# Marquette University
## Learning Assessment Plan

### Mathematics, Statistics, and Computer Sciences

**Program:** Computational Sciences  
**Degree:** Ph.D.  
**Date Submitted:** June 3, 2011

<table>
<thead>
<tr>
<th>Program Learning Outcomes Students will be able to:</th>
<th>Performance Indicators</th>
<th>Measures</th>
<th>Use of the Information</th>
</tr>
</thead>
</table>
| 1. Modify, adapt or construct methods, techniques and software for addressing significant problems in the field of computational science. | Uses appropriate theory or techniques to solve problems. (Measures [C], [D], [E])  
Demonstrates sound practice and mastery of appropriate tools. ([B], [C])  
Demonstrates integration of theory and computation. ([D], [E]) | Measure [B]: The MSCS Graduate Committee (GC) will assess performance on the Comprehensive Examination.  
Measure [C]: Student's Doctoral Committee will assess performance on the Doctoral Qualifying Examination.  
Measure [D]: Student's Doctoral Committee will assess performance on the Public Defense of the Dissertation.  
Measure [E]: Student's Doctoral Committee will assess the dissertation.  
Rubrics for each of the measures [B] through [E] will be Likert scale response instruments developed for each of the performance indicators by the GC. | The MSCS Graduate Committee (GC) Chair will be responsible for compiling assessment data.  
The GC will make a report to the Executive Committee (EC) each year, based on the data.  
The EC will identify possible areas for action and GC consideration. |
| 2. Conduct original research that results in a major written scholarly work in the computational sciences. | Clearly states a research question and its importance.  
<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Description</th>
<th>Employing Measures</th>
<th>Learning Outcome 1</th>
</tr>
</thead>
</table>
| 3. Synthesize research publications in their area of specialization. | Places the original results within the landscape of the technical literature in their research field.  
All or part of the written scholarly work would be acceptable for publication by a major publication venue in the research field. | Both Employing Measures [B] (Comprehensive Exam), [C] (Qualifying Exam), and [E] (Dissertation.) | As for Learning Outcome 1. |
| 4. Demonstrate communication skills appropriate for presenting research to peers, teaching college-level courses, or collaborating with interdisciplinary colleagues. | Oral presentations at levels appropriate for a variety of audiences. ([A], [D])  
Creates and executes a lesson plan for a college-level course audience. ([A]) | Employing Measure [D] (Public Defense).  
Measure [A]: Student presentations of material in the required core Seminar on Research Methods / Professional Development will be assessed by a seminar leader.  
Measure [F]: Teaching Assistants' presentation of material in the Teaching and Learning Seminar will be assessed by a seminar leader.  
Interdisciplinary collaboration will be assessed by Measures [D] (Public Defense) and [E] (Dissertation).  
Rubrics for measures [A] and [F] will be Likert scale response instruments developed for each of the performance indicators by the GC. | As for Learning Outcome 1. |