Fall 2013 Departmental Meeting

Wednesday, September 4
4:10 p.m.
Carver 205
Agenda

• Welcome
• Introductions
• Announcements
• State of Department Programs
• State of Department
Introducing New Faculty

Alejandro Andreotti
Adjunct Assistant Professor

Derrick Stolee
Assistant Professor
Introducing New Faculty

Man Basnet
Post Doc

Wenli Cai
Visiting Scholar

Timothy Chumley
Post Doc

Yiping Hao
Post Doc
Introducing New Faculty

Terrence Pendleton
Post Doc

Maksym Pryporov
Post Doc

Chi-Jen Wang
Post Doc

Jing Wang
Post Doc
Introducing New Graduate Students

Dong Dai
Michael Dairyko
Ismael Dondasse
Pierson Guthrey
Keguo (Tim) Huang

Yi (Jacky) Jiang
Joseph Johnson
Robert Lazar
Chin-Hung Lin
Li Lin
Introducing New Graduate Students

Tia Lyve  Gabi Maurer  Emily Petty  Jessica Poole  Minwoo Shin
Jim Strickland  Milo Taylor  Derek Young
Returning from Sabbatical

- University of Bologna, Italy
- Completed wavelet paper
- Wrote joint paper on use of compressed sensing in facial recognition
- SampTA 2013 conference in Bremen, Germany

Fritz Keinert
Returning from Sabbatical

Jonathan Smith

- MIGHTY III
- Warsaw University of Technology (Fullbright)
- Center for Advanced Studies, WUT
- AAA 85 Conference
- Hausdorff Center for Mathematics, University of Bonn
- University of Denver
- AMS Spring Western Meeting - UC-Boulder
- AMS Spring Central Meeting - ISU
Announcements

• **Departmental Picnic** on Sunday, September 15 at Emma McCarthy Lee Park

• **Mathematics Advisory Board** Meeting on Friday, September 27

• **Undergraduate Teas** – Thursdays at 3:10 pm in Sprague Lounge

• **ISU SIAM Student Chapter** (alternate Wednesdays @ 5:10 pm)
Departmental Awards

Gail Johnston
LAS Outstanding Lecturer

Ryan Martin
LAS Award for Mid-Career Achievement in Research
State of Departmental Programs: Graduate Program

Justin Peters
State of Departmental Programs: Graduate Program - Enrollment

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>First Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total enrollment</td>
<td>83</td>
<td>17</td>
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<tr>
<td>Ph. D.</td>
<td>73</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Underrepresented</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>International</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Funded (at ISU)</td>
<td>75</td>
<td>17</td>
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State of Departmental Programs: Graduate Programs

<table>
<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>Mathematics</td>
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<td>10</td>
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<tr>
<td>Applied Mathematics</td>
<td>27</td>
<td>7</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>InfAs</td>
<td>1</td>
<td>0</td>
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</table>
## State of Departmental Programs:
### Graduate Program:
#### Core Course Enrollment

<table>
<thead>
<tr>
<th>Course</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra (504)</td>
<td>14</td>
</tr>
<tr>
<td>Linear Algebra (510)</td>
<td>17</td>
</tr>
<tr>
<td>Analysis (515)</td>
<td>20</td>
</tr>
<tr>
<td>Appl. Math. (519)</td>
<td>10</td>
</tr>
<tr>
<td>ODEs (557)</td>
<td>11</td>
</tr>
<tr>
<td>Num. Anal. (561)</td>
<td>15</td>
</tr>
</tbody>
</table>

501 (13) 407/507 (13) 554 (15) 566 (19) 607 (16) 617 (8) 641 (35)
655 (2)
State of Departmental Programs:
Graduate Program: Degrees Awarded
Fall 2012 – Summer 2013

• PhD  11
• MS   9
State of Departmental Programs:
Master of School Mathematics Program

Heather Bolles
State of Departmental Programs: Master of School Mathematics Program

School Mathematics Program Enrollment

<table>
<thead>
<tr>
<th>Enrollment Category</th>
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<tbody>
<tr>
<td>Graduated Summer 2013</td>
<td>4</td>
</tr>
<tr>
<td>3rd Year or All But CC</td>
<td>4</td>
</tr>
<tr>
<td>Finished 2nd year</td>
<td>6</td>
</tr>
<tr>
<td>Finished 1st year</td>
<td>10</td>
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<tr>
<td>Non-MSM</td>
<td>4</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
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State of Departmental Programs:
Master of School Mathematics Program
Summer 2013 Course Enrollment

<table>
<thead>
<tr>
<th>Course</th>
<th>Total</th>
<th>On-campus</th>
<th>Off-campus*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminar in Math Ed (540C)</td>
<td>16</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Intermediate Calculus (545)</td>
<td>21</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Algorithms in Analysis and their Computer Implementations (546)</td>
<td>18</td>
<td>7</td>
<td>11</td>
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</tbody>
</table>

*Off-campus: this includes three out-of-state students (Minnesota, Kansas, Michigan)
State of Departmental Programs:
Master of School Mathematics Program

Graduated Fall 2012 – Summer 2013
Melissa Allman, Shelby Schmidt, Adam Paulson, Sylvia Fanous, Karen Mason, Melissa Carlson, Jordan Edgerly, Korie Whiteman

Summer 2014 Courses
Stat 410X (6 cr) Statistical Methods for Math Teachers
Math 540A (1 cr) Seminar in Mathematics Education
State of Departmental Programs:
Master of School Mathematics Program

If you have interest in teaching a course in the MSM program, in working with a teacher on his/her creative component, or in contributing a topic you feel would be of interest to a teacher working on a creative component, please see me.

In the near future, Alejandro Andreotti will be the Director of Graduate Education for this program. We are very happy to have him join the team, knowing he has fresh ideas to continue to advance the mathematical education of teachers. Welcome, Alex!
State of Departmental Programs:
Undergraduate Program

James Wilson
State of Departmental Programs:
Undergraduate Program: Number of Math Majors

Numbers of Mathematics Majors

<table>
<thead>
<tr>
<th>Semester</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>Spring</td>
<td>133</td>
<td>134</td>
<td>144</td>
<td>180</td>
<td>201</td>
<td>212</td>
<td>239</td>
</tr>
<tr>
<td>Fall</td>
<td>134</td>
<td>144</td>
<td>180</td>
<td>185</td>
<td>201</td>
<td>212</td>
<td>238</td>
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<tr>
<td>Spring</td>
<td>144</td>
<td>180</td>
<td>185</td>
<td>201</td>
<td>212</td>
<td>239</td>
<td>236</td>
</tr>
<tr>
<td>Fall</td>
<td>180</td>
<td>185</td>
<td>201</td>
<td>212</td>
<td>239</td>
<td>238</td>
<td>236</td>
</tr>
<tr>
<td>Spring</td>
<td>185</td>
<td>201</td>
<td>212</td>
<td>239</td>
<td>238</td>
<td>236</td>
<td>234</td>
</tr>
<tr>
<td>Fall</td>
<td>201</td>
<td>212</td>
<td>239</td>
<td>238</td>
<td>236</td>
<td>234</td>
<td></td>
</tr>
</tbody>
</table>

Spring 2008: 133
Fall 2008: 134
Spring 2009: 144
Fall 2009: 180
Spring 2010: 185
Fall 2010: 201
Spring 2011: 212
Fall 2011: 239
Spring 2012: 238
Fall 2012: 236
Spring 2013: 234
Fall 2013: 234
State of Departmental Programs:
Undergraduate Program

Steady numbers of mathematics majors for four semesters.

Much interest in:

- Secondary Education  25%
- Economics/Finance Applications  25%
- Computer Science, Computer Engineering, Statistics  19%
- Science, Engineering  13%
State of Departmental Programs:

Undergraduate Program: Course Development

- MATH 101 (1 cr) Orientation in Mathematics, now for juniors and seniors
- MATH 269 (1 cr) Systems of Differential Equations
- MATH 143 (4 cr) Preparation for Calculus
- MATH 207 (3 cr) Matrices and Linear Algebra
- MATH 331 (3 cr) Topology
State of Departmental Programs:
Undergraduate Program: Undergraduate Life

- Speakers: Mathematics and Careers
- Weekly Undergraduate Bulletin
- Sprague Room Activities
- Contests and coaching
- Math Club
- Undergraduate Research
State of Departmental Programs:
Undergraduate Program: Undergraduate Forecast

- Advertising
- Relations with employers, internships, tracking graduates
- Advising and mentoring changes
- MATH 495: Special Topics in Mathematics
State of Departmental Programs

Jennifer Davidson
State of Departmental Programs: Personnel

- Have 301 sections assigned to
  - 63 faculty
  - (about) 56 teaching assistants
- Teams of instructors in
  - Math 207 (2 large sections, 108 + 115 students)
  - Math 266/267 (9 med. Sections, ~90 each section)
- 307 changed to 207
- No longer offer Math 141
- 143X: new precalculus class
- 145X: new “142” for design and kinesiology
State of Departmental Programs: A Victory for Math?

• Math 165 beats
  – English 150, Biology 211 and Chem 177
# State of Departmental Programs:

## Instructional Mission: Students taking math classes

<table>
<thead>
<tr>
<th></th>
<th>Fall 2010</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of Students</strong></td>
<td>7664</td>
<td>7953</td>
<td>8502</td>
<td>9599</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td>3.8%</td>
<td>6.9%</td>
<td><strong>12.9%</strong></td>
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<tr>
<td><strong>Total SCH</strong></td>
<td>25,379</td>
<td>27,658</td>
<td>29,735</td>
<td><strong>31,762</strong></td>
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<tr>
<td><strong>% Change</strong></td>
<td>9%</td>
<td>7.5%</td>
<td>6.8%</td>
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<table>
<thead>
<tr>
<th>Date of Record</th>
<th>Day -2</th>
<th>Day 6</th>
<th>Day 10</th>
<th>Day -2</th>
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## Class Analysis

<table>
<thead>
<tr>
<th>Class</th>
<th>141/2</th>
<th>150</th>
<th>All calculus</th>
<th>266/7</th>
<th>207/307</th>
<th>3XX</th>
<th>4XX</th>
<th>5XX+ 6XX</th>
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<tbody>
<tr>
<td>Fall 2010</td>
<td>873</td>
<td>927</td>
<td>2708</td>
<td>548</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fall 2011</td>
<td>815</td>
<td>1038</td>
<td>2904</td>
<td>620</td>
<td>141</td>
<td>172</td>
<td>90</td>
<td>245</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>814</td>
<td>908</td>
<td>3274</td>
<td>695</td>
<td>218</td>
<td>185</td>
<td>79</td>
<td>233</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>931</td>
<td>1019</td>
<td>3485</td>
<td>756</td>
<td>223</td>
<td>179</td>
<td>89</td>
<td>224</td>
</tr>
</tbody>
</table>

| % increase 10-11 | -6.6 % | +12.0 % | +7.2 % | +13.1 % |
| % increase 11-12 | 0 %    | -12.5 % | +12.7 % | +12.1 % | +54.6 % | +7.6 % | -12.2 % | -4.9 % |
| % increase 12-13 | **+14.4 %** | **+12.2 %** | +6.4 % | +8.8 % | +2.3 % | -3.2 % | **+12.7 %** | -3.9 % |
State of Departmental Programs: Updated Syllabus and Course Policy Web page

• Visit: {Undergrad|Graduate}:Current Students:Classroom Policies
• http://www.math.iastate.edu/Faculty/ClassPolicies.html
• **Important information**: An instructor must not give make up exams unless fits one of 5 reasons
  – Medical excuse - student's own medical emergency.
  – Medical excuse - a member of the student's family has a medical emergency.
  – Extra curricular activities as a representative of Iowa State University (e.g., sponsored sports, band, etc.).
  – Armed forces deployment (military duty).
  – Officially mandated court appearances, including jury duty.
• “Official Documentation required”: verified by instructor
State of Departmental Programs:
Updated Syllabus and Course Policy Web page

• Exception:
• If an instructor gives three or more hour exams during the semester (including a departmental midterm) and discards the lowest hour exam score for the course grade calculations, then the instructor is not required to give a make-up exam for a missed exam, even in the case of the excusable absences. The Final exam must always be taken and cannot be dropped.
• Also academic misconduct; disability; student behavior; harassment and discrimination; religious accommodation
• Continuous assessment: discussed by Elgin Johnston
  – Impacts instructor effort
FERPA: What faculty and staff members need to know

It's Your Responsibility
As a faculty or staff member, you have a legal responsibility under FERPA to protect the confidentiality of student educational records in your possession. You have access to student information only for legitimate use in the completion of your responsibilities as a university employee. **Need to know is the basic principle.**

Your access to student information, including directory information, is based on your faculty or staff role within the university. You may not release lists or files with student information to any third party outside your college or departmental unit.

Student educational records (other than directory information) are considered confidential and may not be released without written consent of the student. Student information stored in electronic format must be secure and available only to those entitled to access that information.

If you're in doubt about a request for student information, contact the Office of the Registrar at 294-1840.

**It's the Law**
FERPA (Family Educational Rights and Privacy Act), also known as the Buckley Amendment, was passed by Congress in 1974. It grants four specific rights to a postsecondary student:

- to see the information that the institution is keeping on the student.
- to seek amendment to those records and in certain cases append a statement to the record.
- to consent to disclosure of his/her records.
- to file a complaint with the FERPA Office in Washington.

FERPA applies to all educational agencies or institutions, including Iowa State University, that receive funds under any program administered by the Secretary of Education. FERPA governs what may be released but does not require that any information be released.
State of Departmental Programs:
Center for Excellence in Undergraduate Mathematics Education

Elgin Johnston
State of Departmental Programs:
Center for Excellence in Undergraduate Mathematics Education

ALEKS update

ALEKS introduced a new assessment exam in Spring of 2013. Most of our incoming freshmen took this new assessment.

In the Spring of 2014 we will have data on ALEKS score, placement, and student performance. We will analyze this data and use the results to fine tune our course threshold scores and strengthen our recommendations to advisers.
State of Departmental Programs:
Center for Excellence in Undergraduate Mathematics Education

We are continuing to build an **archive** of materials and resources for Calculus instruction, including:

- clicker questions
- BlackBoard based reading quizzes
- class projects

We are always interested in contributions.
State of Departmental Programs:
Center for Excellence in Undergraduate Mathematics Education

Please make undergraduates aware of problem solving activities in the Department:

• Problem of the Week

• Putnam Exam – Saturday, December 7, 2013 – Practice sessions will begin soon
State of Departmental Programs: Center for Excellence in Undergraduate Mathematics Education

Seminar to discuss the book “How Learning Works” will begin next week.

We will again be inviting two or three speakers to talk on issues in teaching and education relevant to the department’s efforts and interests.
State of Departmental Programs:
Center for Excellence in Undergraduate Mathematics Education

Outcomes Assessment

This Fall a new state law mandates that we perform outcomes assessment and give a plan for continuing improvement in courses with yearly enrollments of 300 or more.

We will rely on instructors of these courses to provide data on which to base our reports. Stay tuned for updates from course coordinators for more about this.
State of Departmental Programs: Diversity

Leslie Hogben
Director of Diversity
Update on State of the Department: Personnel

Glenn Luecke named Director of HPC Education; will develop prequel to Math 525 that introduces programming techniques needed for high-performance computation.
Update on State of the Department: Searches

- Assistant/Associate professor in Mathematical Biology
- Assistant/Associate professor in Probability, Statistics, and Stochastic Processes (joint with Statistics)
- Assistant professor in Discrete Mathematics and Combinatorics
- Academic Adviser and Undergraduate Recruiter (joint with Computer Science/Statistics)
Update on State of the Department:
Research: External Funding Since January

Steve Butler, NSA
Properties of the Spectra of the Normalized Laplacian

Scott Hansen, NSF
Control of Fluid Elastic Structures and Related Topics

Wolfgang Kliemann, APLU,
Scaling Planning Project

Hailiang Liu, NSF
Recovery of High Frequency Wave Fields, Kinetic Theory of Photons & Entropy Satisfying Methods

Richard Ng, NSF
Hopf Algebras, Modular Categories & Their Invariants

Terrance Pendleton and Tim Chumley, NSF
National Alliance for Building Faculty Diversity in the Math Sciences

Glenn Luecke, Cray Inc.
High Performance Computing
## Update on State of the Department:

### Service Expectations

<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
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<tbody>
<tr>
<td>Full Professor</td>
<td>19</td>
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<tr>
<td>Assoc Professor</td>
<td>14</td>
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<tr>
<td>Ass’t Professor</td>
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<tr>
<td>Sr. Lecturer</td>
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<tr>
<td>Lecturer</td>
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<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
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<td>Advisory</td>
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