculty with new colleagues bringing new ideas, new infrastructure requirements and new program directions. Looking to the future, the Faculty now faces the challenge of retaining these new colleagues and sustaining the new initiatives in teaching and research that have come as a result of this renewal and growth. The focus of the Faculty's objectives will need to shift over the next five years from one of recruitment and infrastructure acquisition to one of retention and sustainability.

Over the next five years the Faculty needs to address the following concerns to sustain the current level of high calibre teaching and research, and to support continued growth in research and teaching excellence. These issues focus largely around infrastructure, particularly if we are to retain these highly qualified members and nourish the growth of the Faculty. These priorities will be achieved by securing funds as the result of a number of ongoing opportunities.

1. Facilitate and support the research enterprise to allow for continued and sustained growth;
2. Develop core infrastructure to support the variety of research programs in the departments;
3. Initiate and sustain a Visiting Scholars Program to increase the potential for national and international interaction and collaboration;
4. Provide increased funding for undergraduate and graduate student support;
5. Secure sustained funding to renew and maintain the existing undergraduate laboratories and to develop modern laboratory facilities designed to meet the needs of new or revised programs;
6. Develop our programs to meet current educational priorities and opportunities in the Province while reflecting the expertise in the Faculty;
7. Propose and develop courses for delivery using Technology Enhanced Learning (TEL) opportunities and Campus Saskatchewan where appropriate.

This shift in focus to retention and sustainability however, does not mean that new opportunities will not be pursued and that new colleagues will not be recruited. Rather the Faculty needs to ensure that the current investment is sustained, and is allowed to grow and develop, to support the goals and objectives, in research and teaching highlighted in the Faculty of Science Strategic Plan Creating Our Future: 2005 –2010 (www.uregina.ca/science). The Vision, Mission and Goals statement, and a summary of the objectives follow. Achieving this plan will require a considerable investment of time and resources from all parties responsible, however the potential return is worth the commitment of time and the investment of resources.

The Faculty of Science faces the new challenges and opportunities that lie ahead with confidence and optimism. The renewal of the Faculty, coupled with the experience and established records of existing colleagues, provides a solid foundation for growth of the Faculty over the next five years. The future of the Faculty of Science is grounded in two fundamental principles, excellence in discipline-based research and recruiting/retention of high quality people, and our future is very bright.

VISION

The Faculty of Science is committed to sustain excellence in the creation and dissemination of knowledge by research, scholarly publication and teaching in both basic and applied sciences.

MISSION

The mandate of the Faculty of Science is the creation and application of knowledge through pure and applied research and the dissemination of this knowledge through scholarly publication and teaching. Research and Teaching are the fundamental activities of the Faculty. The Faculty of Science has a dynamic, externally funded, peer-evaluated, nationally and internationally recognized research base. This base provides a solid foundation for our undergraduate and graduate programs, and is a mechanism for attracting and retaining high quality faculty, students and staff to the Faculty of Science.

ACHIEVING OUR VISION AND MISSION

To meet the objectives described in our Vision and Mission statement the Faculty must focus on six key goals:

- *Research and Teaching:* The Faculty must provide an environment that promotes individual and collaborative research and teaching activities of its faculty, students and staff;
- *Faculty and Staff:* The Faculty must attract and retain high quality faculty and staff members, and support them in their academic responsibilities because the quality of the faculty and staff defines the quality of the Faculty;
- *Students:* The Faculty must provide high quality programs, which develop critical thinking and problem solving skills that build a solid scientific base of knowledge, and the Faculty must enhance these programs by introducing students to research at an early stage;
- *Recognition:* The Faculty must continue to promote the development of national and international research and teaching reputations by actively encouraging research and teaching collaborations;
- *Service:* The Faculty must continue to provide high quality community service delivery and to provide programs and lectures, for schools and community organizations;
- *Accountability:* The Faculty must be accountable to the University of Regina, the national granting councils, the community of its peers and the public for the evaluation of performance.

Since these goals are entwined, the mechanisms for achieving them are described under the following five main subject headings: People, High Quality Programs, Community Service, Resources, and Implementation and Accountability.

OBJECTIVES	
Objective 1: That all policies and procedures in the Faculty of Science reflect the Principles of Natural Justice to ensure fairness and equity for all members.	***Objective 2:*** To attract and retain high quality faculty in areas of identified strength in the Faculty.
Objective 3: To attract and support high quality sessional lecturers to contribute effectively to the teaching goals of the Faculty.	***Objective 4:*** To recruit and retain high quality staff to provide administrative and technical support for the activities of the Faculty of Science.
Objective 5: To recruit and retain high quality undergraduate students both locally and from diverse regions.	***Objective 6:*** To increase the number of First Nations students registered and successfully completing degrees in the Faculty of Science.
Objective 7: To build a sense of community among all students in the Faculty of Science.	***Objective 8:*** To recruit and retain high quality graduate students both locally and from diverse regions.
Objective 9: To increase the engagement and involvement of our alumni in the support of the activities of the Faculty of Science.	***Objective 10:*** To continue to explore international opportunities in the research and teaching programs in the Faculty of Science.
Objective 11: To sustain and grow a strong national and international calibre research enterprise in the core disciplines of the Faculty of Science.	***Objective 12:*** To sustain and grow a strong integrated collaborative research program in the Faculty, with other faculties and with other institutions locally, nationally and internationally.
Objective 13: To increase the awareness and recognition of the research contributions of members of the Faculty of Science.	***Objective 14:*** To continue to sustain and develop high quality undergraduate and graduate programs.
Objective 15: To provide the necessary support services for the research and teaching programs.	***Objective 16:*** To continue to build our relationship with other institutions, government and industry.
Objective 17: To continue to improve service delivery to other programs on campus.	***Objective 18:*** To enhance the public perception and appreciation of the importance of the role of the Faculty of Science in the community.
Objective 19: To obtain sufficient financial and physical resources to meet the current and future needs of the Faculty of Science.	***Objective 20:*** To develop continuous and growing revenue for the Faculty of Science from private donations.

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Part 1: Introduction

The Faculty of Science has enjoyed a successful year in research and teaching. New people have joined the Faculty this year and several new initiatives have been successfully pursued including the acceptance of a five-year strategic plan. This report highlights the major accomplishments in the Faculty of Science between January 1, 2004 and December 31, 2004. The Faculty commitment to research and teaching demonstrates to others that we are a critical and innovative part of the University of Regina, the City and the Province.

This document summarizes accomplishments of 2004 and gives an indication of future directions and potential. The Faculty has undergone many changes over the last year as long time members retired, while others pursued opportunities in other locations and were replaced by new faculty members with new ideas about future directions and expectations. Many exciting new initiatives in both research and teaching within the Faculty, between faculties and with outside agencies and institutions are currently being explored and will be reported next year. Additional and more detailed information about our programs and program requirements, research, faculty members, students and staff is available on our website at **www.uregina.ca/science.**

The Faculty currently offers Bachelor of Science and Bachelor of Science Honours degrees in a number of disciplines as well as Certificates in Computer Science and Indian Health Studies. There are joint degrees with the faculties of Arts and Education, and combined degree programs with SIAST including the new Bachelor of Medical Imaging. The Faculty is exploring collaborative opportunities with foreign institutions particularly in China. Many of the programs in the Faculty of Science offer a Cooperative Education option. Laboratory work is a compulsory aspect of the degree programs because it provides students with practical experience in a controlled environment. The Faculty of Science has a strong commitment to teaching and our members are commonly recognized for their contributions to teaching. This year the Actuarial Science program graduated its first three students with a BSc degree in Actuarial Science at the Spring 2004 Convocation.

The Faculty of Science offers graduate programs in the various disciplines leading to a Master of Science degree or a Doctor of Philosophy degree. The student works in these thesis-based degree programs under the direct supervision of a faculty member.

Faculty members continue to develop research initiatives in the Faculty of Science. The results of their research are published in a variety of peer-reviewed journals and conference proceedings. New research opportunities, either individual or collaborative are proposed and developed on an ongoing basis. The Faculty of Science has a strong commitment to research and our members are commonly recognized for their contributions to research. This year Dr. Howard Hamilton, Department of Computer Science, was selected as a University of Regina President's Scholar for 2004 - 2006 and in the spring of 2004, Dr. Peter Leavitt was awarded the University of Regina Alumni Association Award of Excellence in Research. Drs. Renata Bailey and Brian Sterenberg (Department of Chemistry and Biochemistry) were successful in securing CFI awards. Dr. Bailey's CFI Innovation award was for a Trace Analysis Facility, the only one of its kind in Western Canada, and Dr. Sterenberg's award is for the purchase of a state-of-the-art infra-red spectrophotometer, ReactIR, for *in situ* study of chemical reactions.

Fundraising will take on a new profile in the Faculty over the next few years. Our focus will be on the development of student scholarships at both the undergraduate and graduate level to support our goal of attracting high quality students. The government announced Fall 2003 the commitment of funds in principal to build a new Laboratory Building Addition. This building will enhance the research and teaching programs in the Faculty of Science and will provide the necessary infrastructure to recruit and retain high quality faculty to the University of Regina. The Faculty of Science is optimistic that the funding for this building will be realized in 2005.

Many faculty members and students are active in the community both in local and rural locations giving lectures and demonstrations in elementary and high school classrooms, conducting campus tours and/or organizing camps. This aspect of public service is an important component of our contribution to the community that supports us.

PART 2: FACULTY OVERVIEW

The Faculty of Science has 87 faculty members, 2 instructors, 24 laboratory instructors and technicians, 22 administrative staff, 1150 full-time and 150 part-time undergraduate, and 123 graduate students. Members of the Faculty of Science have a strong commitment to research and teaching excellence. The Faculty of Science is composed of six departments: Biology, Chemistry and Biochemistry, Computer Science, Geology, Mathematics and Statistics, and Physics. Each department offers both undergraduate (BSc and BSc Honours) and graduate (MSc and PhD) degrees. Opportunities for interdepartmental programs (eg., Biology and Chemistry, Biology and Statistics) and interfaculty programs [eg., Mathematics and Education, Statistics and Economics (Arts)] are available, as are joint programs with SIAST. The Faculty is currently evaluating collaborative opportunities with international institutions (eg., China).

The University of Regina Planning Document and the Faculty of Science Vision, Mission and Goals Statement guide the decision making process of the Faculty. The Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010 was approved at the September 2004 meeting of Faculty Council. The Faculty of Science is committed to developing a strong foundation of inquiry-based research to support integrated collaborative research programs internally and externally, nationally and internationally, and to support the development of practical applications derived from this research. A strong base of research supported by the Natural Sciences and Engineering Research Council of Canada (NSERC) will ensure that the University maintains a stable level of funding from NSERC to support the indirect costs of research across the Institution. A strong research program is key to the success of the teaching program at both the undergraduate and graduate levels because research informs teaching and maintains its currency. Our researchers serve as role models and mentors for our students. Our students are a reflection and measure of the success of the research and teaching programs of the Faculty as well as of the Institution.

The Faculty of Science has been working steadily to support the following specific goals and initiatives identified in our Strategic Plan:

- Upgrade the undergraduate laboratories to maintain program currency and to meet legislated safety standards;
- Remove and dispose of chemical wastes, and establishment of policies and procedures for handling of biological, chemical and radioactive wastes;
- Continue to recruit and retain high quality faculty, academic staff members and support staff;
- New program development (teaching and research) that reflects the University's and the Faculty's strategic areas of emphases in both discipline-based and integrated collaborative programs;
- Increase enrollment of both graduate and undergraduate including international students;
- Increase funding for graduate students.

The Faculty has been successful in meeting these goals but most require an ongoing commitment if these objectives are to be sustained. Many have required significant resources to address the accumulated deferred maintenance and infrastructure problems, and if not given a commitment of ongoing support will not be sustained. These goals reflect the objectives stated in the University of Regina document entitled Building on Progress: The Plan for 2004 - 2009 as well as the Student Recruitment Task Force Report, Faculty Recruitment and Retention, and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010. These goals provide the framework for the allocation of Faculty resources and ongoing support to the individual departments. The Departments have each developed planning documents that have undergone external review and are consistent with the University of Regina Reaching Our Potential, the University of Regina Strategic Research Plan and the Faculty of Science Strategic Plan. The departmental documents guide faculty recruitment, program development (teaching and research) and infrastructure support. In this context the Faculty of Science through the various departments has had a very successful year. The accomplishments and initiatives of each department are highlighted in this report.

2.1 Departments

A brief overview of each department and highlights of their accomplishments for the year 2004 are described below.

Department of Biology:

The Department has identified two areas of focus (Environmental/Ecology Stream and Molecular Biology Stream) that were supported by the External Review Team in 2000. These areas provide the framework for recruitment and program development (teaching and research) in the Department and are consistent with the strategic research areas of emphases in Energy and Environment, and Health Research, described in the University of Regina Strategic Research Plan. Members of the Department are actively involved with the Sustainable Communities Initiative. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively, all eight faculty members in the Department of Biology hold NSERC Research Discovery Grants, which together with other grants and contracts total about $1.34 M.
- Department members supervised: 8 Honours, 15 Masters and 6 PhD students. Five Postdoctoral Fellows were supervised, of which three held NSERC PDFs.
- Drs. M. Brigham and P. Leavitt were co-applicants on a Canada Foundation for Innovation (CFI) Grant awarded to Dr. R. Bailey (Department of Chemistry and Biochemistry) of $1.88 M.
- Two Department members are on grant selection committees: NSERC (Wilson) and Health Services Utilization and Research Commission (HSURC) (Ashton).
- Collectively, Faculty Members published 35 refereed articles or book chapters in national and international journals. A total of 19 conference papers were presented.
- Faculty Members participate in the larger academic community by reviewing manuscripts and grant applications, and serving on editorial boards of scholarly journals.
- Dr. Pedro Peres-Neto will join the Department in January 2005. As a quantitative ecologist and modeler, he will add needed expertise to the Department's environmental teaching and research programs.
- Major renovations to the Aquatic Facility were completed in 2004. Not only will the research (and associated teaching) needs of Drs. Manzon and Peres-Neto be met, the facility is expected to serve as a significant recruiting tool.
- The Department has also demonstrated its public accountability as evidenced by the numerous presentations made to schools, community interest groups and the media.
- Laboratory Instructor Ms. Gwen Jones, last year's winner of the University of Regina Alumni Association Award for Excellence in Teaching, retired and was replaced by Ms. Lauri Lintott in July 2004. Ms. Lintott's expertise will enhance the Department's teaching programs in Genetics, Cell Biology and Molecular Biology.
- Ms. Heather Stanley (Laboratory Instructor) was a key participant in developing WebCT materials for two courses in microbiology and a Human Biology course for non-majors.
- In the spring of 2004, Dr. Peter Leavitt was awarded the University of Regina Alumni Association Award of Excellence in Research. Dr. Leavitt is also Director of the Environmental Quality Analysis Laboratory (EQAL), who with other members of his team are undertaking significant research on climate change, drought and the environmental impact of human activities.
- The George Ledingham Herbarium continues to serve as an important resource for academics and students. This past summer, Dr. Susan M. Studlar, Adjunct Associate Professor of Biology at West Virginia University, visited and worked in the herbarium as a University of Regina Visiting Scholar. Herbarium Director and Professor Emeritus Dr. G. Ledingham was very helpful and continues to be so in dealing with external requests for herbarium materials. In the spring, the Department of Biology in cooperation with the Native Plant Society of Saskatchewan held a workshop on rare plants using the resources provided by the herbarium. This association promises to become an annual event.

- Dr. Christopher Yost initiated a "Microbiology Today" bulletin where up-to-date newsworthy items are posted.

Initiatives

- The Animal Care Facility housed in the Department of Biology was decommissioned. Now we will
- re-focus and streamline the activities in the research and teaching programs to ensure the level of care provided for animals used in teaching and research programs meets or exceeds the standards set by the Canadian Council on Animal Care.
- The Bat Rescue Program is now a joint responsibility with the Saskatchewan Science Centre which will house and care for the bats in their facility.
- **New Faculty Recruitment:** The Department has a search ongoing for an animal physiologist to replace Dr. Melvin Weisbart who retired in June 2004. The Department is also initiating a search for applicants for a University Fellowship Award (UFA/NSERC) in the area of Environmental Biology.

Department of Chemistry and Biochemistry:

The Department has identified two areas of emphases (Chemistry of Biological Systems and Chemistry of Environmental/Energy Systems) in their planning document of 2000 that builds on the four pillars of chemistry: Analytical, Inorganic, Organic and Physical Chemistry. These areas provide the framework for recruitment and program development (teaching and research) in the Department and are consistent with the strategic areas of emphases in Energy and Environment, and Health Research, described in the University of Regina Strategic Research Plan. Members of the Department are actively involved with the Sustainable Communities Initiative. The Department continues to work toward achieving the objectives identified in their planning document. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively, all eight faculty members in the Department of Chemistry and Biochemistry hold NSERC Research Discovery Grants, three Equipment Grants (NSERC Research Tools (RTI) and Canadian Foundation for Innovation (CFI), and two other grants which together total about $2.48 M.
- Department members supervised: 7 Honours students, 12 Masters students (2 completed) and 4 PhD students (1 completed). Five Postdoctoral Fellows were supervised.
- Drs. R. Bailey and B. Sterenberg were successful in securing CFI awards. Dr. Bailey's CFI Innovation award was for a Trace Analysis Facility, the only one of its kind in Western Canada, and Dr. Sterenberg's award is for the purchase of a state-of-the-art infra-red spectrophotometer, ReactIR, for *in situ* study of chemical reactions.
- New faculty members (Murphy and Sterenberg) were successful in securing NSERC funding: Discovery (Murphy and Sterenberg) and RTI (Sterenberg). Dr. Dahms was successful in the renewal of her NSERC Discovery grant.
- The initial commitment from the Faculty of Science, the University and the Department to invest in our new faculty members has contributed to the positive results in external grant successes.
- The Department was successful in recruiting Dr. Andrew Freywald, who is the newest addition to the Biochemistry Unit in the Department. Dr. Freywald is a Cell Biochemist.
- The Department has successfully completed the upgrade and acquisition of equipment for use in teaching and research. Undergraduate and graduate students now have access to and will have hands-on experience in the use of modern equipment.

Initiatives

- **New Faculty Recruitment:** The Department conducted a search for a Biochemist and a candidate was selected. An offer sent in January 2005 has been accepted.
- **Review of Chemistry and Biochemistry Undergraduate Curricula:** The Department had a retreat in May 2004 to review and discuss, the chemistry and biochemistry programs and curricula. The main objective was to arrive at a cohesive, comprehensive and effective program for chemistry and

biochemistry. The courses and the laboratory components, where applicable, within each program were examined and suggestions for changes were made. Four subcommittees were established to look at specific core areas – Analytical/Physical, Organic, Inorganic and Biochemistry. These subcommittees were asked to exchange ideas and each subcommittee will report to the Departmental Curriculum Committee. The latter will submit its recommendations to the Department.

- **Equipment Cost-Recovery Fee:** Nominal user fees for equipment use are now in effect for researchers who use departmental equipment such as the NMRs and GC-MS, as well as for the use of dry ice. Note that undergraduate students also use the NMRs with the assistance of laboratory instructors, the GC-MS (Honours students) and dry-ice, but are not assessed a fee. The user fees collected from researchers are not adequate to fully offset the maintenance costs of the equipment.
- **Laboratory Rejuvenation and Renovation:** The undergraduate laboratories are in the process of being rejuvenated; the benches will be resurfaced and/or repaired, all plumbing will be inspected and the labs will be painted. Several research labs are being renovated to accommodate the work-space requirements of principal investigators. For example, a laboratory is being renovated to house the new Trace Analysis Facility, headed by Dr. Bailey, and two other labs, one to become a modern inorganic/organometallic and the second to accommodate a photophysics laser facility, are also being renovated.

Department of Computer Science:

The Department has identified three principal areas of focus (Data Mining and Databases, Digital/Multi Media and Software Systems Development). These areas provide the framework for recruitment and program development (teaching and research) in the Department and are consistent with the strategic areas of emphases in Energy and Environment, Informatics and Health Research, described in the University of Regina Strategic Research Plan. Members of the Department are actively involved with the Sustainable Communities Initiative. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively 19 faculty members in the Department of Computer Science held 16 NSERC Discovery Grants, one NSERC RTI Grant and 20 other grants and contracts totalling about $1.14 M.
- Department members supervised: 4 Honours students, 64 Masters students (14 completed) and 19 PhD students (3 completed). The Department was host to five Visiting Scholars.
- Drs. David Gerhard and Dominik Slezak were awarded a CFI New Opportunities grant worth about $150,000 to develop the rough music and audio digital interactive lab (aRMADILo).
- Dr. Howard Hamilton was selected as a University of Regina President's Scholar for 2004-2006.
- Additional temporary space in College West was obtained and is being used to provide office and research space for new faculty members and their graduate students.
- The Department was successful in recruiting Dr. Terence Chan who joined the Department in July 2004. Dr. Chan brings expertise in networks to the Department complement.
- **Open Systems Lab.** Open-source software is developed by an open community and is licensed under terms that encourage sharing and participation, instead of closed proprietary software whose source code is closely guarded. The open-source software (OSS) model includes intense scrutiny of code, and could create reliable software more rapidly and economically. This model has attracted attention from major software developers around the world. The Open Systems Lab, funded by Western Economic Diversification (WED) with a contribution from the Faculty of Science, will allow University of Regina students to be trained, with practical experience, in the OSS development model. The Open Systems Lab will serve the dual purpose of training our students and building an active research program that will make important contributions to the open-source community.
- Interactive Media Lab. This laboratory, funded by WED with a contribution from the Faculty of Science, provides state-of-the-art software access to students that most movie production companies use to create computer-generated images. Students will learn the technical and creative aspects in the development of computer games and interactive television, and be ready to deal with the convergence

of entertainment and networking in the home. It is complementary to the existing Undergraduate Digital Media Lab shared between Science and Fine Arts.

- **International Visitors and International Reputation.** The following were visiting scholars in the Computer Science Department this year: Mr. Jishun Kuang from Hunan University, Dr. Yinliang Zhao from Xi'an Jiaotong University, Professor Huazhong Zhang from Shandong University, and Dr. Marcin Szczuka from Warsaw University. Professor Guoyin Wang from Chongqing University of Posts and Telecommunications was a guest lecturer.
- **Technology Enhanced Learning (TEL) Grants.** The following TEL class projects, awarded last year, are in development or have been introduced: CS306 Data Communications and Networks by Dr. JingTao Yao; CS330 Introduction to Operating Systems by Dr. Howard Hamilton; CS340 Algorithms and Data Structures by Dr. Malek Mouhoub; and CS372 Software Engineering Methodology by Dr. Samira Sadaoui.
- **Credit adjustment in MSc and PhD in Computer Science (thesis option).** The elimination of two credit hours of CS 900 previously outlined in the MSc and PhD programs (thesis options), allows program credit adjustments to 30 credit hours and 60 credit hours respectively. The Computer Science Department requires MSc and PhD students to do two seminar presentations that are not associated with program credit hours.
- **Masters program options.** The Department of Computer Science is now offering two additional Master of Science program options – project and co-op. The Master's project option allows students to choose project research to address and solve issues of significant size in their workplaces. The Master's co-op option provides the opportunity for students to enrich academic learning with workplace experience.
- **Post-Diploma admission option.** A transfer program has been established to allow SIAST graduates to continue toward a BSc degree in Computer Science.
- **Curriculum accreditation.** Canadian Information Processing (CIPS) accreditation, previously conducted at the end of an academic year, is now changed to the end of a calendar year. As a result of this change, our undergraduate curriculum is to be reviewed by the end of 2004. Under a short notice from CIPS, the Department, specifically with the extraordinary efforts made by the Department staff members, has prepared and submitted, all the required information and documentation by the deadline. The visit by the CIPS team is postponed to February 2005 because of a scheduling problem on the CIPS' side.

Initiatives

- **Curriculum Development.** The Curriculum Committee has been conducting a major revision to our curriculum under the guidelines of the Association for Computing Machinery (ACM) 2001 Computing Curricula. Tasks include developing new courses and modernizing existing course content. A new introductory stream has been developed and is pending approval. The higher-level courses are currently being streamlined. Four new graduate courses were approved as follows: CS808, Animation Software Design; CS809, Interactive Entertainment Software; CS834, Software Security; and CS839, Web Intelligence and Electronic Commerce. We anticipate more courses to be approved in the coming year.
- **Rough music and audio digital interactive lab (aRMADILo).** This laboratory provides the basis for researchers and students interested in applications of rough sets, data mining, and artificial intelligence, to the analysis of real-life data concerned with sound and speech recognition, and modeling. As a result, activities of aRMADILo could be integrated with the New Media Studio Lab (a joint interdisciplinary research lab involving Media Production and Studies, Computer Science and Software Systems Engineering), the WED funded Interactive Media Lab and the Rough Set Technology Lab (RSTL) established in 2002 with the objective of sponsoring research and application related activities. This lab has funding of $59,655 from CFI; $59,655 from the provincial government; and a contribution of $29,700 from the Faculty of Science.
- **Web-based Intelligent System for Sustainable Transportation**. Sustainable transportation is an important component of sustainable development. The goal of this project is to study and develop a web-based intelligent system for sustainable public transportation. The system will help decision and policy makers, collect and study general public opinions on sustainable transportation to inform the decision making process. Web interface, dynamic simulation and demonstration are some of the key features of this system. This collaborative project involves Drs. JingTao Yao, Lisa Fan, Yiyu Yao and

Xue-Dong Yang from Computer Science, Dr. A. Liu from Saskatchewan Highway and Transportation, and J. Stusek from City of Regina Transit. The project has applied for funding of $55,000 from the Communities for Tomorrow fund, and in-kind contribution of $15,000 from City of Regina Transit.

- **TEL proposals.** Computer Science submitted three TEL applications: CS170 Fundamentals of Computer Science by Dr. Fong (second proposal for CS170 to build supplemental material); CS305 Human Computer Communications by Drs. Gerhard and Hepting; and CS340 Algorithms and Data Structures by Dr. Mouhoub (second proposal for CS340 to expand on-line course).
- **Undergraduate Programs.** Computer Science is a dynamic and vibrant discipline that has experienced and will continue to experience, rapid and dramatic development. With the revised curriculum and expanded expertise from newly recruited faculty members, the Department will be able to deliver up-to-date knowledge for existing courses and introduce a number of new courses related to emerging areas in the Information Technology (IT) industry. The requirements of scientific knowledge, technical and analytical skills for IT professionals from industry today are different from a decade ago. It becomes more and more important that our graduates do not write programs, but have adequate professional knowledge in one or more application fields. This shifting trend strongly supports the development of interdisciplinary programs. Our department has recognized such shifting direction in the future, and has started to act on it. Faculty members have initiated a close collaboration with the Faculty of Fine Arts. Potential collaborations with other departments and faculties are highly possible and critical to the future development of our department. The opportunities include, but are not limited to, scientific computing with Physics, Chemistry, and Engineering; bio-informatics with Biology, Biochemistry, and other health related disciplines; information systems with Administration.
- **Research Clusters.** More than one-half of the faculty members in our department were recruited in the past few years. Though all faculty members are actively engaged in individual research projects, it is critical to start building research teams (i.e. critical synergetic mass that can pursue significant large projects and attract major research funding). The long-term objective is to establish several unique research programs with national and international reputations. A successful example is our internationally recognized Rough Set Research Group that is hosting the 10th International Conference on Rough Sets, Fuzzy sets, Data Mining, and Granular Computing (RSFDGrC' 2005) in Regina in 2005. During the two-day departmental retreat in the beginning of September 2004, the idea of creating research clusters was proposed and discussed. The cluster structure would facilitate and encourage joint research among faculty members within the department, as well as external collaboration. This team building process will be ongoing.
- **Space Committee.** As a result of the rapid expansion of our undergraduate teaching programs and graduate research programs, the demand for undergraduate teaching lab space, and graduate research lab and office space is critical. To address this issue, the Department Space Committee has established a framework for current space allocation and future space planning. The first effort is to optimize the use of currently available space. This practice requires senior faculty members to make sacrifices in order that new faculty members may have desperately needed space to accommodate their research programs and graduate students. This committee will work on future planning that will adequately accommodate the current needs and allow for anticipated future endeavors.

Department of Geology:

The response to the Unit Review (Fall 2002) was presented in the Winter 2004. The Department has identified field-based resource geology as the principal area of focus and this provides the framework for recruitment and program development. The focus on field-based geology complements the focus of the Department of Geology at the University of Saskatchewan, and at Saskatchewan Industry and Resources (SIR) allowing for extensive collaboration between the different groups. Field-based resource geology with practical hands-on experience is a hallmark of the training that our students receive. Graduate and undergraduate students were supported in numerous field and laboratory based thesis projects by government surveys and industry. This focus is consistent with the strategic areas of emphases in Energy and Environment described in the University of Regina Strategic Research Plan. Members of the Department are actively involved in the Petroleum Technology Research Centre (PTRC), Prairie Adaptation Research Collaborative (PARC), Canadian Plains Research Center (CPRC) and Environmental Quality Analysis Laboratory (EQAL) as well as a number of international research projects. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on

Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively, all six faculty members in the Department of Geology hold four NSERC Research Discovery Grants and fifteen other grants which together total about $2.16 M.
- Department members supervised: 2 Honours students, 20 Masters students (3 completed) and 5 PhD students (1 completed). One Postdoctoral Fellow was supervised and there were five Visiting Scholars: Ms. Qiu Yan from Guangzhou Marine Geological Survey, Mr. Lin Wei Dong from Sun Yat-Sen University, Dr. Deliang Han from China Oceanography University, Dr. Jiaren Ye from China University of University of Geoscience and Dr. Chunji Xue from Chang/an University China.
- Dr. Guoxiang Chi was awarded a CFI grant for the development of a "Geofluids Characterization and Modeling Laboratory." In collaboration with Dr. Hairuo Qing, this facility will contribute to a wide range of applications in the movement of geofluids in many geological settings such as sedimentary basins, hydrocarbon systems, mineral deposits, and the feasibility of long-term greenhouse gas storage.
- Dr. Stephen Bend obtained funding from WED and the Faculty of Science to establish the "Geomodelling and Geographic Information System (GIS) Laboratory," an advanced computer facility with equipment and software packages that support a wide range of Geoscience applications housed in the Department of Geology.
- "Faculty of Science Scanning Electron Microscope Laboratory" has a state-of–the–art scanning electron microscope with an attached cathodluminescence system to collect images and spectra for a wide range of applications. Funds for the equipment came from the Faculty of Science and a CFI grant awarded to Dr. Ian Coulson. System users come from a variety of disciplines from the University of Regina, other universities and government.
- The Department continues to encourage collaboration with other institutions, government, industry and universities. Ongoing collaboration includes the Geological Survey of Canada, Saskatchewan Industry and Resources (SIR), and industry connections IMC Potash Corp., Alcan Canada, Gatan U.S.A. Inc., Jeol USA Inc. and Nexen. University collaboration includes the Universities of Saskatchewan, Winnipeg and British Columbia, Chinese Academy of Sciences, and Sir Wilfred Laurier, Quebec, Carleton, and Queen's Universities. Current Canadian research projects occur in Saskatchewan, Alberta, Manitoba, British Columbia, Ontario, New Brunswick, Quebec and Nunavut. International projects are ongoing in the United States, China, Italy, Costa Rica, east and southeast Africa, Somalia, Pakistan and Greenland.
- Drs. Hairuo Qing and Guoxiang Chi were part of a group of geologists from Canada invited to visit universities in Beijing, Xi'an and Changdu, China, December 18th 2003 to January 2004, to explore opportunities for collaborative projects with researchers from Canada. Since then Drs. Stephen Bend and Janis Dale have travelled to China to develop or conduct research projects.
- The Department acquired temporary additional space that was critical for faculty research and senior graduate student offices. The new space includes suites CW 235.1 to .6 and CW 236.1 to .6 until July 15, 2005 after which we will apply to obtain these spaces on a permanent basis.
- We continued our outreach to the public through presentations, labs and field trips for local school groups, by both Faculty and graduate students. Formal school visits this year include St. Pius X School, Massey School and Rouleau School.
- The Geology Students Society (GSS) continues to be very active holding seven successful events and increasing their membership to 40 in 2004. They are established student chapters in the Geological Association of Canada and the American Association of Petroleum Geologists. They have their own GSS web page and newsletter.
- A number of our graduate and undergraduate students were honoured in 2004 by external agencies. Ms. Carrie Kreutzer won first place for the best student poster at the Canadian Society of Petroleum Geologist in Calgary. Ms. Kari Geller was the recipient of the Association of Professional Engineers and Geoscientists (APEGS) Gold medal award. Mr. William Clark and colleagues won the Bill Ayerton Award for Technical Interpretation at the SIFT conference. Best undergraduate poster at SIR Open House went to Mr. Aaron Brown.
- Dr. Osman Salad Hersi joined the Department in July 2004 in a three-year term position at the rank of Assistant Professor to provide support to the undergraduate teaching program in the Department.

- Dr. John Lewry, a former faculty member of Geology, was honoured (posthumously) by having a lake officially named after him by the Canadian Government, in recognition of his contributions to the understanding of the geology of the Precambrian Shield in Saskatchewan.

Initiatives

- To increase public awareness of our Graduate Program in Geology a poster was prepared to present our graduate program, research opportunities, our facilities and the expertise of faculty members. The poster was on display at the Saskatchewan Industry and Resources Open House in December where the audience included potential graduate students, industry representatives, government employees and the public. It will be shown at other venues this coming year.
- **Review of Geology Undergraduate Curricula:** The Department is planning a retreat to review and discuss the Geology curriculum. The main objective is to arrive at a cohesive, comprehensive and effective program for Geology.

Department of Mathematics and Statistics:

The Department of Mathematics and Statistics offers programs in mathematics, statistics and actuarial science. This variety of programs provides the framework for recruitment and development initiatives. The principal areas of research are algebra and number theory, discrete mathematics, geometry and topology, linear algebra, operator algebras, probability theory and statistics. The active colloquium series and research seminars in the Department exemplify the University's goal in scholarship and research to "sustain a vibrant research enterprise where faculty members are enthusiastic about intellectual activity…". The actuarial program and the variety of outreach initiatives in the Department meet the University's goal in service to "Take our academic expertise into the community…". These areas of focus are consistent with the University of Regina Strategic Research Plan that commits to supporting high quality areas of basic research and the strategic research emphasis in Informatics. The Department is also very active in public outreach through Math Central and Math Camp. This is one of the stated goals of the University of Regina in the Strategic Planning Document under public service and accountability. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively 26 faculty members in the Department of Mathematics and Statistics held 14 NSERC Discovery Grants and eight other grants and contracts totalling about $305,566.
- Department members supervised: 2 Honours students, 10 Masters students (2 completed) and 7 PhD students (1 completed). Faculty members supervised 17 graduate students. Three Postdoctoral Fellows were supervised. There were 16 Visiting Scholars: Dr. Jed Mihalisin, University of Montana; Dr. Bryan Shader, University of Wyoming; Dr. Lorenzo Ramero, Universite Bordeaux I; Dr. Gregory Akulov, Kiev National University; Dr. Bart De Bruyn, Ghent University, Belgium; Dr. Michael Lamoureux, University of Calgary; Dr. Danny Dyer, Simon Fraser University; Dr. Pascal Lambrechts, UCL, Belgium; Dr. Nathanial P. Brown, Penn State University; Dr. Patrick J. Browne, University of Saskatchewan; Dr. Dave Morris, University of Lethbridge; Dr. Joy Morris, University of Lethbridge; Dr. Shaofei Du, Capital Normal University, China; Dr. D.Z. Djokovic, University of Waterloo; Dr. Jeff Strom, Western Michigan University; Dr. Gary MacGillivray, University of Victoria.
- Dr. Michael Kozdron (probability and statistics) and Dr. Augustin-Liviu Mare (differential geometry) joined the Department at the Assistant Professor rank.
- Dr. Sergei Panafidin (algebraic geometry) was appointed in a three-year term position at the rank of Assistant Professor to provide support to the undergraduate teaching program in the Department.
- Mr. Peter Douglas has been recruited for a permanent Instructor II position in Actuarial Science.
- The Actuarial Science program graduated its first three students with a BSc degree in Actuarial Science in the spring 2004 convocation.
- Additional temporary space in CW320 was obtained and is being used for graduate student offices.

- Student awards and honours:
  - Matthew McKague received the President's Medal at the spring convocation. Both the Faculty of Science and the Faculty of Fine Arts nominated Mr. McKague for this prize.
  - Two of our students received NSERC Postgraduate Scholarships and four were awarded NSERC Undergraduate Student Research Awards.
- The Department Colloquium series was very active in 2004, with 26 colloquia presented, including 15 by visitors to the University.
- Three regular seminar series took place in the Department during 2004.
  - Algebra and Number Theory: weekly seminar in the spring of 2004 with ten participants.
  - Shubert Calculus Working Group: weekly in the fall of 2004 with nine participants.
  - MITACS/Communications Security Establishment: May 2004 a two-week seminar with participants; two members of our department, one from Computer Science, one Postdoctoral Fellow, and four graduate students.
- The Department has many ongoing outreach activities. These include:
  - A problem-solving workshop that meets every second week with students from local schools, grades 7 through 12.
  - Our fifth annual Math Camp was held on March 13, 2004.
  - Math Central, a collection of Internet services for K-12 level mathematics.
  - Dr. H. Weston is the director of the *Centre for Mathematics, Science and Technology Education*.
- Dr. D. Farenick chaired the NSERC Selection Committee for Graduate and Postdoctoral Fellowship Awards.
- Dr. S. Fallat is the web master for the International Linear Algebra Society (ILAS) website.

Initiatives

- Dr. Donald Stanley was nominated by the University for a Tier II Canada Research Chair (CRC).
- Drs. S. Fallat, D. Farenick, C-H. Guo and S. Kirkland are local organizers of the 12th Conference of the International Linear Algebra Society, to be held in Regina in June 2005.
- The Department is working with the Saskatchewan Math Teachers' Society to organize a yearly Saskatchewan Math Challenge - a contest for grades 8-10 students to be held at the U of R and U of S in alternate years.
- Dr. Adatia resigned from the University of Regina and the Department will be looking to replace his expertise.

Department of Physics:

The Physics Department has identified two principal areas of expertise, experimental and theoretical subatomic physics. This concentration in the broad field of subatomic physics (SAP) complements the closely related field of particle astrophysics an area of growth potential given the existing resources on campus. The areas of focus and proposed growth were supported by the 1996 external review. These areas of focus are consistent with the University of Regina Strategic Research Plan that commits to supporting high quality areas of basic research and the strategic research emphasis in Informatics. The effort to improve the delivery of education (teaching) is one of the stated goals of the University of Regina and the efforts to enhance the teaching environment in Physics are consistent with the goals of the University and the Faculty. All these activities are central to the idea of a University and are consistent with the University's Vision, Mission, Goals and Values statements on page 14 of its document entitled Building on Progress: The Plan for 2004 – 2009 and the Faculty of Science Strategic Plan Creating Our Future: 2005 - 2010.

Accomplishments

- Collectively nine faculty members in the Department of Physics held six NSERC Discovery Grants, one NSERC RTI Grant and five other grants and contracts totalling about $1.12 M.
- Department members supervised: 3 Honours students, 9 Masters students (3 completed) and 3 PhD students. Six Postdoctoral Fellows (PDFs) were supervised and 2 Research Scientists were supported. The Department was host to four Visiting Scholars: Dr. Richard Woloshyn, TRIUMF, Dr. Tom Steele, University of Saskatchewan; Dr. Derek Harnett, University College of the Fraser Valley; Dr. Kevin Robbie, Queen's University.

- The hiring of Dr. Dutta (our newest theorist) has had positive effects in graduate student activity, by providing increased support because of a large NSERC grant and the input of new ideas. He has strengthened and expanded the Department's reputation in Canada, and has attracted new graduate students and PDFs, while using essentially established resources and infrastructure.
- The CRC Tier II Chair position awarded to Dr. Lewis provided resources through CFI funding associated with the CRC award to expand the computing infrastructure for Lattice Gauge Theory (LGT) at the University of Regina. The University of Regina is Canada's center on LGT and is a very competitive player in this field internationally.
- The associated action of initiating a search for a tenure track faculty member was as an important event as the award of the Chair itself. The search was successful and resulted in the hiring of Dr. Barbi. The choice was again a strategic one. Dr. Barbi is a high-energy experimentalist, with enough common interests with the Subatomic Physics at Regina with Research Offshore (SPARRO) members (particularly the GlueX side) to provide coherence of program, but with a breadth of research experience to open up new directions of research.
- The SPARRO group, that represents half of the Department, is engaged in SAP research at Jefferson Lab (JLab). With a number of high priority experiments already completed and in the preparation stages, all the elements are there for a great program for the next decade and well beyond. The GlueX project has received CD-0 approval by the Department of Energy (DOE) and the U.S. Congress. Two major reviews have been successfully completed and we now have a detailed and time-fixed process by the DOE leading to construction and first physics output. GlueX and the JLab energy upgrade will carry the group well past year 2020. JLab Upgrade and GlueX are well-funded and large projects with very high scientific priority in the U.S. In fact, a number of science panels have identified GlueX as potentially Nobel Prize material. SPARRO plays a leading role in GlueX/Hall-D and is funded by both NSERC and DOE/JLab. The respect SPARRO enjoys internationally and nationally is evidenced by the invitation to join the Canadian Linear Collider (LC) Collaboration. Negotiations are ongoing with our Canadian colleagues in LC to define the role SPARRO can play, given the major commitment in GlueX. GlueX and the LC represent the long-term future of particle physics for 2010 - and well beyond - and the physicists involved in these new projects are mainly members of the same international community that will define the longer-term program of SAP as well.
- The past year has been the fifth year in a row that we have focused on our undergraduate labs.
- With the physical renovations completed in three labs between 2000 and 2003, in 2004 emphasis was placed on upgrading the experimental equipment for the 200- and 300-series labs.
- Continuous repairs and purchasing of new lab equipment has been the operating mode for a number of years, this is the first time that a significant budget has been requested – and approved – that allowed the labs to be upgraded in a major and coherent way. The purchase of all the planned equipment (to the total of $52,000) has been completed.
- Although at least a year of evaluation and consolidation will be required before there is an understanding of the effects of the investment in new equipment, the early feedback from students and lab instructors has been very positive. This major investment required a large portion of the Department's budget and a significant contribution from the Faculty of Science. It is a milestone in the educational life of the Department, and the first time in its history that a sustained and integrated effort, of this scope and magnitude was conceived, carried out and completed successfully.
- Dr. Dutta was selected by the Partnership Group for Science and Engineering (PAGSE) in Canada to be a delegate for their 2004 symposium entitled "Leaders of Tomorrow". Dr. Dutta was among the 15 participants who were selected among 150 nominees from different universities across Canada.

Initiatives

- Dr. Brash resigned from the University of Regina and the Department will be looking to replace his expertise.
- One new initiative, related to but administratively separate from the Department, is the creation of the Prairie Particle Physics Institute (P3I) with membership drawn by the particle physicists in Physics and by two research scientists. Financial support for P3I is provided by the Office of the Vice President Research and International, the Department of Physics, the Faculty of Science and JLab/DOE, the latter for partial salary support of one of the research scientists. The Institute is housed within the Department of Physics and the Faculty of Science.

2.2 Human Resources

DEAN'S OFFICE

Dean:	Dr. Katherine Bergman
Assistant Dean (Research):	Dr. Scott Wilson
Assistant Dean (Undergraduate):	Dr. David Chandler
Faculty Administrator:	Audrey Perra
Coordinator, Science Operations:	Lee Aument
Academic Program Advisor:	Raeanne Thompson
Program Coordinator:	Lois Adams
Dean's Office:	Marlene Miller
	Ev Pow
	Sarah Savage
Student Program Centre:	Sandy Barker
	Sorcha O'Rorke
Environmental Quality Analysis Laboratory (EQAL):	Dr. Richard Hughes (resigned)
Laboratory for Computational Discovery (LCD):	John Jorgensen
Science Stores:	Joe Zieger
	Marsha Bahador (term)
Machine Shop:	Dan Kolybaba
Electronics Shop:	Keith Wolbaum

Department of Biology

Head:		Dr. William Chapco
Graduate Student Coordinator:		Dr. William Chapco
Department Office:	Jill Medby	Marg Friebel
Faculty:	Dr. Neil Ashton	Dr. Mark Brigham (sabbatical)
	Dr. Peter Leavitt	Dr. Richard Manzon
	Dr. Harold Weger	Dr. Mel Weisbart (retired)
	Dr. Scott Wilson	Dr. Christopher Yost

PDFs/Research Associates:	Dr. Lynda Bunting	Dr. Sally Cleland	Dr. Alain Patoine
	Dr. Suzanne McGowan	Dr. Chunhong Tian	
Lab Instructors:	Gwen Jones (retired)	Lauri Lintott	Terry Ross Heather Stanley
Technicians:	Joanne Downing	Jackie Rorquist	

Department of Chemistry & Biochemistry

Head:		Dr. Andrew Wee
Graduate Student Coordinator:		Dr. Allan East
Co-op Coordinator:		Dr. Lynn Mihichuk
Department Office:	Teri Dibble	Marg Friebel
Faculty:	Dr. Renata Bailey	Dr. David Chandler
	Dr. Tanya Dahms	Dr. Allan East
	Dr. Andrew Freywald	Dr. Rod Kelln
	Dr. Lynn Mihichuk	Dr. Scott Murphy
	Dr. Brian Sterenberg	Dr. Dae-Yeon Suh

PDFs/Research Associates:	Dr. Ahmed Bari	Dr. Phillip Bailey	Dr. Shatrugan Shahi
	Dr. Gaojun Fan	Dr. Sun Young Kim	
Lab Instructors:	Donna Draper	Danny Ng	Henry Yee Mark Tymchak (term)
Technician:	Christine Dehm		

Department of Computer Science

Head:		Dr. Brien Maguire (administrative leave)
Acting Head:		Dr. Xue-Dong Yang
Graduate Student Coordinator:		Dr. Cory Butz
Undergraduate Coordinator:		Dr. Lisa Fan
Co-op Coordinator:		Dr. Lisa Fan
Program Coordinator:		Lois Adams
Department Office:	Donalda Kozlowski	Janice Savoie
Faculty:	Dr. David Barnard	Dr. Cory Butz
	Dr. Terence Chan	Dr. Lisa Fan
	Dr. Philip Fong	Dr. David Gerhard
	Dr. Howard Hamilton	Dr. Daryl Hepting
	Dr. Robert Hilderman	Dr. Malek Mouhoub
	Dr. Samira Sadaoui	Dr. Larry Saxton
	Dr. Dominik Slezak	Dr. Larry Symes
	Dr. Boting Yang	Dr. Xue-Dong Yang
	Dr. JingTao Yao	Dr. Yiyu Yao (sabbatical)
	Dr. Chang Zhang	Dr. Wojciech Ziarko
Lab Instructors:	Guili Liu Nova Scheidt	Catherine Song Pauline van Havere (sabbatical)
Technical Services:	Florin Palanciuc	Pat Wagner
Systems Support:	Robert Cowles	Sarah (Peng) Yao

Department of Geology

Head:		Dr. Janis Dale
Graduate Student Coordinator:		Dr. Hairuo Qing
Department Office:		Bobbie Ruda
Faculty:	Dr. Stephen Bend	Dr. Kathryn Bethune
	Dr. Katherine Bergman	Dr. Guoxiang Chi
	Dr. Ian Coulson	Dr. Hairuo Qing
	Dr. Osman Salad Hersi	Dr. Brian Watters (sabbatical)
PDFs/Research Associates:	Dr. Hasan Ferdous	
Lab Instructors:	Syed Abbas-Hasanie	Evanna Simpson
Technician:	Mets Ritsema	

Department of Mathematics & Statistics

Acting Head:		Dr. Harley Weston
Graduate Student Coordinator:		Dr. Chun-Hua Guo
Coordinator of Undergraduate Programs:		Mr. Patrick Maidorn
Co-op Coordinator:		Dr. Maria Torres
Department Office:	Karen Howden	Nadine Griffiths
Faculty:	Dr. Aminmohamed Adatia (resigned)	Dr. Martin Argerami
	Dr. Francesco Barioli (term)	Dr. Dianliang Deng
	Mr. Peter Douglas (term)	Dr. Julianna Erlijman (leave)
	Dr. Shaun Fallat	Dr. Doug Farenick
	Dr. Chris Fisher (sabbatical)	Dr. Jonathon Funk (term)
	Dr. Bruce Gilligan	Dr. Chun-Hua Guo
	Dr. Denis Hanson	Dr. Kathy Heinrich
	Dr. Allen Herman	Dr. Stephen Kirkland

	Dr. Michael Kozdron	Mr. Glenn Larson
	Mr. Patrick Maidorn	Dr. Augustin-Liviu Mare
	Dr. Richard McIntosh	Mr. Larry Miller
	Dr. Sergei Panafidin (term)	Dr. Donald Stanley
	Dr. Fernando Szechtman	Dr. Jim Tomkins
	Dr. Maria Torres	Dr. Andrei Volodin
PDFs/Research Associates:	Dr. Alejandra Premat	Dr. Xiangwen Li Dr. Fei Zhou
Lab Instructors:	Sarah Carnochan Naqvi	Supranee Lisawadi (term)

Department of Physics

Head:	Dr. George Lolos (sabbatical)
Acting Head:	Dr. Zisis Papandreou
Graduate Student Coordinator:	Dr. Bhaskar Dutta
Co-op Coordinator:	Dr. Randy Lewis
Department Office:	Carol Allen

Faculty:	Dr. Mauricio Barbi	Dr. Edward Brash (resigned)
	Dr. Bhaskar Dutta	Dr. Garth Huber
	Dr. Randy Lewis	Dr. Edward Mathie
	Dr. Nader Mobed	Dr. Zisis Papandreou
Research Scientist:	Dr. Roman Tacik	Dr. Rafael Hakobyan

PDFs/Research Associates:	Dr. Abdou Abdel-Rehim	Dr. Georg von Hippel	Dr. Vitali Kovaltchouk
	Dr. Yukihiro Mimura	Dr. Aemer Rauf	Dr. Chuncheng Xu
Lab Instructors:	Peter Bergbusch	Gerry Zimmer	

Adjunct, Associate and Professor Emeritus:

The Faculty recognizes the contributions made by emeritus professors, as well as the contribution of adjunct and associate members to the Departments. They are listed in Appendix 1: Professor Emeriti and Appendix 2: Adjunct and Associate Members.

Sessional Appointments:

Many staff and faculty are employed in the faculty on a sessional lecturer basis. The Faculty recognizes the contributions made by sessional lecturers to the programs offered by the Faculty of Science. These appointments are listed in Appendix 3.

2.3 Faculty Committees

DEAN'S EXECUTIVE COMMITTEE

(Chair: Dr. Katherine Bergman, Dean)

Biology	Dr. William Chapco
Chemistry and Biochemistry	Dr. Andrew Wee
Computer Science	Dr. Brien Maguire
Geology	Dr. Janis Dale
Mathematics and Statistics	Dr. Harley Weston
Physics	Dr. George Lolos
Assistant Dean (Undergraduate)	Dr. David Chandler
Assistant Dean (Research)	Dr. Scott Wilson
Dean	Dr. Katherine Bergman
Faculty Administrator	Ms. Audrey Perra

Admissions and Studies Committee

(Chair: Dr. David Chandler, Assistant Dean Undergraduate)

Computer Science	Dr. Howard Hamilton	(2007)
Chemistry and Biochemistry	Dr. Allan East	(2005)
Mathematics and Statistics	Dr. Shaun Fallat	(2005)
Biology	Dr. Harold Weger	(2006)
Dean E*x-Officio*	Dr. Katherine Bergman	

Curriculum Committee

(Chair: Dr. David Chandler, Assistant Dean Undergraduate)

Biology	Dr. Harold Weger
Chemistry and Biochemistry	Dr. Tanya Dahms
Computer Science	Dr. Larry Saxton
Geology	Dr. Brian Watters
Mathematics and Statistics	Dr. Allen Herman
Physics	Dr. Edward Mathie
Dean E*x-Officio*	Dr. Katherine Bergman

Dean's Public Relations Committee

(Chair: Dr. Katherine Bergman, Dean)

Biology	Dr. Mark Brigham
Chemistry and Biochemistry	Mr. Henry Yee
Computer Science	Dr. Wojciech Ziarko
Geology	Dr. Ian Coulson
Mathematics and Statistics	Mr. Patrick Maidorn
Physics	Dr. Edward Mathie
Assistant Dean (Undergraduate)	Dr. David Chandler
Assistant Dean (Research)	Dr. Scott Wilson
Faculty Administrator	Ms. Audrey Perra

Library Committee

Biology	Dr. Mark Brigham
Chemistry and Biochemistry	Dr. Tanya Dahms
Computer Science	Dr. Yang Xiang
Geology	Dr. Hairuo Qing
Mathematics and Statistics	Dr. Chris Fisher
Physics	Dr. Nader Mobed
Dean E*x-Officio*	Dr. Katherine Bergman

Nominating Committee

Mathematics and Statistics	Dr. Denis Hanson	(2005)
Chemistry and Biochemistry	Dr. Tanya Dahms	(2006)
Computer Science	Dr. Cory Butz	(2006)

Safety Committee

Biology	Dr. Chris Yost
Chemistry and Biochemistry	Dr. Ron Treble
Computer Science	Dr. Brien Maguire
Geology	Dr. Janis Dale
	Mr. Mets Ritsema
Mathematics and Statistics	Mr. Larry Miller
Physics	Dr. Gary Diver
Science Stores	Mr. Joe Zieger
Science Technician	Mrs. Chris Dehm
Faculty Administrator	Ms. Audrey Perra
Coordinator, Science Operations	Mr. Lee Aument
Health & Safety Manager, Human Resources	Ms. Holly Hastie

Scholarship Committee

(Chair : Dr. David Chandler, Assistant Dean Undergraduate)

Physics	Dr. Zisis Papandreou	(2005)
Mathematics and Statistics	Mr. Larry Miller	(2006)
Computer Science	Dr. Larry Saxton	(2007)
Dean E*x-Officio*	Dr. Katherine Bergman	

Student Appeals Committee

Biology	Dr. Richard Manzon	(2005)
Geology	Dr. Stephen Bend	(2006)
CHEMISTRY AND BIOCHEMISTRY	DR. LYNN MIHICHUK	(2006)
Mathematics and Statistics	Mr. Glenn Larson	(2007)
Computer Science	Dr. Xue-Dong Yang	(2007)
Physics	Dr. Garth Huber	(2007)
Dean E*x-Officio*	Dr. Katherine Bergman	

Faculty Representatives to Other Faculties

Faculty of Administration	Dr. Daryl Hepting
Faculty of Arts	Dr. Dae-Yeon Suh
	Dr. JingTao Yao
Faculty of Education	Dr. Renata Bailey
	Dr. Harley Weston
Faculty of Engineering	Dr. Martin Argerami
	Dr. Lisa Fan
Faculty of Fine Arts	Dr. Stephen Kirkland
Faculty of Kinesiology and Health Studies	Dr. Stephen Bend
Faculty of Social Work	Dr. Scott Murphy
Centre for Continuing Education	Dr. Ian Coulson

2.4 Fundraising

Scholarships are awarded annually in the Faculty. The Faculty of Science has ongoing discussions with the University Relations Office to develop a fundraising strategy. The target for this fundraising program will be to increase the number and value of the scholarships available to students in the Faculty of Science, to develop a Visiting Scholars Program and to support the outreach activities of the Faculty. This will provide increased leverage to recruit and retain high quality faculty members and to attract top quality students into our programs at both the undergraduate and graduate levels.

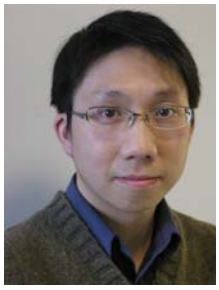
PART 3: NEW FACES IN THE FACULTY

3.1 Faculty Members

Department of Chemistry and Biochemistry

Dr. Andrew Freywald is an Assistant Professor. His research interests are in signal transduction and molecular mechanism of cancer. Currently his research program focuses on biochemical, molecular biology and cell biology approaches to characterise the role and mechanism of action of the EphB6 receptor in malignant lymphocytes. His previous work has shown that the EphB6 receptor is overexpressed on cancer T cells. Upon stimulation the EphB6 receptor initiates cytoplasmic signaling events and regulates adhesion of human malignant T lymphocytes. Since the adhesive properties of malignant T cells define their metastatic behaviour and determine their aggressiveness, it is important to elucidate the functions of EphB6 in malignant cells. By employing a panel of modern molecular biology and cell biology techniques such as siRNAs, dominant-negative mutations, and fluorescent microscopy, he is attempting to investigate the role of the EphB6 receptor in regulation of cancer T cells and to identify the molecular mechanism of its action. This research should lead to a better understanding of malignant T cell biology and may eventually allow the development of a conceptually new approach to cancer treatment.

Department of Computer Science



Dr. Terence H. Chan is an Assistant Professor. His research interests are in network coding theory, resource allocations, cross-layer network designs, wireless and optical communications, and information theory. He is currently developing a "network coding" compatible networking architecture to improve the utilization throughput of existing networks. The motivation of this work is to accommodate the fast growing demands in data transportation services due to the rapid development of content distribution businesses such as Video on Demand, peer-to-peer file sharing and E-learning. As a result of this work, end users can enjoy lower access fees and better quality of services. To the content and service providers, a larger user population can be supported leading to an increase in revenue.

Department of Geology

Dr. Osman Salad Hersi is an Assistant Professor appointed for a three year term in the Department of Geology. His research interests are in sedimentary basin analysis, particularly stratigraphy, sedimentology, diagenesis and reservoir characterization of carbonate and mixed carbonate-siliciclastic successions. Besides more than four years of postdoctoral research experience from Quebec University (INRS), Geological Survey of Canada and Carleton University, Dr. Salad Hersi has strong industrial experience. His current focus is on the Devonian of southeastern Saskatchewan, Cambro-Ordovician of southern Quebec, Jurassic-Cretaceous and Oligocene-Miocene of northern Somalia, and Middle-Late Eocene of central Pakistan. These projects have potential applications in petroleum exploration and production. Dr Salad Hersi cooperates with other researchers in the petroleum industry, the Geological Survey of Canada and Canadian universities.

Department of Mathematics and Statistics

Dr. Michael Kozdron is an Assistant Professor in the Department of Mathematics and Statistics whose area of research is in probability and statistics. He focuses his main research interests on stochastic processes, especially Brownian motion and random walk, and attempts to answer questions posed in statistical mechanics about the critical behaviour of two dimensional lattice models. Michael comes to the University of Regina having completed his PhD at Duke University, and spending two years visiting Cornell University.

Dr. Augustin-Liviu Mare is an Assistant Professor. His research interests are in the broad areas of Differential Geometry, Lie Theory and Algebraic Topology. More specifically he has been interested in the geometry and topology of homogeneous spaces, especially flag manifolds. Currently he is investigating the quantum cohomology of such manifolds, including the case where their dimension is infinite. His research program also includes Symplectic Geometry, in particular Hamiltonian Lie group actions and the topology of symplectic quotients.

Dr. Sergei Panafidin is an Assistant Professor and was appointed for a three-year term. His research interests are in algebraic and complex geometry. The present research is focused on the theory of holomorphic hermitian bundles and their secondary invariants. The approach to studying these invariants is based on the theory of singular connections and is partially motivated by some results of classical complex analysis and Nevanlinna theory. He is also interested in arithmetic intersection theory and Arakelov theory.

Department of Physics

Dr. Mauricio Barbi is an Assistant Professor in the Department of Physics**.** Dr. Barbi's area of expertise is in experimental subatomic physics and specifically in the high-energy physics domain of the Standard Model and beyond. He has played a major role in the ZEUS experiment and was entrusted as the run co-ordinator for the last two years.

3.2 Laboratory Instructors

Department of Biology

Lauri Lintott joined the Department of Biology in July 2004 as a Laboratory Instructor II. After receiving an MSc in Molecular Biology from the University of Calgary in 1993 (BSc Honours, University of Regina, 1989), she widened her technical expertise in a variety of current molecular/genetical domains. Her vast experience will serve her well in developing laboratory exercises that are both creative and current in cell and molecular biology, and genetics.

Department of Mathematics and Statistics

Supranee Lisawadi is a Laboratory Instructor I with the Department of Mathematics and Statistics and was appointed for the 2005 winter semester. She is also a Ph.D. student in Statistics at the University of Regina.

3.3 Administrative Staff

Coordinator, Science Operations

Lee Aument joined the Faculty of Science in March 2004 as the Coordinator of Science Operations. Lee possesses a unique skill set having both a scientific, and an administrative and financial background. He has a degree in Biological Science and his coursework in Environmental and Analytical Chemistry was completed in Philadelphia in 1996. Subsequently he has held positions in scientific laboratories in Florida, North Dakota and Regina (Aventis Crop Science). His energy and enthusiasm for the University of Regina have been evident since he arrived and make him a good 'fit' in the Faculty of Science.

Department of Mathematics and Statistics

Dr. J. Harley Weston is a Professor and was appointed for an eight month term as the Acting Head of the Department of Mathematics and Statistics. His academic interests center around outreach and promotion of mathematics to the K-12 community and the general public. Current projects include Math Central, a collection of web-based mathematics services, the University of Regina Math Camp and Mathematics with a Human Face. He is also director of the Centre for Mathematics, Science and Technology Education at the University of Regina and Chair of the Education Committee of the Canadian Mathematical Society.

PART 4: UNDERGRADUATE PROGRAMS

4.1 Enrollment Trends

There was about a 5% decrease in both the number of credit hours and the number of students in Science during 2004 as Tables 4.1 and 4.2 indicate. However, the decrease in the 2004-30 semester was not as large as it has been in the two previous semesters. During 2004-30 there was an increase in the numbers of Campion and First Nations University of Canada Science students. About 50% of all students in Science are registered in the three Federated Colleges, an increase of 3% over last year.

Table 4.1 Registration Credit Hours:

	2004-10	(2003-10)	2004-20	(2003-20)	2004-30	(2003-30)
University	7083	(7471)	1182	(1292)	7731	(8062)
Campion	3464	(3829)	336	(433)	4190	(3963)
Luther	3614	(2920)	221	(249)	2967	(3096)
First Nations University of Canada	123	(210)	15	(18)	160	(123)
Semester Total	13284	(14420)	1754	(1992)	15048	(15244)
Yearly Total	30086	(31656)				

Table 4.2 Registered Students:

	2004-10	(2003-10)	2004-20	(2003-20)	2004-30	(2003-30)
University	638	(676)	227	(248)	663	(703)
Campion	296	(334)	81	(88)	346	(334)
Luther	226	(253)	60	(61)	253	(260)
First Nations University of Canada	13	(18)	3	(6)	15	(11)
Semester Total	1173	(1281)	371	(401)	1277	(1308)
Yearly Total	2821	(2990)				

Of the students registered in degree programs (Table 4.3) only 4.7% are in an Honour's program. A large number of students (38%) are declared pre-professional students or are undecided in their degree aspirations. 247 students have declared Computer Science as their major (Table 4.4), down 21% compared to the same semester last year (which, in turn, was 20% below the number the year before). The number of Actuarial Science majors has increased by 6.8% over the past year.

Table 4.3 Students Registered By Degree or Certificate:

	2004-10	2004-30	Average
BMI	1	0	0.5
BSc	794	843	818.5
BSc (Hon)	57	61	59.0
Certificate in CS	5	4	4.5
Undeclared/Other	316	377	346.5
Total	1173	1285	1229.0

Table 4.4 Majors in 2004-30 (Figure 1):

	Number	(Co-op Program)
Undeclared/Undecided	178	
Actuarial Science	68	
Biology/Biochemistry	7	
Biology/Geography	4	
Biochemistry	54	(3)
Biology	145	
Chemistry	69	(8)
Computer Science	247	(61)
Computer Science/Mathematics	10	
Environmental Biology	15	
Geography	26	
Geology	46	
Mathematics	36	(1)
Mathematics/Statistics	3	
Physics	31	(5)
Statistics	17	(0)
Pre-Professional	313	
Certificate in Computer Science	4	

In 2004, 173 Bachelors degrees were awarded, down 8% from the previous year (Table 4.5). The number of certificates was also much lower. Slightly more than 45% of the degrees were in Computer Science, 9.8%, 8.8%, 8.8% and 8.2% in Biology, Biochemistry, Geography and Mathematics respectively, with another 2 to 5% each in Chemistry, Environmental Biology, Geology and Physics (Table 4.6). At the Spring Convocation the first degrees in Actuarial Science (3) were awarded.

Table 4.5 Degrees and Certificates Awarded in 2004:

	Spring (2003)	Fall (2003)	Total (2003)
BSc	124 (147)	23 (17)	147 (164)
BSc (Hon)	19 (21)	7 (3)	26 (24)
Certificate in CS	4 (16)	3 (8)	7 (24)
Certificate in IHS	0 (1)	0 (0)	0 (1)
Total Degrees	143 (168)	30 (20)	173 (188)
Total Certificates	4 (17)	3 (8)	7 (25)

Of the 173 BSc degrees awarded, 31 were to students in the Co-operative Education Program.

Table 4.6 Degrees and Certificates Awarded by Area in 2004 (Figure 2):

	Spring	Fall	Total
Actuarial Science	3	0	3
Biochemistry	11	4	15
Biochemistry/Chemistry	2	0	2
Biology	17	0	17
Biology/Geography	1	0	1
Chemistry	5	1	6
Computer Science	60	18	78
Computer Science/Mathematics	3	0	3
Environmental Biology	4	0	4
Geography	10	5	15
Geology	2	2	4
Mathematics	14	0	14
Mathematics/Statistics	1	0	1
Physics	8	0	8
Statistics	2	0	2
Statistics/Economics	1	0	1
Certificate in CS	4	3	7

As Table 4.7 shows, the number of credit hours taught by areas in Science is down in 2004, mainly in Computer Science and First Nations University of Canada. Nearly 50% of Science students are registered through the Federated Colleges. Less than 11% of Science course credit hours are taught by the Federated Colleges.

Table 4.7 Credit Hours Taught By Academic Areas (Figure 3):

	2004-10	(2003-10)	2004-20	(2003-20)	2004-30	(2003-30)
Biology	1667	(1626)	52	(69)	2271	(2107)
Biochemistry/Chemistry	2528	(2484)	66	(23)	2685	(2581)
Computer Science	3495	(3945)	594	(743)	4051	(4767)
Geology	1359	(1362)	267	(307)	1321	(1255)
Mathematics/Statistics	6512	(6514)	1266	(1542)	7586	(7511)
Physics	1115	(903)	30	(192)	1013	(960)
Science	0	(3)				
First Nations University of Canada	999	(951)	129	(279)	438	(831)
Luther	1140	(945)	72	(51)	1073	(1136)
Campion	273	(384)	0	(0)	291	(267)
Total	19088	(19117)	2476	(3206)	20729	(23306)

4.2 Student Recruitment Strategies

The Faculty of Science is actively involved in school (elementary and secondary) and community organization programs. The Faculty sponsors various functions as well as being involved in science and career fairs. A number of faculty members visit classrooms or host classes on campus. The interaction with students early in their careers makes us visible to them and provides them with contact people at the University to discuss their options. The Faculty will continue to develop a fundraising program to increase the number and value of our scholarships as a means of recruiting top undergraduate and graduate students.

4.3 Co-operative Education Program

The Faculty offers programs in co-operative university education in Biochemistry, Chemistry, Computer Science, Mathematics, Physics and Statistics. Students spend alternate four-month periods taking university courses and working in related, salaried jobs. There were about 90 students registered in the co-operative education program this year. Actuarial Science now offers an internship program whereby students can take jobs in cooperating companies during their academic program.

4.4 Departmental Programs

The following undergraduate programs are available:

4.4.1 Actuarial Science BSc;
4.4.2 Biology BSc and BSc (Hons);
4.4.3 Biology/Biochemistry BSc;
4.4.4 Biology/Geography BSc;
4.4.5 Biology/Statistics BSc;
4.4.6 Environmental Biology (with SIAST Woodlands Campus) BSc and BSc (Hons);
4.4.7 Biochemistry BSc and BSc (Hons);
4.4.8 Biochemistry/Chemistry BSc;
4.4.9 Chemistry BSc and BSc (Hons);
4.4.10 Chemistry/Education Combined BEd/BSc;
4.4.11 Chemical Technology (with SIAST Kelsey Campus) BSc;
4.4.12 Computer Science Certificate, BSc and BSc (Hons);
4.4.13 Computer Science Post-Diploma BSc (after diplomas from SIAST Kelsey and Palliser Campuses);
4.4.14 Computer Science Software Systems Development, BSc;
4.4.15 Computer Science/Mathematics BSc and BSc (Hons);
4.4.16 Geography BSc and BSc (Hons);
4.4.17 Geology BSc and BSc (Hons);
4.4.18 Indian Health Studies Certificate;
4.4.19 Mathematics BSc and BSc (Hons);
4.4.20 Mathematics/Education Combined BEd/BSc;
4.4.21 Mathematics/Computer Science BSc and BSc (Hons);
4.4.22 Mathematics/Statistics BSc;
4.4.23 Medical Imaging Degree Program (with SIAST Kelsey Campus);
4.4.24 Physics BSc and BSc (Hons);
4.4.25 Physics/Education Combined BEd/BSc;
4.4.26 Applied Industrial Physics with Emphasis in Computation and Physical Modeling BSc;
4.4.27 Applied Industrial Physics with Emphasis in Electronics and Modern Physics BSc;
4.4.28 Statistics BSc;
4.4.29 Statistics/Economics BSc

There are also Minors available in Biochemistry, Biology, Chemistry, Computer Science, Geology, Mathematics, Physics and Statistics.

4.5 Undergraduate Societies

The academic year kicked off with the Faculty of Science hosting its second Student Social in October. The event was a huge success and we were very pleased to have all of the student societies participate throughout the planning process, and by setting up displays and assisting with registration at the event in the Multi-Purpose Room on campus. Since that time the student societies have taken on a number of initiatives representing their respective groups.

Biology Undergraduate and Graduate Society

The Biology Undergraduate and Graduate Society (BUGS) has been very active over the past academic year. In January it held a bowling night, and in February hosted a Biology Career Banquet with about 100 people in attendance. In March members took in the "GEE in Genome" exhibit at the Science Centre and watched a movie on bears at the Kramer IMAX Theatre. April saw a year-end social. The Society participated in First Year Orientation in August and held its General Meeting in September. In September, members participated in the Great Canadian Shoreline Cleanup. In October there was a Halloween party and scavenger hunt. November saw a clothing sale and December a Christmas Party.

Chemistry and Biochemistry Students' Association

The Biochemistry and Chemistry Students' Society (BCSA) was active in 2004 with several activities including wallyball and pool tournaments.

Computer Science Students' Society

The Computer Science Students' Society (CSSS) has been very active throughout 2004. It has been involved in a number of activities including a Wonderland Arcade night, Beer and Pizza night, curling minispiel and a post Annual General Meeting dinner during the Winter Semester. The Society also sponsored intra-mural volleyball, soccer and curling teams. During the Spring/Summer period a barbeque was held and a softball team sponsored. In the Fall, the Society held movie nights, a pool night with CIPS, a bowling night, and a beer and pizza night. It also sponsored intra-mural volleyball and soccer teams.

Geological Students' Society

The Geological Students' Society (GSS) took part in the Western Inter-University Geology Conference in Vancouver in January. During the Winter Semester it held a curling bonspiel and a year-end banquet. In the Fall members met with faculty and new students, took part in a Field Trip to Weyburn, and held a bowling night and Christmas party. They also sponsored a Dodgeball Tournament for the University. The Society's website can be viewed at www.uregina.ca/geosoc.

Physics Students' Society

The Physics Students' Society (PSS), newly revised in 2003, held a pizza party, a bowling night and cribbage tournament, as well as selling PSS t-shirts. The society also organized student and faculty visits to Luther High School and Campbell Collegiate to promote physics as a career choice. There are plans underway to offer tutorials for select first year courses.

4.6 Undergraduate Scholarships

4.6.1.1 The University Prize in Science was awarded to Carlyn Janel Matz (High Honours in Biochemistry) at the Spring 2004 Convocation, and to Jennifer Nicole Smith (Great Distinction in Biochemistry) at the Fall 2004 Convocation.

4.6.1.2 Matthew Edmund McKague (High Honours in Mathematics, BA in Music, Minors in Classics and Philosophy) was awarded the President's Medal at the Spring 2004 Convocation.

4.6.1.3 The Faculty of Science 10th Anniversary Entrance Scholarship was awarded to Jennifer Litzenberger, O'Neill High School, Regina.

4.6.1.4 The Coca-Cola Student Award was awarded to Brianna Dopson (Biology).

4.7 Dean's Honour List (Campion, Luther**, First Nations University of Canada***)*

Winter 2004

Abdulla, Adam*
Adams, Hillary**
Aitken, Hillary**
Askew, Christopher**
Barkway, Megan
Bird, Jeffery
Bodani, Vivek
Booy, Amanda
Carbno, Christine**
Colpitts, Che
Congly, David
Dosselmann, Richard*
Dreger, Jill
Fahlman, Amy
Fleischhaker, Daniel*
Fleming, Shaun
Fong, Andrea
Foreman, Dallas**
Gilongos, Gerard
Harack, Benjamin*
Harman, Chelsea**
Harrington, Melody**
Hladky, Stephen*
Hui, Tiffany
Isaac, Esther
Jackson, Jessica
Johnson, Adelle**
Jorgensen, Rebecca
Kozan, Daniel*
Krislock, Abram
Kroon, Alexis*
Krupski, Nicole**
Langill, Brett*
Legault, Kathie*
Lekivetz, Ryan*
Lien, Francis
Mack, Crystal*
Mahussier, Karla
Mamchur, Joel
Marbach, Jeffrey*
Marcotte, Jeanette*
Martin, Kristen*
McKell, Nicole**
Miller, Nicole*
Morcom, Adam
Neuls, Evan**
Nguyen, Rita*
Nie, Wenshuang,
O'Krancy, Steven*
Peters, Kevin
Peti, Nicholas*
Pollard, Janette
Ramadan, Eman
Rathgaber, Joel
Richards, Louise*
Rizvi, Syed
Roettger, David*
Rudovics, Andrejs
Ruten, Shelby**
Schauenberg, Jennifer
Schmiedge, Paul
Schmuecker, Johanan
Schnell, Jessica*
Schommer, Clark
Selzer, Jason*
Selzer, Erin*
Sidhu, Naveenpaul*
Sinclair, Caitlin*
Sluser, Sarah*
Slywka, Jill**
Smith, Tara**
Stark, Laura**
Stonechild, Rachel***
Tam, Kevin*
Thomas, John*
Thue, David**
Truong, Wallace
Ulmer, Sharla**
Wang, Xiaoli
Weins, Laura*
Wilde, Brenda*
Wist, Sarah
Xie, Xi-quan
Yang, Yanshan
Zhang, Ting
Zhang, Danhua
Zhou, Minxian

DEAN'S HONOUR LIST (CAMPION*, LUTHER**, FIRST NATIONS UNIVERSITY OF CANADA)***

SUMMER 2004

Li, Hao
Liang, Jiaping
Pitchko, John**
Potts, Mishayla
Shen, Bingyan

FALL 2004

Abdulla, Adam*
Askew, Christopher**
Baidoo, Kezia
Barkwell, Jillian*
Beauchesne, Jennifer
Bedel, Kevin**
Betker, Angela**
Bodani, Vivek
Booy, Amanda
Brown, Michael
Buchko, Jordan*
Carbno, Christine**
Chow, Michael
Donald, Derek**
Dressler, Nicole*
Foreman, Dallas**
Freitag, Benjamin**
Hanna, Sarah*
Harack, Benjamin*
Hart, Caroline
Herauf, Melissa
Huang, Yu Hui
Jackson, Jessica
Jalil, Rabiya
Janzen, Kathryn
Jasper, Blair
Johnson, Eve Marie**
Kaytor, Chantel
Kelly, Jacob**
Kozan, Daniel*
Krupski, Nicole**
Langman, Blaine
Li, Daiming
Liang, Lingfeng
Liang, Yanling
Lien, Francis
Litzenberger, Jennifer*
Long, Michelle**
Lozinsky, Shannon**
Mack, Crystal*
Magnus, Rachel
Mamchur, Joel
Mazur, Daniel
McKell, Nicole**
Medwid, Brocade
Milani, Dustin
Moleski, Janet
Morcom, Adam
Ng, Michelle*
Ng, Wendy*
Ng, Vivian*
Nguyen, Anne
Nguyen, Rita*
Nie, Wenshuang
Oberkirsch, Travis
Park, Brett
Park, Jae Kyoung
Plosker, Sarah
Pollard, Janette
Potter, Gabriel
Ramsey, Christopher
Rathgaber, Joel
Rizvi, Syed
Roettger, David*
Roy, Penny*
Schmuecker, Johanan
Schommer, Clark
Schonhoffer, Thomas*
Selzer, Erin*
Sinclair, Caitlin*
Sliva, Kevin
Spring, Richard*
Stark, Laura**
Stonechild, Rachel***
Straub, Elana*
Tang, Jinbiao
Thomas, Amy*
Truong, Wallace
Ulmer, Sharla**
Ulmer, Tiffany**
Verhelst, Laura*
Wang, Xiaoli
Weninger, Dean*
Wiens, Luke
Wilson, Leslie*
Wist, Sarah
Zhang, Ting
Zhang, Danhua
Zhen, Rongshi

PART 5: GRADUATE PROGRAM

Graduate education is an integral part of Faculty of Science activity. Graduate students obtain important advanced education in scientific research by working alongside professors in the laboratory, in the field and in the office. Much of the research undertaken by scientists could not be realized without the support of graduate students. To underscore the crucial role of graduate education in research, NSERC requires that each research program receiving NSERC funding be structured to provide for the education of highly qualified personnel.

Graduate students enjoy individual attention from their supervising professors and benefit from low student-to-professor ratios. The Faculty of Science fosters a collegial atmosphere whereby students and professors interact as colleagues. The student body comprises a mix of first-rate domestic and international students, which enhances the learning experiences for each graduate student and brings useful expertise to the province.

The Faculty of Science offers programs leading to the Master of Science (MSc) and Doctor of Philosophy (PhD) degrees. The MSc degree typically requires two years of study after the BSc, while the PhD normally takes three to four years to complete after the MSc.

5.1 Enrollment Trends

Recruitment of high quality graduate students is a challenge for the Faculty of Science. Many of the best undergraduate students in Science choose to do graduate work elsewhere and it is difficult to attract large numbers of high-quality graduate students from other regions of Canada. However, this is somewhat compensated for by the high international demand for our graduate programs. The presence of international students enhances the University and community at large, and enables the Faculty of Science to fulfill its mandate of research and graduate education (Table 5.1).

TABLE 5.1 REGISTRATION STATISTICS

	STUDENTS REGISTERED		**Degrees Conferred**	
	2004	2003	2004	2003
MSc				
Biology	14	11	0	3
Chemistry & Biochemistry	12	13	2	3
Computer Science	66	61	13	6
Geology	18	17	3	2
Mathematics & Statistics	10	7	2	1
Physics	9	6	1	0
Total	129	115	21	15
PhD				
Biology	4	9	1	6
Chemistry & Biochemistry	3	4	1	0
Computer Science	20	19	3	1
Geology	4	5	1	0
Mathematics & Statistics	6	5	0	0
Physics	3	3	0	2
Total	40	45	6	9

5.2 Departmental Programs

A brief overview of the graduate programs in each department in the Faculty of Science is provided below.

Department of Biology

The Department of Biology offers graduate programs in areas of active research by faculty members: moss developmental regulation, insect evolutionary genetics, microbial toxin synthesis and gene expression, plant respiratory metabolism, fish endocrinology and osmoregulation, plant community ecology, terrestrial vertebrate ecology and limnology. The Department is well equipped with modern research laboratories, including plant and aquatic facilities, a herbarium, a field station in the Cypress Hills of southwestern Saskatchewan, the CFI sponsored Environmental Quality Analysis Laboratory and long-term ecological research plots in the Research Park. The research capabilities of the Department are enhanced through association with local, federal and provincial government facilities, and research connections with a number of other universities.

Department of Chemistry and Biochemistry

Graduate studies in the Chemistry and Biochemistry Department involves programs in selected areas of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, physical chemistry, computational chemistry and theoretical chemistry.

Department of Computer Science

The Department of Computer Science offers programs of study involving interdepartmental, multi-institutional and inter-institutional collaboration that has attracted faculty members and graduate students from all over the world. Students may pursue full-time or part-time graduate study leading toward the MSc and PhD degrees.

The MSc and PhD degrees in Computer Science focus on four main areas of research: artificial intelligence; databases and information retrieval, graphics and image processing, and software engineering. The department is currently conducting research in the areas of control algorithm acquisition, pattern recognition, knowledge representation, knowledge discovery in databases, temporal reasoning, constraint logic programming, machine learning, rough sets and applications, uncertainty management, distributed systems, parallel processing, neural networks, theory of computing, computational geometry, virtual reality and computer animation, interfaces, internet applications, structured text processing, data security, mobile code security, agent technology, formal specification, software engineering and agent technologies. The Department is well equipped with modern computing facilities including the CFI sponsored Laboratory for Computational Discovery and numerous SGI and Sun workstations. For parallel and graphics computing research, there is a 24-processor SGI Onyx2 graphics supercomputer.

Department of Geology

The Department of Geology offers graduate programs in fields that include: geochemical, igneous, metamorphic, Quaternary and structural studies of the Canadian Shield, Phanerozoic carbonate and clastic environments, and evaporite studies, as well as coal, petroleum, uranium and geothermal energy studies. Resources are available for particular western regional projects. Close co-operation with Saskatchewan Industry and Resources provides excellent opportunities for field-based studies in the Shield, and access to sedimentary cores and data relating to the Phanerozoic rocks of Saskatchewan. On campus, staff and students of the Department work in co-operation with the PTRC, PARC, CPRC and Communities of Tomorrow.

Department of Mathematics and Statistics

The Department of Mathematics and Statistics offers graduate programs in a wide variety of areas in pure and applied mathematics, and statistics. Recent graduate students have studied in the areas of statistics, matrix theory, discrete mathematics and operator algebras. Graduate students enjoy the guidance of several faculty experts and participate in field-specific seminars. The pure mathematical areas of algebra, number theory, topology and analysis are areas of strength in the Department.

Department of Physics

The Department of Physics offers graduate degrees in the areas of Experimental and Theoretical Subatomic Physics, and Astronomy. Faculty members and graduate students, pursue their research locally and at locations elsewhere in Canada, the United States and Europe. The Department is an associate member of the TRIUMF subatomic physics laboratory located at the University of British Columbia in Vancouver, B.C. and has a close relationship with the Jefferson Laboratory (formerly the Continuous Electron Beam Accelerator Facility) in Newport News, Virginia, U.S.A.

5.3 Graduate Scholarship and Support

Graduate education in Science is demanding and intensive, and normally continues through twelve months of the year. Full-time graduate students devote most of their time to their studies and research, making it difficult for these students to hold part-time jobs. The Faculty of Graduate Studies and Research offers scholarships and teaching assistantships to qualified graduate students. Additional support for graduate students is made available through the research grants of supervising professors, as well as through scholarships and grants from government and private-sector agencies.

The Faculty of Graduate Studies provides financial support (Table 5.2) for graduate students through scholarships and teaching assistantships to qualified students.

TABLE 5.2: GRADUATE FUNDING

	Summer 2004			**Fall and Winter 2004-2005**			
	Research Assistantship	Scholarship	**Value**	**Teaching Assistantship**	**Research Assistantship**	**Scholarship**	**Value**
Biology	2	1	12,500	5	0	4	39,532
Chemistry & Biochemistry	1	1	8,500	4	0	3	31,414
Computer Science	5	4	39,000	15	1	13	132,273
Geology	0	1	4,500	0	2	2	18,000
Mathematics & Statistics	1	1	9,500	2	0	2	19,000
Physics	1	0	4,500	2	0	2	18,413
TOTAL	10	8	78,500	28	3	26	258,632

5.4 National Scholarships and Fellowships

NSERC funds promising graduate students through the Canada Graduate Scholarship (CGS) and Post-Graduate Scholarship (PGS) programs. The duration of the scholarship at the master's level is one year with a possible one year extension. The duration of the scholarship for the doctoral level is one to three years, depending on the time the student has already completed at the doctoral level. The value of the CGS-M (Master's) is $17,500 for one year; PGS-M is $17,300 for one year. The value of the CGS-D (Doctoral) is $35,000/year up to three years; PGS-D is $21,000/year up to three years. NSERC will fund students for a total of four years at the graduate level.

TABLE 5.3 PGS M AND CGS-M RECIPIENTS

Category	Student's Name	Department
PGS M	Anderson, Kenton	Computer Science
CGS-M	Blyth, Shannon	Computer Science
PGS M	Brochu, Tyson	Computer Science
CGS-M	Demyen, Douglas	Computer Science
PGS M	Drabycz, Sylvia	Physics
PGS M	Lekivetz, Ryan	Mathematics and Statistics
PGS M	McKague, Matthew	Mathematics and Statistics
PGS M	Selzer, Jason	Computer Science
CGS-M	Wyatt, Haley	Chemistry and Biochemistry

A PGS D was awarded to Yan Zhao (Computer Science) who is working under the supervision of Dr. Y. Yao.

NSERC also provides summer scholarships (Table 5.4) to allow promising students to gain research experience working with faculty.

TABLE 5.4 NSERC SUMMER SCHOLARSHIPS

Student's Name	Supervisor	Department
Blyth, Shannon	Howard Hamilton	Computer Science
Bogdan, Vili	Malek Mouhoub	Computer Science
Buchko, Jordan	Richard Manzon	Biology
Demyen, Douglas	Howard Hamilton	Computer Science
Dopson, Brianna	Peter Leavitt	Biology
Friebel, Rachel	Harold Weger	Biology
Hepperle, Steven	Allan East	Chemistry and Biochemistry
Klein, Brian	George Lolos	Physics
Lekivetz, Ryan	Shaun Fallat	Mathematics and Statistics
McCann, Shaun	Doug Farenick	Mathematics and Statistics
McKague, Matthew	Allen Herman	Mathematics and Statistics
Miller, Nicole	Neil Ashton	Biology
Neuls, Evan	Dae-Yeon Suh	Chemistry and Biochemistry
Ng, Sara	Cory Butz	Computer Science
Pfeifer, Laura	Peter Leavitt	Biology
Ranalli, Melissa	Mark Brigham/Mary Vetter	Biology
Roettger, David	Allan East	Chemistry and Biochemistry
Ruten, Shelby	Tanya Dahms	Chemistry and Biochemistry
Schauenberg, Jennifer	Richard Manzon	Biology
Schmiedge, Paul	Daryl Hepting	Computer Science
Selzer, Jason	Howard Hamilton	Computer Science
Smith, Tara	Richard Manzon	Biology
Smith, Tara	Richard Manzon	Chemistry and Biochemistry
Sum, Ricky	Malek Mouhoub	Computer Science
Taylor, Ryan	George Lolos	Physics
Thue, David	Howard Hamilton	Computer Science
Widenmaier, Scott	Richard Manzon	Biology
Wist, Sarah	Doug Farenick	Mathematics and Statistics

5.5 NSERC postdoctoral fellows attracted to the faculty

NSERC scholarships and fellowships are portable: students and fellows are encouraged to move to new institutions to broaden their experience. Four NSERC postdoctoral fellowships were attracted to Science in the following Departments: Chemistry and Biochemistry (2), Mathematics and Statistics (1) and Physics (1). This represents a "brain gain" for the community as well as a direct economic input (each award is worth $72,000) to the province because salaries are provided from Ottawa. Postdoctoral fellows came from UBC, McMaster, Montréal and Calgary.

5.6 NSERC Committees

It is important for the University of Regina to have representation at the national level on the committees that oversee the policies for and the selection of graduate scholarships and postdoctoral fellowships. Dr. Rod Kelln, Department of Chemistry and Biochemistry, sits on the Standing Committee on Scholarships and Fellowships. Dr. Doug Farenick, Department of Mathematics and Statistics, is Chair of the Scholarships and Post-doctoral Fellowships for Computational and Mathematical Science.

5.7 Centennial Student Employment Program (CSEP)

The Centennial Student Employment Program (CSEP) is a five year provincial initiative that began in 2001 in Saskatchewan by providing students with the opportunity to obtain summer employment related to their area of study.

Table 5.5 CSEP Recipients

Student's Name	**Supervisor**	**Department**
Dehm, Nicole	Lee Aument	Dean's Office
Fries, Megan	William Chapco	Biology

PART 6: RESEARCH

Research is a fundamental activity in the Faculty of Science. Through research, the Faculty, the University and the Province of Saskatchewan are significantly involved in the creation, acquisition and dissemination of scientific knowledge. It is through research and teaching that high-level expertise is maintained and developed in the province.

Last year we published 203 scientific papers in journals that were circulated throughout the world. Ten books and 19 technical reports were produced.

Scientific papers are published only after peer-review, which is an evaluation by experts in the field, and faculty members reviewed 156 papers for national and international journals. Peer review is organized by the editors of scientific journals: 21 editorships are held within the Faculty.

Because of the relatively long time required for publishing, it is vital to communicate research findings rapidly through talks at meetings, and 171 presentations were made at national and international meetings. Fifty-five of these were invited by conference organizers, indicating our faculty members are recognized as leaders in their fields.

Research funding from national and international agencies is awarded on the basis of international activity, as evidenced by the quantity and quality of scientific publications. The Faculty received 71 research grants from national agencies, as well as 12 from international agencies, including eight from the USA. In addition, faculty members reviewed 20 grant applications on the behalf of these agencies.

In summary, the quantity of our research is reflected by the numbers of publications and grants, and the quality is reflected in the number of leadership roles (reviews, editorships, invited talks) awarded to the Faculty.

6.1 Departmental Research Activities

A brief overview of the research activities and expertise in each department in the Faculty of Science is presented.

Department of Biology

Research in the Department of Biology addresses a variety of fundamental interests that include: animal, aquatic and plant ecology, genetics, molecular and developmental biology, and microbiology. The field studies for a number of research projects are undertaken around the world. In addition, research by the Department of Biology is relevant to the environmental, health and economic concerns of Saskatchewan including freshwater research, climate change research, drought studies, research into ecosystem variability and plant ecology. The Department of Biology attracts and oversees a large complement of research assistants at levels varying from undergraduate students through to postdoctoral fellows.

The expertise of the Department is broadly described as follows:

Environmental biology:	M. Brigham, P. Leavitt, P. Peres-Neto, S. Wilson
Evolution and systematics:	N. Ashton, W. Chapco
Genetics, cellular and molecular biology:	N. Ashton, W. Chapco, R. Manzon, C. Yost
Microbiology:	C. Yost
Physiology, development and behavior:	M. Brigham, R. Manzon, H. Weger

Dr. Melvin Weisbart retired. Dr. Pedro Peres-Neto, whose expertise is quantitative ecology, will join the Department in January 2005. The Department is presently recruiting to fill a position in animal physiology.

Department of Chemistry and Biochemistry

Research interests of the Department of Chemistry and Biochemistry include analytical and environmental chemistry, asymmetric synthesis and methodology, biophysical biochemistry, cell biochemistry, photochemistry, theoretical and computational chemistry, chemical biology, inorganic chemistry, organometallic chemistry and catalysis, nucleic acid biochemistry, enzymology and protein chemistry.

The expertise of the Department is broadly grouped as follows:

Analytical chemistry:	R. Bailey
Biochemistry:	T. Dahms, A. Freywald, R. Kelln, D.-Y. Suh
Inorganic chemistry/Organometallic:	L. Mihichuk, B. Sterenberg
Physical (includes Physical Organic) and Theoretical/Computational chemistry:	W.D. Chandler, A. East, S. Murphy
Organic synthesis and methodology:	A. Wee, A. Bari (NSERC PDF), P. Shahi (NSERC PDF)

The Department is presently recruiting to fill a vacant position in biochemistry.

Department of Computer Science

Research in the Department of Computer Science is both discipline and applications based. The fields of research activity include: computing theory, theory and application of rough sets, information retrieval, graphics, computer visualization, machine learning, expert systems, human-computer interaction, databases and distance education. The CFI-funded Laboratory for Computational Discovery (LCD) provides the necessary infrastructure for discipline based and interdisciplinary research projects. The Rough Set Technology Laboratory (RSTL) is a focal point for growth in research activity in Rough Sets, Bayesian Networks, Data Mining and Web Intelligence. The Undergraduate Digital Media Lab continues to be a joint effort by the Department of Media Production and Studies in the Faculty of Fine Arts, and the Department of Computer Science. It provides state-of-the-art facilities for interdisciplinary research in multimedia.

The expertise of the current faculty is broadly described as follows:

Artificial intelligence:	C. Butz, D. Gerhard, H. Hamilton, M. Mouhoub, S. Sadaoui, D. Slezak, J.T. Yao, Y. Yao, W. Ziarko
Parallel processing and VLSI architecture:	C.N. Zhang
Computers in education:	D. Hepting, R.B. Maguire
Computational acoustics:	D. Gerhard
Computing theory, computational geometry, geometry and algorithmic graph theory:	L. Saxton, B. Yang
Computer security:	P. Fong, B. Yang, C.N. Zhang
Databases:	C. Butz, L. Saxton, W. Ziarko
Data communications:	T. Chan
Data mining:	H. Hamilton, R. Hilderman, D. Slezak, J.T. Yao, Y. Jao, W. Ziarko
Enviromatics:	D. Hepting
Human-computer interaction:	D. Gerhard, D. Hepting, R. Hilderman, R.B. Maguire
Informational retrieval and rough sets:	D. Slezak, J.T. Yao, Y. Yao, W. Ziarko
Languages, compilers, text processing:	D. Barnard, L. Symes
Multimedia:	D. Gerhard, H. Hamilton, D. Hepting, X.D. Yang
Software technology/engineering:	L. Fan, P. Fong, D. Hepting, S. Sadaoui, W. Ziarko

We are pleased to welcome Dr. Terence Chan to Computer Science. The department now has 19 faculty members.

Department of Geology

The research expertise of the Department of Geology includes igneous and metamorphic petrology, structural geology, organic petrology, geochemistry, clastic and carbonate sedimentology and basin analysis, mineralogy, geomorphology, Quaternary geology and economic geology. The department maintains research collaborations with Saskatchewan Industry and Resources (SIR). This collaboration gives faculty access to the SIR Subsurface Laboratory and core depository. SIR is also a source of research funding and provides graduate and undergraduate student support. Some members of the department contribute to the research activities of the Petroleum Technology Research Centre (PTRC) situated in the University's Research Park.

The research expertise of the department is broadly grouped as follows:

Organic petrology/geochemistry:	S. Bend
Clastic sedimentology and stratigraphy:	K. Bergman
Structural geology and metamorphic petrology:	K. Bethune
Economic geology and geofluids:	G. Chi
Igneous petrology and mineralogy:	I. Coulson
Geomorphology and quaternary environments:	J. Dale
Carbonate petrology and diagenesis:	H. Qing
Sedimentary basin analysis:	O. Salad Hersi
Igneous petrology/geochemistry:	B. Watters

Department of Mathematics and Statistics

Research by members of the Department of Mathematics and Statistics is primarily in theoretical areas. In mathematics, the department undertakes research in algebra, pure and applied analysis, differential geometry, discrete mathematics, linear algebra, number theory, and topology. The department also has research activities in both theoretical and applied statistics. In addition, the department engages in consulting activities in actuarial science and statistics.

A number of mathematicians are affiliated with the department. Dr. Brian Alspach, a distinguished Canadian mathematician, is an adjunct professor, and Drs. Edward Doolittle and Fotini Labropulu are assistant and associate professors in First Nations University of Canada and Luther College respectively. Drs. Premat and Zhou are postdoctoral fellows.

The expertise of the department is broadly grouped as follows:

Actuarial mathematics:	L. Miller, P. Douglas
Algebra and number theory:	A. Herman, R. McIntosh, A. Premat (PDF) F. Szechtman
Algebraic topology:	D. Stanley
Category theory:	J. Funk (term appointment)
Classical and applied analysis:	E. Doolittle (First Nations University of Canada), C.-H. Guo, F. Labropulu (Luther College)
Discrete mathematics:	B. Alspach, D. Hanson, K. Heinrich
Functional analysis:	M. Argerami, J. Erlijman, D. Farenick, M. Torres, F. Zhou (NSERC PDF)
Geometric analysis:	B. Gilligan, A.L. Mare, S. Panafidin (term appointment)
Geometry:	J.C. Fisher
Mathematics education:	G. Larson, P. Maidorn, H. Weston
Matrix theory:	F. Barioli (term appointment), S. Fallat, S. Kirkland
Statistics and probability:	A. Adatia, D. Deng, A. Simchi (term appointment), R.J. Tomkins, A. Volodin

The term appointments of Drs. Bariolo, Funk, and Simchi were completed on June 30, 2004. Drs. Kozdron, Mare, Panafidin, Premat, and Zhou joined the University on July 1, 2004.

Department of Physics

The Department of Physics has active research programs in experimental and theoretical subatomic physics, and in observational astronomy. The research of many of the faculty members is collaborative in nature and the Physics Department organizes most of its research infrastructure under three groups: SPARRO (Subatomic Physics at Regina with Research Offshore), REGIE (Regina Experimental Group in Intermediate Energy Physics), and STAR (Subatomic Theory at Regina).

The expertise of the department is broadly grouped as follows:

Experimental subatomic physics:	M. Barbi, G. Huber, G. Lolos, E. Mathie, Z. Papandreou, R. Tacik (TRIUMF Research Scientist), R. Hakobyan (NSERC Research Scientist)
Observational astronomy:	P. Bergbusch
Planetary astronomy:	M. Beech (Campion College)
Theoretical physics:	B. Dutta, R. Lewis, N. Mobed

6.2 External Funding and Granting Agencies

Research in the Faculty of Science is supported by a number of external agencies. The Natural Sciences and Engineering Research Council of Canada (NSERC), the Social Sciences and Humanities Research Council of Canada (SSHRC), and the Canadian Institute for Health Research (CIHR) are the three federal granting bodies that provide the majority of external funding to the faculty. This funding is awarded on the basis of national competitions that evaluate research productivity and international impact.

The Canada Foundation for Innovation (CFI), in partnership with the Government of Saskatchewan, provides infrastructure support for high-quality research proposals. At the provincial level, researchers are eligible to compete for funds from the Health Services Utilization and Research Commission (HSURC).

Table 6.1 summarizes by department the sources of funds received by Faculty of Science researchers in the fiscal year 2003-2004. The table does not reflect the total amount of funding awarded because in many instances the award is paid out over a number of years.

Table 6.1. Sources of funds received by Faculty of Science researchers in the fiscal year 2003-2004.

	NSERC	SSHRC	CIHR	CRC	FEDERAL GOV'T	PROV GOV'T	INDUSTRY	INTER-FUND TRANSFERS	TOTALS
Dean's Office								30,223	30,223
Biology	297,715		4,048	200,152	78,271	692,918	78,051	44,451	1,395,606
Chemistry and Biochemistry	292,384				52,392	29,749	97,620	101,800	573,945
Computer Science	329,000	28,000			184,337		191,811	106,600	839,748
Geology	154,169				77,586	52,403	316,004	19,000	619,162
Mathematics and Statistics	232,425				5,400		9,192	47,073	294,090
Actuarial Science						50,000	69,000		119,000
Physics	425,739			50,000			282,546	30,281	788,566
Totals	1,731,432	28,000	4,048	250,152	397,986	825,070	1,044,224	379,428	4,660,340

Support from NSERC for ongoing research is mostly in the form of 'Discovery Grants' awarded to individual professors. Additional NSERC funding comes from Research Tools and Instrument (RTI) grants, group discovery grants, project grants, industrial collaborative grants, and strategic-research grants. The University of Regina is represented at the national level by members of the Faculty of Science who serve on the following committee devoted to the adjudication and allocation of NSERC research funding.

H. Hamilton (retires 2006): Grant Selection Committee, Computing and Information Science-B

In addition, Dr. Rod Kelln serves on the Multidisciplinary Assessment Committee of the Canada Foundation for Innovation and Dr. Doug Farenick represents NSERC at the University of Regina.

The University is also represented at the provincial level by Dr. Katherine Bergman who serves on the HSURC Grant Selection Review Team.

6.3 Canada Research Chairs

The Faculty hosts a Tier I Chair in the area of Energy and Environment (P. Leavitt), and a Tier II Chair in Computational Physics (R. Lewis). This year the Physics Chair received $362,000 from the Province of Saskatchewan and the Canada Foundation for Innovation to construct a computing facility comprising 260 Pentium 4 processors, used by scientists from both Regina and a number of collaborating universities. The Faculty has nominated Dr. Donald Stanley (Department of Mathematics and Statistics) as a candidate for a second Tier II Chair.

6.4 International Research Development

International impact is a key criterion for receiving NSERC funding, (Table 6.1) and our success in obtaining NSERC support attests to the ongoing level of activity in this area. This is achieved primarily by publishing scientific papers in international journals that are circulated globally.

It is also common for members of the Faculty of Science to be involved in fieldwork abroad or in international collaborations. Faculty members also serve on the grant selection committees of other countries, review for these agencies, and serve as editors for international journals.

University of Regina scientists routinely travel to present the results of their research at international symposia, and to attend conferences and workshops to keep up to date with cutting-edge developments in their discipline. The Faculty helped fund 30 professors to make presentations at international conferences in 2004, with the balance of funds coming mostly from NSERC grants. Participation by students and postdoctoral fellows at international meetings is also common.

6.5 Research Opportunities for Undergraduate Students

NSERC Undergraduate Summer Research Awards

NSERC annually allocates a number of awards for undergraduate students to obtain significant research experience under the direction of NSERC researchers (refer to Table 5.4).

Undergraduate Research Assistants

Dozens of undergraduate students were hired by Faculty of Science researchers to assist in laboratories, fieldwork and other research-related activities over the summer months. Partial funding for these students comes from the Centennial Student Employment Program (refer to Table 5.5). This is a provincial initiative to create jobs for students. This is the fourth year of a five-year program.

6.6 Research Journals

The University of Regina began to reap the benefits of the Canadian National Site Licensing Project (CNSLP) in 2001. A consortium of over 60 Canadian institutions and libraries, including the University of Regina and the Canadian Foundation for Innovation, participate in the CNSLP, which permits consortium researchers and students electronic access to a very large number of scholarly journals. This extraordinary enhancement of the University's journal collection is of particular use to scientists, as the majority of the journal titles are devoted to scientific research. These journals are accessible from offices, laboratories, residence rooms, and classrooms on campus; furthermore, the University of Regina Library has set up a proxy server through which anyone with a valid University of Regina library card can access the journal collection from any computer off campus.

The Library has made some notable acquisitions in the sciences in the past year. The Library now provides online access to most of the journals from ***Cambridge University Press***. Additionally, online access to the backfile holdings of a couple of important journals were acquired: ***Angewandte Chemie*** (v.1, 1962 – v.36, 1997), as well as the ***Physical Review Online Archive*** (PROLA), which includes all American Physical Society journal content back to 1893.

Online access to ***Biological Abstracts*** (the major index to international life science research journals) has been extended back to 1969. Similarly, online access to ***Web of Science*** (which includes Science Citation Index) has been extended back to 1975.

New to the Library is the ***Technology Research Database.*** Indexing more than 4000 periodicals, the Technology Research Database covers areas such as materials science, computer applications, and database information systems.

Faculty and students can now access the complete online backfiles of all 29 sections of ***Annual Reviews*** from inception to 1998. This monographic series has 29 different sections representing different subject areas (for example, Annual Review of Biochemistry, Annual Review of Ecology and Systematics, Annual Review of Entomology, etc.). A gap in the Library's holdings of ***Methods in Enzymology*** was eliminated with the purchase of volumes 276 – 342 inclusive.

The Library acquired ***Treatise on Geochemistry,*** a ten-volume reference set dealing with all aspects of geochemistry, ranging from the chemistry of the solar system to environmental geochemistry (Main Ref QE 515 T69 2004); also new to the Library is ***Comprehensive Organometallic Chemistry II***, a fourteen-volume treatise that covers the literature in depth from 1982-1994 (Main Ref QD 411 C652 1995).

PART 7: UNIVERSITY SERVICE

7.1 Representation on University Committees

Members of the Faculty of Science serve as representatives to other faculties and are members of University committees including:

Senate
Executive of Council
Planning and Priorities Committee
Council Admissions and Studies
Council Scholarship Committee
Deans' Council
President's Research Committee
President's Committee on Animal Care
Research Ethics Board
President's Advisory Committee in Information Technology
University Committee for Promotion to Professor
Campus Administrative and Technical Staff

7.2 Professional Organizations

Faculty members of each academic department belong to various professional organizations. These organizations are named for each department below:

Biology
Animal Behaviour Society
American Ornithologists Union
American Society of Limnology and Oceanography
American Society of Mammalogists
American Society of Zoologists
British Ecological Society
Canadian Entomological Society
Canadian Society of Environmental Biologists
Canadian Society of Plant Physiologists
Canadian Society of Zoologists
Ecological Society of America
Geological Society of America
International Association of Great Lakes Research
North American Benthological Society
Phycological Society of America
Sigma Xi
Society of Canadian Limnologists
The Wildlife Society

Chemistry and Biochemistry
American Chemical Society
Biophysical Society
Canadian Institute of Chemistry
Canadian Society for Chemistry
Federation of American Society for Biochemistry
International Society for Heterocyclic Chemistry
American Association of Cancer Research

Computer Science
American Association of Artificial Intelligence
Association for Computing Machinery
Canadian Information Processing Society
Canadian Society for Computational Studies on Intelligence
Entity Relationships Society
Florida Artificial Intelligence Research Society
Institute of Electrical and Electronic Engineers
International Roughset Society
North American Fuzzy Set Society
Society for Industrial and Applied Mathematics
Special Interest Group
Information Retrieval
Artificial Intelligence
Models of Data

Geology
Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS)
American Association of Petroleum Geologists (AAPG)
American Association of Petroleum Geologists Student Chapter
Canadian Association of Geographers
Canadian Sedimentology Research Group
Canadian Society of Organic Petrologists
Canadian Society of Petroleum Geologists (CSPG)
European Association of Organic Geochemists
International Association of Sedimentologists (IAS)
International Committee of Coal Petrologists
Geological Association of Canada (GAC)
Geological Society of America
Geological Society of London
Geological Society of South Africa
Mineralogical Association of Canada (MAC)
Mineralogical Society of Great Britain
National Association of Geology Teachers
Royal Canadian Geographical Society
Saskatchewan Geological Society (SGS)
Society for Sedimentary Geology (SEPM)
Society of Organic Petrologists

Mathematics and Statistics
American Mathematical Society
American Statistical Association
Association for Women in Mathematics
Bernoulli Society for Probability and Statistics
Canadian Applied and Industrial Mathematics Society
Canadian Mathematical Society
Canadian Mathematics Education Study Group
Combinatorial Mathematics Society of Australia
German Mathematical Society
Institute for Combinatorics and Its Applications
Institute for Mathematical Statistics
International Chinese Statistical Association
International Indian Statistical Association
International Linear Algebra Society
International Statistical Institute
Mathematical Association of America

National Council of Teachers of Mathematics
Royal Statistical Society
Statistical Society of Canada
Society for Industrial and Applied Mathematics
The American Academy of Actuaries
The Canadian Institute of Actuaries
The Society of Actuaries

Physics
American Physical Society (APS)
Canadian Association of Physicists (CAP)

Part 8: Public Service

8.1 Schools

Our faculty members are regularly invited to give lectures and presentations at elementary and secondary schools, as well as community organizations (e.g., Beavers, Cubs). These visits are well received by the school children and their teachers, and provide the faculty a means of interacting with potential students. The Faculty of Science sponsors several events organized by various local and regional school systems such as science fairs and career fairs. The Faculty also provides displays and volunteers (e.g., judges, mentors) to these functions.

8.2 Community

- The Faculty of Science sponsors the Basterfield Lecture Series in honour of Dr. Steward S. Basterfield, former Dean of Regina College. Dr. Basterfield was an accomplished scientist with interests in scientific principles and the philosophy of science. This lectureship series is the major event sponsored by the Faculty of Science for the academic and public communities of southern Saskatchewan. Outstanding scientists and engineers from a variety of disciplines are brought to the campus to discuss the broad influence of research and technology on society in their discipline specific areas. Dr. Larry Matthies, Supervisor of the Machine Vision Group of the Jet Propulsion Laboratory at the California Institute of Technology was the 46th Basterfield lecturer. Dr. Matthies is a University of Regina alumnus.

- The Department of Mathematics and Statistics hosted the annual Mathematics Enrichment Camp for students from grades 7 to 12. Students from across the province attended and were engaged in a wide variety of activities to develop mathematical skills and to expose them to different opportunities available in mathematics. The two-day camp includes activities, games and presentations on a wide variety of topics designed to spark and/or enrich student interest in mathematical science. Topics include, logic games, fractals and robotics. The Department also sponsors the Problem of the Month Contest. Each month a challenging math problem appears on the Department web page and in the Carillon (the University student newspaper). Although a few responses have been received locally many of the responses are from other provinces as well as Spain and Russia. The Department maintains Math Central a web-based interactive resource for teachers and students.

- Many of our faculty are members of the Saskatchewan Science Centre and give public presentations or assist with the development of displays. The Faculty of Science is a gold sponsor of the Science Centre and was a corporate sponsor for the Fantasy Food 2004 Charity Gala Event.

- In 2004, Dr. Mark Brigham's Biology lab initiated a collaboration with the Saskatchewan Science Center for the purpose of saving "rescued" bats that come to our attention during the winter. These animals are typically juveniles who attempt to hibernate in buildings around Regina. They seem to choose bad locations and without "rescue", their interactions with humans typically leads to the demise of the bat. The Science Center makes available their staff and facilities to care for the animals rescued. The bats are put on display which promotes education amongst their visitors and signage highlights the collaboration between our institutions.

APPENDIX 1: PROFESSOR EMERITI FOR 2004

Department of Biology
Dr. Keith Denford
Dr. George Ledingham
Dr. George Mitchell
Dr. William Quick
Dr. M.V. Sethu Raju
Dr. Diane Secoy
Dr. A. Walther
Dr. Melvin Weisbart
Dr. Russell Zacharuk

Department of Chemistry and Biochemistry
Dr. Keith Johnson
Dr. Donald Lee

Department of Computer Science
Dr. Michael Wong

Department of Geology
Dr. Pier Binda
Dr. Donald Kent
Dr. Laurence Vigrass

Department of Mathematics and Statistics
Mr. Norman Biernes
Dr. James Conlan
Dr. Audrey Duthie
Dr. Haragauri Gupta
Dr. Saroop Kaul
Dr. Eusebio Koh
Mrs. Joanne McDonald
Dr. R. Ian McDonald
Dr. Dieter Ruoff
Dr. Daihacharo Sato
Dr. C.L. Wang

Department of Physics
Dr. Leonard Greenberg
Dr. Joseph Kos
Dr. S. Ishrat Naqvi
Dr. Giorgio Papini
Dr. Bev Robertson

APPENDIX 2: ADJUNCT AND ASSOCIATE MEMBERS FOR 2004

Adjunct Members:

Department of Biology
Dr. Harold Bryant
Dr. Stephen Davis
Dr. Gregory Horseman
Dr. Paul Levett
Dr. Peter Pieroni
Dr. Glen Sutter
Dr. Rolf Vinebrooke
Dr. Melvin Weisbart

Department of Chemistry and Biochemistry
Dr. Keith Johnson
Dr. Lynn Kirkpatrick
Dr. Ron Treble

Department of Computer Science
Dr. Nick Cercone
Dr. Yang Xiang
Dr. Michael Wong

Department of Geology
Dr. Kenneth Ashton
Dr. Pier Binda
Dr. Ralph Cheesman
Dr. Donald Kent
Dr. R. Macdonald
Dr. Per Pedersen
Dr. Laverne Stasiuk

Department of Mathematics and Statistics
Dr. Ejaz Ahmed
Dr. Brian Alspach
Dr. Jonathon Funk

Department of Physics
Dr. Roman Tacik

Associate Members:

Department of Biology
Dr. Dennis Alfano
Dr. James Gomes (First Nations University of Canada)
Dr. Rod Kelln
Dr. Suzie Nilson (First Nations University of Canada)
Dr. Mary Vetter (Luther)

Department of Chemistry & Biochemistry
Dr. Neil Ashton

Department of Computer Science
Ms. Maureen Bradley
Dr. Ed Brash
Dr. Norma Fuller (First Nations University of Canada)
Dr. Sheila Petty

Department of Mathematics and Statistics
Dr. Ejaz Ahmed
Dr. Edward Doolittle (First Nations University of Canada)
Dr. Fotini Labropulu (Luther)

Department of Physics
Dr. Martin Beech (Campion)

APPENDIX 3: SESSIONAL LECTURERS FOR 2004

Department of Biology
Harold Bryant
Andrew Felskie
Paul Levett

Department of Chemistry and Biochemistry
Joshua Rizak
Mark Tymchak
Larry Wingert
Henry Yee

Department of Computer Science
Janine Bernat
Gloria Geng
Liqiang Geng
Orland Hoeber
Terry Peckham
John Quesnel
Mahesh Man Shrestha
Takis Skagos
Hong Yao
Pengzhou Yin
Yan Zhao

Department of Geology
Pier Binda
Ralph Cheesman
Robert Macdonald

Department of Mathematics and Statistics
Sandra Fital
Iqbal Husain
Supranee Lisawadi
Leigh Anne MacKnight
S. Mahmoud Manjegani
Dipra Mitra
Barb Pidkowich
Alejandra Premat
Eric Roettger
Dieter Ruoff
Jonathan Scott
Ali Simchi

Department of Physics
Gary Diver
Nikolay Kolev