Assessment Plan for Master in Computer Science

# Program-Level Outcomes

The program-level outcomes (PLOs) for Computer Science are:

1. Demonstrate conceptual understanding of the cutting-edge technology in computer science.
2. Understand the theoretical foundations of computing.
3. Develop software to solve real-world complicated problems and analyze its time and space complexity
4. Demonstrate the ability to solve problems, use standard software design techniques to create efficient application system with easy-to-understand source code, demonstrate the ability to communicate effectively to work as a team.
5. Demonstrate a broad knowledge of Computer Science which includes Database, Computer Graphics, Artificial Intelligence, Cyber Security, Operation System
6. Demonstrate knowledge and understanding of professional ethics and responsible behavior.

# PLOTaxonomy

A classification of the PLOs according to Anderson's and Krauthwohl's revision of Bloom's taxonomy:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Remember | Understand | Apply | Analyze | Evaluate | Create |
| Factual | 3,4 | 3,4 | 3,4 | 3 | 3 | 4 |
| Conceptual | 1,2 | 1,2 | 1 |  |  |  |
| Procedural | 4,5 | 4,5 | 4.5 | 4,5 | 4,5 | 4,5 |
| Metacognitive | 6 | 6 |  |  |  |  |

# Curriculum Map

I = Introducing, D = Developing, M = Mastering

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PLO |  | |  | | | Required Courses | | | | | | | | |
| 510 | 515 | | 530 | 540 | | 605 | 609 | 610 | 611 | 612 | 613 | 615 | 645 |
| 1 | M | D | | M | D | | M | M | I | D | D | I | D | D |
| 2 | M | D | | M |  | |  |  |  |  | I | I | D | D |
| 3 | M |  | | M | D | | M | D |  | D | D | I | D | M |
| 4 | M |  | | M | D | | M | M |  | D | D | I | M | M |
| 5 | M |  | | M |  | |  |  | D | D |  | D | M | M |
| 6 | I |  | | I | I | | I | I | I | D | I | I | I | I |

# Timeline

|  |  |  |  |
| --- | --- | --- | --- |
| Course | Tools | PLOs | Semester |
| CS 605 | Project(s) | 1,3, 4 | Fall or Spring |
| CS 530 | Project(s) | 1,4,3 | Fall or Spring |
| CS 510 | Project(s) | 3,4,5 | Fall or Spring |
| All students | Portfolio | 3,4,5,6 | Last semester |
| Thesis option only | Thesis | 2,4,5,6 | Last semester |

# Assessment Instruments

The computer science program will be assessed by assignments/projects in CS 605, CS 530, and CS 510, plus a portfolio consisting of student projects from the major courses (submitted in the student’s last semester). For students completing the thesis option, their thesis will also be used as an assessment instrument.

The portfolio will assess PLOs 3, 4, 5, and 6. Materials for the portfolio will come from the core and elective courses completed. A committee will determine the appropriate PLO ratings. The basic ratings for PLO 3: 1= not real world problem solved, 2 = simplified real world problem solved, 3 = real world problem solved, 4 = commercial possibility.

The thesis will assess PLOs 2, 4, 5, and 6. The thesis committee will determine the appropriate PLO ratings.

The tests will be reviewed at the end of each program review cycle, but may be reviewed more frequently.

# Data Collection

After the tests are administered, the answer sheets will be given to the department's assessment coordinator for entry into the database. For the paper and presentation and the portfolio, the ratings determined by the committee will be given to the assessment coordinator for entry into the database.

# Data Analysis

Data analysis will be done first by the committee and next by the entire department

and will partly consist of considering students' performance on the PLOs both at the individual assessment points and throughout the program. More in-depth analysis of the data for each PLO will be done according to this four-year schedule (beginning Spring 2015):

|  |  |
| --- | --- |
| Year | PLOs |
| 1 | 2, 4 |
| 2 | 3, 5 |
| 3 | 1, 6 |
| 4 | Meta-analysis and resolution of problems |

The data distributions that will be used for analysis are:

1. Number of students choosing each item on each question
2. Average overall rating for each PLO
3. Number of students in each category for each PLO

The standard analysis questions are:

1. Has the distribution of students shifted from the lower categories to the higher categories as students progress through the programs?
2. At a particular level, does the distribution match expectations?

The basic expectations are:

* Initial Assessment -- Majority of students are ``inchoate'' or ``emerging''.
* Second Assessment -- Majority of students are ``emerging'' with some ``developed''.
* Final Assessment -- Majority of students are ``developed'' or ``mastered''.

1. Instrument Analysis

Curriculum changes will be made if the analyses indicate they are needed.