Nebraska Math & Science Summer Institutes (NMSSI)

Online Graduate Education

Opportunities for Nebraska Teachers

Michelle Homp, University of Nebraska-Lincoln
Nebraska Math and Science
Summer Institutes (NMSSI)

A little history

- **Math in the Middle (M²) Institute Partnership**
  - 2004-2011
  - $5.9 million from NSF as a $5 million Math Science Partnership Institute with $0.9 million Noyce supplements

- **NebraskaMATH**
  - 2009-2014
  - $9.2 million from NSF as a Targeted Math Science Partnership

- **NebraskaNOYCE**
  - 2010/11-2015/16
  - $3 million from the Noyce Foundation with $1.5 million UNL match
NSF grants

**Overarching goal:** Improve student achievement by strengthening teachers’ mathematical and pedagogical knowledge through high quality professional development

Grant funds allowed for

- Collaborative course development: input from UNL or other IHE faculty, K-12 district leaders and classroom teachers
- Research to inform course refinement and effectiveness
NSF grants

$M^2$, NebraskaMATH & Nebraska Noyce grants resulted in the development of:

- 19 graduate level math classes for K-12 teachers
- 2 graduate level statistics classes for teachers
- 15 graduate level math-focused pedagogy courses

Offered via condensed instructional model respectful of teachers’ time

All of which have been proven to be effective in increasing teachers’ knowledge of mathematics and pedagogy.
NSF grants

When grant funds are no longer available....

Q: How do we continue to make these opportunities available to Nebraska teachers?

A: Nebraska Math and Science Summer Institutes (NMSSI)
It’s one thing to offer the courses, making them affordable is quite another

With grant funding

- Teachers brought to Lincoln for coursework on grant dollars
- Grant funds covered tuition and fees
- Cost to teacher: $0

Without grant funding

- Travel, housing & meal costs paid by teacher
- Teacher pays tuition and fees; approximately $1020* per course
- Cost to teacher: **Too Much!!!**

*based on 2014 rates
To make graduate courses affordable

*Tuition & Fees $1020

20% tuition discount - 172

Net cost $848

Reduce tuition

- UNL offers 20% tuition reduction for Nebraska teachers (uncommon!)

*based on 2014 rates
To make graduate courses affordable

<table>
<thead>
<tr>
<th>Tuition &amp; Fees</th>
<th>$1020</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% tuition discount</td>
<td>- 172</td>
</tr>
<tr>
<td><strong>Reduced fees</strong></td>
<td>- 110</td>
</tr>
<tr>
<td><strong>Net cost</strong></td>
<td>$738</td>
</tr>
</tbody>
</table>

Reduce fees
- Partner with ESUs to bring the courses to teachers’ communities

** for courses not on the UNL campus, based on 2014 rates
# NMSSI Tuition Fellowships

To make graduate courses affordable *(in case $738 is still too high....)*

- *Tuition & Fees* $1020
  - 20% tuition discount  - 172
  - **Reduced fees**  - 110
  - **Net cost**  - 300
  - **Net cost** $438

Award tuition fellowships to Nebraska teachers

**A total savings of $582 per course**

**for courses not on the UNL campus, based on 2014 rates**
NMSS1 Course Locations
2008 through 2014

Courses have been held in Ainsworth, Auburn, Beatrice, Columbus, Fremont, Grand Island, Hastings, Holdrege, Kearney, Lincoln, Neligh, Norfolk, North Platte, Omaha and Scottsbluff.
### NMSSI Tuition Fellowships

**Fellowships awarded in summer 2014**

<table>
<thead>
<tr>
<th>Fellowship</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math for the 21st Century</td>
<td>29,550</td>
</tr>
<tr>
<td>Science for the 21st Century</td>
<td>1,100</td>
</tr>
<tr>
<td>John Deere Foundation</td>
<td>9,600</td>
</tr>
<tr>
<td>Don Miller Fund (Dept of Mathematics)</td>
<td>13,000</td>
</tr>
<tr>
<td>Jim and Doris Lewis Fund</td>
<td>15,780</td>
</tr>
<tr>
<td>Department of Earth &amp; Atmospheric Sciences</td>
<td>1,500</td>
</tr>
<tr>
<td>Department of Teaching, Learning &amp; Teacher Education</td>
<td>6,000</td>
</tr>
<tr>
<td>College of Education and Human Sciences</td>
<td>6,000</td>
</tr>
</tbody>
</table>

**Tuition Fellowships Total** $82,530

*All fellowship funds to directly toward teachers’ tuition costs.*
## NMSSI Program Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Registrations</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5</td>
<td>67</td>
<td>3</td>
</tr>
<tr>
<td>2009</td>
<td>10</td>
<td>108</td>
<td>4</td>
</tr>
<tr>
<td>2010</td>
<td>13</td>
<td>127</td>
<td>4</td>
</tr>
<tr>
<td>2011</td>
<td>16</td>
<td>190</td>
<td>7</td>
</tr>
<tr>
<td>2012</td>
<td>26</td>
<td>261</td>
<td>11</td>
</tr>
<tr>
<td>2013</td>
<td>32</td>
<td>352</td>
<td>11</td>
</tr>
<tr>
<td>2014</td>
<td>35</td>
<td>338 (+79 LPS, 27 ESU 3)</td>
<td>9</td>
</tr>
</tbody>
</table>

*Numbers do not include registrations associated with grant or district funded programs*
Balance of $438 (or $548) is paid by:

- the teachers
- districts/schools
- scholarships from other organizations
  - NDE’s Enhancing Excellence in Teaching Program
  - Hastings Area Retired Teachers Association
  - others?
Alternatively: Districts / ESUs partner with us to bring a program to area teachers

- ESU 3 School Districts – Primarily Math
- ESU 5 / Beatrice Public Schools – Primarily Math (1st course)
- Lincoln Public Schools - Title I
  - Math in the Middle
  - Primarily Math
- ESU 13 / Scottsbluff Public Schools
  - Strengthening Mathematics Instruction (ITQ grant)
  - Adaptation of three $M^2$ /NMSSI courses
Courses for Math Teachers ONLINE

Beginning in 2011 – consistently offer courses online

- For professional development or for graduate degree
- Combination of online & in-person courses
- Can earn M.A.T. degree 100% online

In Spring 2015

- TEAC 880E: Teaching Mathematics with Technology
- Math 804T: Experimentation, Conjecture & Reasoning
- Math 812T: Geometry for Geometry Teachers
Courses for Math Teachers ONLINE

Math 802T: Functions, Algebra & Geometry
Math 805T: Discrete Mathematics for Teachers
Math 807T: Using Math to Understand Our Word
Math 808T: Concepts of Calculus
Math 810T: Algebra for Algebra Teachers
Math 811T: Functions for High School Teachers
TEAC 800: Inquiry into Teaching & Learning
TEAC 801: Curriculum Inquiry

Coming soon
- TEAC 896: Reasoning & Sensemaking
- Math 806T: Number Theory & Cryptology for Teachers

Clientele is primarily teachers from NE, but out-of-state registrations are growing.

Online classes do not qualify for the summer 20% discount, but offer the benefit of flexible
Courses for Math Teachers ONLINE

Online Course Model: Expectations and benefits consistent with in-person sections

- Group collaboration
  - Discussion boards
  - Group tasks (wikis, blogs, google docs)
  - Internet conferencing (e.g. Google Video chats)

- Sharing multiple solution strategies
  - Create and share screen-casts
  - Educreations, Camtasia Relay, Screencast-o-matic, Explain Everything
Courses for Math Teachers ONLINE

Online Course Model:

- Connections to classroom practice
  - articles, discussions
  - collaborative lesson planning
  - Student misconceptions

- Support
  - Email instructor or classmates
  - Online office hours
Master’s Degree Programs for Teachers of Mathematics

Master of Arts for Teachers (M.A.T.) degrees
- Department of Mathematics
- For secondary or middle level teachers

Master of Arts (M.A.) degree
- Department of Teaching, Learning & Teacher Education
- For PK-12 teachers
## 2005 – 2014 Master’s Degrees Earned

<table>
<thead>
<tr>
<th>FY</th>
<th>A&amp;S/Math</th>
<th>CEHS/TLTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAT</td>
<td>M2 MAT</td>
</tr>
<tr>
<td>FY 2005/07</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>FY 2007/09</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>FY 2009/11</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>FY 2011/13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>FY 2013/14</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Sum 2014</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Graduated</td>
<td>49</td>
<td>115</td>
</tr>
</tbody>
</table>
## Current master’s degree students

<table>
<thead>
<tr>
<th></th>
<th>A&amp;S/Math</th>
<th>CEHS/TLTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAT</td>
<td>M2 MAT</td>
</tr>
<tr>
<td>FY 2014/15 (est)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>FY 2015/16 (est)</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>FY 2016/17 (est)</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>FY 2017/18 (est)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><strong>Active</strong></td>
<td><strong>41</strong></td>
<td><strong>54</strong></td>
</tr>
</tbody>
</table>
If you want to earn a master’s degree...

Search keywords:
mathematics, center, Nebraska

http://scimath.unl.edu/csmce/index.php
If you want to take a course...

But not necessarily work towards a graduate degree

- Check NMSSI / Center website
- Check announcements in NebraskasMATH Newsletters (sign up to receive them on the Center website)

To bring a course to your community:

- Speak with your ESU staff development coordinator

Contact the Center at nebraskamath@unl.edu
If you just want to learn ....

To date our emphasis has been on graduate programs. We recognize not everyone is looking to earn graduate credit.

We need your feedback....
Survey:
Nebraska Teachers Needs Assessment

Wireless Network: UNL-Conference
Conference Username: MathScienceSummit
Conference Password: Innovation2014!

Go to:

http://goo.gl/forms/IUNnUJJ4T9