# Mathematics (PhD): Interdisciplinary Mathematics Concentration

## Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Required Courses</strong></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See &quot;Required Courses by Category&quot; listed below</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Additional Courses</strong> ¹, ²</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;Additional Courses&quot; are approved in conjunction with the academic committee to meet 72 total hours</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td>72</td>
<td></td>
</tr>
<tr>
<td></td>
<td>¹ At least 30 credit hours of MA coursework must be at the graded 500- and 700-level.</td>
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<td></td>
<td>² At least two courses should be from another discipline. One of these courses may be cross-listed with MA.</td>
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</tbody>
</table>

## Required Coursework by Category

Select one course from each of the following categories:

### Continuous Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 513</td>
<td>Introduction To Complex Variables</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 515</td>
<td>Analysis I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 531</td>
<td>Dynamic Systems and Multivariable Control I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 532</td>
<td>Ordinary Differential Equations I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 534</td>
<td>Introduction To Partial Differential Equations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 546</td>
<td>Probability and Stochastic Processes I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 551</td>
<td>Introduction to Topology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 555</td>
<td>Introduction to Manifold Theory</td>
<td>3</td>
<td></td>
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</tbody>
</table>

### Discrete Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 505</td>
<td>Linear Programming</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 520</td>
<td>Linear Algebra</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

## Computational Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 522</td>
<td>Computer Algebra</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 540</td>
<td>Uncertainty Quantification for Physical and Biological Models</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 565</td>
<td>Graph Theory</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA 573</td>
<td>Mathematical Modeling of Physical and Biological Processes I</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Faculty

**Full Professors**

Bojko Nentchev Bakalov  
Alina Emil Chertock  
Moody Ten-Chao Chu  
Jo-Ann D. Cohen  
Patrick Louis Combettes  
Pierre Alain Gremaud  
Mansoor Abbas Haider  
Hoon Hong  
Ilse Ipsen  
Kazufumi Ito  
Naihuan Jing  
Erich L. Kaltofen  
Carl Timothy Kelley  
Arkady Kheyfets  
Irina Aleksandrovna Kogan  
Zhilin Li  
Xiao-Biao Lin  
Alun L. Lloyd  
Sharon R. Lubkin
Negash G. Medhin
Kailash Chandra Misra
Mette Olufsen
Tao Pang
Nathan P. Reading
Jesus Rodriguez
Michael Shearer
Jack William Silverstein
Ralph Conover Smith
Ernest Lester Sitzinger
Seth M. Sullivant
Agnes Szanto
Hien Trong Tran
Semyon Victor Tsynkov
Dmitry Valerievich Zenkov

**Associate Professors**
Lorena Viorica Bociu
Min Jeong Kang
Ricky Ini Liu
Arvind Krishna Saibaba
David Papp
Cynthia Leslie Vinzant

**Assistant Professors**
Martin Helmer
Alen Alexanderian
Mohammad Mehdi Farazmand
Kevin Bryant Flores
P. Ivanisvili
C. Jones
Yerkin Kitabayev
Tye Lidman
P. McGrath
Ryan William Murray
Tien Khai Nguyen

A. Papanicolaou
T. Saksala
Radmila Sazdanovic

**Practice/Research/Teaching Professors**
Elisabeth M. M. Brown
L. Castle
Alina Nicoleta Duca
Molly A. Fenn
Bevin Laurel Maultsby
S. Paul
Brenda B. Williams

**Emeritus Faculty**
John William Bishir
Stephen LaVern Campbell
Richard E. Chandler
H. Charlton
Ethelbert N. Chukwu
Lung-ock Chung
Joseph C. Dunn
Gary Doyle Faulkner
John E. Franke
Ronald O. Fulp
Dennis E. Garoutte
Robert E. Hartwig
Aloysius G. Helminck
Robert H. Martin Jr.
Thomas J. Lada
Joe A. Marlin
Carl Meyer Jr.
Larry Keith Norris
Sandra Paur
Lavon Barry Page
E. Peterson
Mohan Sastri Putcha
N. Rose
Stephen Schecter
Jeffrey Scott Scroggs
James Francis Selgrade
C. Siewert
Robert Silber
Michael F. Singer
R. White

**Adjunct Faculty**

Scott Christopher Batson
Jonathan David Hauenstein
Patricia L. Hersh
John Lavery
Jordan E. Massad
Jessica Loock Matthews
J. Ottesen