<table>
<thead>
<tr>
<th>Outcome</th>
<th>Assessment Method</th>
</tr>
</thead>
</table>
| SLO1: Students will demonstrate an advanced level of knowledge and ability in using software development models and techniques. (CSIS 602) | **Measure 1:** Grade on a substantial software development project consisting of multiple deliverables covering both planning and execution. Each deliverable is evaluated independently.  
**Performance Target:** For each measure, acceptable target achievement (short-term goal) – For each deliverable, grade of A- or better; ideal target (long-term goal) - 90% of projects with A average  
**Measure 2:** Exam questions related to knowledge of software development models.  
**Performance Target:** For each measure, acceptable target achievement (short-term goal) – For each deliverable, 80% of class will earn a grade of 90% or better; ideal target (long-term goal) - 90% of students will earn a grade of 90% or better |
| SLO2: Students will demonstrate the ability to critically analyze research in the computer science literature. (Outcome assess in 602) | **Measure 1:** Paper or Presentation – Analysis of research article in CSCI 602.  
**Measure 2:** There is not sufficient time for a second measure of this outcome in this course. Paper / presentations will be assessed using a detailed rubric.  
**Performance Target:** Acceptable target achievement (short-term goal) – Average writing/presentation grade of A  
**Measure 2:** Presentations of software development project in CSCI 602  
**Performance Target:** No target set. |
| SLO3: Students will demonstrate the ability to function effectively on teams to accomplish a common goal. | **Measure 1:** Summative assessment of teamwork on software development project at various points during the semester, including peer evaluations.  
**Performance Target:** Acceptable target achievement (short-term goal) – average rating of 4/5+ on team skills  
**Measure 2:** Presentations of software development project in CSCI 602  
**Performance Target:** No target set. |
| Students will understand the programming models underlying different languages, and make informed design choices in languages supporting multiple complementary approaches. (Assessed in CSIS 618) | **Measure 1:** Students complete five programming assignments in different languages using the imperative programming paradigm or the declarative programming paradigm and present the results which are graded based on the following rubric (1-5 points for each of the following 16 questions): How well did the language solve the problems? Discuss the benefits and drawbacks of each major abstraction/characteristic the language presents. Is the language Procedural, OO, Function, and/or Logic? What type of binding does the language employ? What is the language's type system (Strong vs. Dynamic)? Does the language utilize references or pointers? Is the language mainly compiled or interpreted? Does the language support garbage collection? How readable is the language (opinion)? How portable is the language? Brevity: Are "complex" tasks completed in a small amount of code? Does the language support error checking? How modular is the language? How well does the language support concurrency? Discuss how the abstractions/characteristic presented by the language impede and/or enable satisfactory performance. Be sure to discuss whether any performance penalties for language abstractions represent worthwhile trade-offs. Discuss how well the language supports large programming projects involving multiple developers (What development tools are available?)  
**Performance Target:** Score 60 points for each assignment which is equivalent to a B. A median grade of 'B' on the aggregate, unweighted mean of these five assignments.  
**Measure 2:** An exam question which requires students to demonstrate their knowledge of different programming models/paradigms is given  
**Performance Target:** 80% of students will earn at a B or better on this question |
## Computer Information Sciences MS – Graduate School  
(continues)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Assessment Method</th>
</tr>
</thead>
</table>
| SLO5: Students identify the Chomsky Hierarchy and relate the various levels to both formal and programming language concepts as well as limits for computation. (Assessed in CSIS 601 or 618) | **Measure 1:** Test questions involving languages at each level of the hierarchy are assigned and graded.  
**Measure 2:** Final exam questions involving languages at each level of the hierarchy are included.  
**Performance Target:** 80% of the students will earn a B or better on each assessment. |
| SLO6: Student will be able to design and implement client/server network applications using BSD (define acronyms) sockets and API. (Assessed in CSIS 632) | **Measure 1:** A programming projects is assigned. Students are required to submit source files and script files with sample runs.  
**Measure 2:** A programming projects is assigned. Students are required to submit source files and script files with sample runs.  
**Measure 3:** A programming projects is assigned. Students are required to submit source files and script files with sample runs. Ideal  
**Performance Target:** Target (longterm goal): Average score will be B or better on programming projects Implementation Plan (timeline): Assessed in CSCI 632 |
| SLO7: Students will be able to analyze different cryptographic techniques. (CSIS 631) | **Measure 1:** Cryptography homework 1. (see attached)  
**Measure 2:** Cryptography homework 2. (see attached)  
**Measure 3:** Cryptography homework 2. (see attached)  
**Performance Target:** 90% of students will score a grade of 90% or above. |
| SLO8: Students will demonstrate an ability to evaluate alternative designs according to principles of good architecture and design. (CSIS 656) | **Measure 1:** Team Project Details/Description: Students are required to complete a substantial software development project consisting of multiple deliverables, with emphasis on architecture and design. The ability to see architectural alternatives and make architectural decisions in the Software Design Document. Acceptable Target (shortterm goal): 100% of teams will score 80% or higher on MetaArchitecture Document. Ideal Target (longterm goal): 100% of teams will score 90% or higher on MetaArchitecture Document  
**Measure 2:** A question requiring students to discuss alternative architectures is included on the final exam.  
**Performance Target:** Acceptable Target (short-term goal): 100% of students will score 80% or higher on the three questions stated above. Ideal Target (long-term goal): 100% of students will score 90% or higher on the three questions stated above. |
| SLO9: Students will demonstrate an ability to work as a team to engineer working software. (CSIS 602) | **Measure 1:** Summative assessment of teamwork on software development project at various points during the semester, including peer evaluations.  
**Performance Target:** Acceptable target achievement (short-term goal) – average rating of 4/5+ on team skills  
**Measure 2:** Presentations of software development project in CSCI 602  
**Performance Target:** No target set. |
### Outcome Assessment Method

**SLO10:** Students will be able to analyze different cryptographic techniques. Assignments from the course, CSIS 631, will be used and measured.

- **Measure 1:** Cryptography homework 3. (see attached)
- **Measure 2:** Cryptography homework 4. (see attached)
- **Measure 3:** Cryptography homework 5. (see attached)

**Performance Target:** 90% of students will score a grade of 90% or above.

**SLO11?**

**Outcome 1:** Students will demonstrate an ability to analyze rules for firewalls for controlling network traffic. Outcome 2: Students will demonstrate the ability to defend computer network by devising appropriate firewall rules and intrusion detection system alerts.

The above outcomes will be assessed in CSIS 641. Outcome 1 is assessed by the following measures:

- **Measure 1:** Homework assignments on writing firewall rules and testing them.
- **Measure 2:** Exam Question on how to write firewall rules for a specific topology.

**Performance Target:** Acceptable Target (short-term goal): 90% of the class will be able to write correct firewall rules. Ideal Target (long-term goal): 100% of the class will be able to write the correct firewall rules. Outcome 2 is assessed by the following measures:

- **Measure 1:** Homework assignment on how to setup and use intrusion detection systems.
- **Measure 2:** Test question on intrusion detection systems.

**Performance Target:** Acceptable Target (short-term goal): 90% of the class will be able to write correct intrusion detection rules. Ideal Target (long-term goal): 100% of the class will be able to write correct intrusion detection rules.