Undergraduate major Christoffer Renner received the Dean’s Award for Academic Excellence.

Graduate students Luke Shorty and Jon Wixson were selected as the Outstanding Graduate Teaching Assistants.

Sandy Bowers received a Chamber of Commerce/Alumni Association Award for Excellence in Teaching.

Professor Maurice Burke and Becky Parker were CLS Outstanding Teachers.

CLS Distinguished Professor John Borkowski was a Visiting Professor at Thammasat University in Bangkok, Thailand.

Of 103 undergraduate majors, 4 were Presidential Scholars and 14 were in the Honors Program.

## Summary

**Teaching**

In 2007 the Department of Mathematical Sciences again delivered about 10% of the total student credit hours at MSU. We had 103 undergraduate majors seeking a B.S. degree in one of four options (Applied Mathematics, Mathematics, Mathematics Teaching, Statistics). In addition we had 109 graduate students enrolled in programs in Mathematics, Mathematics Education, and Statistics. There were 72 M.S. students and 37 Ph.D. candidates. In 2007, the department awarded 23 Bachelor of Science degrees. Of these B.S. graduates 4 graduated with highest honors, 9 graduated with honors, and 1 completed the University Honors Program. Also awarded in 2007 were 23 Master of Science degrees and five Doctor of Philosophy degrees.

Our students have received several awards this year. Benjamin Bartle, Matthew Beamer, Kevin Rice, and Matthew Welch were Presidential Scholars. Tess Ritter was a Provost Scholar. Christoffer Renner received the College of Letters and Science Dean’s Award for Academic Excellence in Science. Daniel Cornish spent a semester studying abroad at Yeditepe University in Istanbul, Turkey and Steven Harris Weiel spent a year on exchange at the University of North Carolina at Wilmington.

Luke Shorty and Jonathan Wixson were departmental Outstanding GTAs. Sandy Bowers received the Bozeman Area Chamber of Commerce and MSU Alumni Association Award for Excellence in Teaching. Professor Maurice Burke and Becky Parker were recognized as College of Letters and Science Outstanding Teachers.

### Highlights

- Undergraduate major Christoffer Renner received the Dean’s Award for Academic Excellence.
- Graduate students Luke Shorty and Jon Wixson were selected as the Outstanding Graduate Teaching Assistants.
- Sandy Bowers received a Chamber of Commerce/Alumni Association Award for Excellence in Teaching.
- Professor Maurice Burke and Becky Parker were CLS Outstanding Teachers.
- CLS Distinguished Professor John Borkowski was a Visiting Professor at Thammasat University in Bangkok, Thailand.
- Of 103 undergraduate majors, 4 were Presidential Scholars and 14 were in the Honors Program.

### Key Figures

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<th>Category</th>
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<td>Books</td>
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<td>Grant Expenditures</td>
<td>$257,277</td>
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Faculty in the Department of Mathematical Sciences had a productive year in advancing their research programs. They worked on numerous interdisciplinary research programs involving the Air Force Office of Scientific Research (AFOSR), the Center for Biofilm Engineering (CBE), the Center for Computational Biology (CCB), the Center for Learning and Teaching in the West (CLTW), the Department of Education, the Department of Energy, the Interagency Grizzly Bear Study Team, the National Institutes of Health (NIH), the National Science Foundation (NSF), the Pacific Northwest National Laboratory (PNNL), the State of Montana Fish, Wildlife, & Park Service, the Statistical and Applied Mathematical Sciences Institute (SAMSI), the US Geological Survey (USGS), and Yellowstone National Park. Cooperative on-campus projects involved the departments of Agricultural Economics & Economics, Animal & Range Sciences, Cell Biology & Neuroscience, Chemical Engineering, Civil Engineering, Earth Sciences, Ecology, Education, Entomology, Land Resources & Environmental Sciences, Nursing, Physics, and Psychology.

Several faculty were invited to give international lectures this year. Marcy Barge spoke at the University of Kyoto, in Kyoto, Japan; at the Centre International de Rencontres Mathematiques (CIRM) in Marseille, France; at the University of Victoria, Victoria, Canada; and at the University of Copenhagen, Copenhagen, Denmark. John Borkowski was a Visiting Professor of Statistics in the Department of Mathematics and Statistics at Thammasat University in Bangkok, Thailand and gave an address at the Conference on Statistics and Applied Statistics in Cha-am, Thailand. Tomas Gedeon spoke at the 6th International Congress for Industrial and Applied Mathematics (ICIAM) in Zurich, Switzerland and the Canadian Applied Mathematics Meeting in Banff, Canada. Lukas Geyer spoke at Oberwolfach, Germany. Isaac Klapper spoke at the Institute for Mathematical Sciences, National University of Singapore in Singapore and the 4th American Society of Microbiology Conference on Biofilms in Quebec, Canada.

Steve Cherry continued a funded research project with the US Geological Survey concerning wildlife habitat in and around Yellowstone National Park. John Borkowski and Steve Cherry both have separate funded projects with the National Park Service involving habitat studies in Yellowstone. Steve Cherry is a member of the Interagency Grizzly Bear Study Team, the Northern Yellowstone Carnivore Working Group, and the Whitebark Pine Monitoring Working Group. Lisa Davis continued on a project in sensitivity analysis of advanced guidance systems for the Air Force Office of Scientific Research. Tomas Gedeon worked on the five-year, INBRE grant, involved with bioinformatics; continued work on a National Science Foundation grant on optimal sensor receptor arrays; and completed a NSF/NIH grant to study NCR-circuit dynamics. Isaac Klapper spent fall semester at the Statistical and Applied Mathematical Sciences Institute in the Research Triangle, North Carolina. Jennie Luebeck continued work on the Department of Education funded Creating Opportunities in Mathematics for Exemplary Teaching (COMET) project, for which she serves as the Principal Investigator. Al Parker was awarded a joint Postdoctoral Fellowship by the New Zealand Institute of Mathematics, the University of Auckland, and the University of Otago. Jim Robison-Cox continued work on a whirling disease project funded by the U.S. Fish & Wildlife Service. Curt Vogel was funded by NSF on a project involving adaptive optics scanning laser ophthalmoscopy and by the Department of Energy for a project involving Los Alamos National Laboratory.

This year five Ph.D. students graduated and many more were involved in exciting research ventures. Maurice Burke's Ph.D. student, Jon Harper, finished his degree and is now teaching in the Department of Mathematics and Statistics at Minnesota State University, in Mankato, Minnesota. Tomas Gedeon worked with a team of graduate students including Jesse Berwald, Mark Campanelli, Bree Cummins, Shaun Harker, and Kate Patterson on computational neuroscience. Joe Latulippe completed his Ph.D. under Mark Pernarowski and took a faculty position in the Department of Mathematics and Statistics at Cal Poly Pomona in Pomona, California. Linda Simonsen had two Ph.D. students finish; Rachael Welder now teaches in the Department of Mathematics and Statistics at Hunter College of the City University of New York in New York City, New York and Christine Latulippe took a faculty position in the Department of Mathematics and Statistics at Cal Poly Pomona in Pomona, California. Jarek Kwapisz worked with...
graduate students Veronica Baker, Andy Bouwman, David Buhanan, and Mark Mathison on problems in dynamical systems. John Borkowski’s Ph.D. student, Julia Sharp, is now on the faculty of the Department of Applied Economics and Statistics at Clemson University in Clemson, South Carolina. Maurice Burke worked with graduate students Taylor Jensen, Rejoice Mudzimir, Kim Nordby, Sarah Segal, and Raquel Vallines Mira on issues in mathematics education. Curt Vogel and his postdoc, Qiang Yang, looked into atmospheric optics as it pertains to the Thirty Meter Telescope (TMT) project.

SERVICE

The Department of Mathematical Sciences serves the local and campus community, as well as the region, state and nation, in a variety of ways. All of the faculty contribute to department and campus activities. In addition, our faculty contribute to numerous efforts to improve our state. Steve Cherry served on the General Education Council for the Commissioner of Higher Education. Ken Bowers served on the Mathematics Faculty Learning Outcomes Council, convened by the Commissioner of Higher Education. Warren Esty is on the P-20 Assessment Task Force for the Commissioner of Higher Education. For the Montana Chapter of the American Statistical Association, Sherry Heis was the Secretary/Treasurer and Mark Greenwood was the President. Jennie Luebeck was on both the Board of Directors of the Montana Council of Teachers of Mathematics and the Board of Directors of the Montana Learning Center for Mathematics and Science.

Beyond the borders of Montana, several faculty contribute to their profession in a variety of ways. Robert Boik is an Editorial Board member for Psychological Methods. John Borkowski is an Associate Editor for both The American Statistician and the Journal of Probability and Statistical Science. He is also on the Editorial Review Board for the Journal of Quality Technology and the Thailand Statistician. Maurice Burke is the Editor of the Navigations Series produced by the National Council of Teachers of Mathematics. Tomas Gedeon is an Associate Editor for both the Rocky Mountain Journal of Mathematics and Discrete and Continuous Dynamical Systems.

A. BOOKS / EDITED COLLECTIONS / FULL-LENGTH WORKS

ESTY, W.


B. TECHNICAL MANUSCRIPTS

CHERRY, S.


GREENWOOD, M.


C. REFEREED PUBLICATIONS

BARGE, M.


BOIK, R.


BORKOWSKI, J.


BURKE, M.


BURROUGHS, E.


CHERRY, S.


CUMMINS, B.


DOCKERY, J.


GEDEON, T.


GEYER, L.


GREENWOOD, M.


HAMILTON, M.


HARKER, S.


HAYES, C.


HODGSON, T.


KLAPPER, I.


KWAPISZ, J.


LUEBECK, J.

ROBISON-COX, J.

SHARP, J.L.


SWANSON, R.


YANG, Q.


YOPP, D.

PRESENTATIONS

BARGE, M.

“Sheaf Cohomology of Tiling Spaces II: Dynamic Systems and Related Topics,” University of Kyoto, Kyoto, Japan, 2007.


“The Branch Locus in One-Dimensional Substitution Tiling Spaces,” University of Victoria, Victoria, British Columbia, Canada, June 2007.

“Geometry and Topology of Quasicrystals,” University of Copenhagen, Copenhagen, Denmark, May 2007.
BORKOWSKI, J.


BURKE, M.


BURROUGHS, E.


CHERRY, S.


DOCKERY, J.


ESTY, W.


GEDEON, T.


“Why is Lambda Phage So Stable?,” Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio, 2007.


GEYER, L.


GREENWOOD, M.


HAYES, C.


KLAPPER, I.


LUEBECK, J.


VOGEL, C.


A. FUNDED EXTERNAL GRANTS

BORKOWSKI, J.


BURKE, M.

“Before It’s Too Late III,” Office of the Commissioner

CHERRY, S.


DAVIS, L.


GEDEON, T.


HODGSON, T.


KLAPPER, I.


LUEBECK, J.


ROBISON-COX, J.


VOGEL, C.


B. FUNDED INTERNAL GRANTS

BORKOWSKI J.

“Conducting Collaborative Research with Statistics Faculty at Kasetsart University and Silpakorn University, Thailand,” Short-Term Faculty Professional Development Leave Program, PI: J. Borkowski, $3,600, (2007).

“Establishing Collaborative Research with Faculty and Doctoral Students at Thammasat University in Thailand and to Enhance Recruitment of Doctoral Students for our Graduate Program,” Faculty International Research and Development Program, PI: J. Borkowski, $1,500, (2007).

GEDEON, T.


KLAPPER, I.