| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate proficiency in foundation areas of Computer Science including discrete structures, logic, formal languages and automata.
 | 1. **Discrete Structures and Logic**

Assessment Activity: Course-embedded assessment via examination questions in Discrete Mathematics (MAD 2104). (See Appendix D).Sample: All students completing MAD 2104 in one section per year.Minimum Criteria for Success: Each multiple choice question will be answered correctly by at least 75% of students.1. **Formal Languages and Automata**

Assessment Activity: Course-embedded assessment via examination questions in Theory of Algorithms (MAD 3512). (See Appendix D).Sample: All students completing MAD 3512 in one section per year.Minimum Criterion for Success: Each multiple choice question will be answered correctly by at least 75% of students. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.

*(continued on following page)* | 1. **Data Structures and Algorithms**

Assessment Activity:Course-embedded assessment via examination questions in Data Structures (COP 3530). (See Appendix D).Sample:All students completing COP 3530 in one section per year.Minimum Criterion for Success:Each multiple choice question will be answered correctly by at least 75% of students.1. **Concepts of Programming Languages**

Assessment Activity:Course-embedded assessment via examination questions in Programming Languages (COP 4555). (See Appendix D).Sample:All students completing COP 4555 in one section per year.Minimum Criterion for Success:Each multiple choice question will be answered correctly by at least 75% of students. |  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| (Outcome (b) continued).*(continued on following page)* | 1. **Computer Systems**

Assessment Activity: Course-embedded assessment via examination questions in Database Management (COP 4710). (See Appendix D).Sample:All students completing COP 4710 in one section per year.Minimum Criterion for Success:Each multiple choice question will be answered correctly by at least 75% of students.Assessment Activity:Course-embedded assessment of project artifacts in Operating Systems (COP 4610) via the *Computer Systems Operating Systems* rubric. (See Appendix B).Sample:All completed COP 4610 projects in one semester per year.Minimum Criterion for Success:At least 75% of projects assessed will be scored at 75% (9 of 12) or better.Assessment Activity: Course-embedded assessment of project artifacts in  Programming III (COP 4338) via the *Computer Systems* *Multithreading* rubric. (See Appendix B).Sample:All completed COP 4338 projects in one semester per year.Minimum Criterion for Success:At least 75% of projects assessed will be scored at 75% (9 of 12) or better. |  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| . (Outcome (b) continued) | 1. **Computer Science Core Areas**

Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric. (See Appendix A).Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate proficiency in problem solving and application of software engineering techniques.
 | Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric.(See Appendix A).Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate mastery of at least one modern programming language and proficiency in at least one other.

*(continued on following page)* | 1. **Mastery of at least one modern programming language**

Assessment ActivityAssessment of program artifacts in Data Structures (COP 3530). Sample is rated on each of several programming skill units via the *Programming Skill Assessment* rubrics.(See Appendix B).SampleSelected programming assignments completed by all students in one section of COP 3530, per year.Minimum Criterion for SuccessOn each programming skill unit, at least 75% of the sample will be rated at 75% (6 of 8, or 9 of 12), or better.Assessment Activity: Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric. (See Appendix A). Sample: All completed CIS-4911 projects. Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| . (Outcome (d) continued) | 1. **Proficiency in at least one other modern programming language**

Assessment ActivityAssessment of program artifacts in Programming III (COP 4338) via the *C Language Proficiency Assessment* rubric. (See Appendix B).SampleSelected programming assignments completed by all students in one section of COP 4338, per year.Minimum Criteria for Success75% of the sample will be rated at least 75%. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate understanding of the social and ethical concerns of the practicing computer scientist.
 | Assessment ActivityAssessment of project artifacts in Professional Ethics and Social Issues in Computing (CGS-3092) via the *Ethics and Social Issues Assessment* rubric. (See Appendix C).SampleAt least 20 completed projects from one semester, per year, each including a written paper and associated oral presentation.Minimum Criteria for SuccessA least 75% of the projects will be rated at least 75% (6 of 8).Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric.(See Appendix A).Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate the ability to work cooperatively in teams.
 | Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric (Appendix A). The principal component of this assessment is the *Teamwork Peer Assessment Rubric* completed by each CIS 4911 student.(See Appendix A).Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Demonstrate effective communication skills.
 | Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric (Appendix A). The principal component of this assessment is observation of the final oral presentations. The *Oral Presentation Assessment* rubric is incorporated into the *Senior Project Outcomes Assessment* rubric. (See Appendix A).Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

| **Program Outcome****(Stated in Measurable Terms)** | **Assessment Methods** | Results **(Data summary and analysis)** |
| --- | --- | --- |
| 1. Have experience with contemporary environments and tools necessary for the practice of computing.
 | Assessment Activity:Assessment of project artifacts in Senior Project (CIS-4911) via the *Senior Project Outcomes Assessment* rubric (Appendix A).Each CIS 4911 project team compiles a list of the tools and IDE’s employed in completing their project.Sample:All completed CIS-4911 projects.Minimum Criterion for Success:At least 75% of projects will be rated at either 4 or 5 for this outcome. |  |
| **Use of Results for Improving Program** |
|  |

**Summarize the use of results for continuous improvement of the educational program:**

**Appendices to this rubric:**

Appendix **A**: CIS 4911 Senior Project Rubrics

A.1 Senior Project Outcomes Assessment Rubric – all Outcomes

A.2 Teamwork Peer Assessment Rubric – Outcome (f)

A.3 Oral Presentation Assessment Rubric *(incorporated into A.1)* – Outcome (g)

Appendix **B**: Programming Artifact Rubrics

B.1.1 CS Core: Computer Systems - Multithreading (COP 4338) - Outcome (b)

B.1.2 CS Core: Computer Systems - Operating Systems (COP 4610) - Outcome (b)

B.2.1 Programming Mastery: Abstraction/Java (COP 3530) - Outcome (d)

B.2.2 Programming Mastery: Exceptions/Java (COP 3530) - Outcome (d)

B.2.3 Programming Mastery: Inheritance/Java (COP 3530) - Outcome (d)

B.2.4 Programming Mastery: Linked Structures/Java (COP 3530) - Outcome (d)

B.2.5 Programming Mastery: Recursion/Java (COP 3530) - Outcome (d)

B.2.6 Programming Mastery: Libraries / Java API (COP 3530) - Outcome (d)

B.2.7 Programming Proficiency: C Language (COP 4338) - Outcome (d)

Appendix **C**: Ethics & Social Issues Rubric (CGS 3092)

C.1 Ethics and Social Issues Assessment Rubric – Outcome (e)

Appendix **D**: Course-Embedded Multiple-Choice Question Pools

D.1 Discrete Mathematics (MAD-2104) - Outcome (a)

D.2 Formal Languages and Automata (MAD-3512) - Outcome (a)

D.3 Data Structures and Algorithms (COP-3530) - Outcome (b)

D.4 Concepts of Programming Languages (COP-4555) - Outcome (b)

D.5 Databases (COP-4710) - Outcome (b)