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Spring 2022 Core Curriculum Assessment Report

This report should be a collaborative effort involving the CCAC, the applicable subcommittee of the CCAC, the faculty teaching the applicable courses, and the UGSC.	Core Curriculum Requirement: Computer Science
	Responsible Party: Core Curriculum Assessment Committee (CCAC)
	CS subcommittee of the CCAC: Matthew Bauer, Yuri Mansury, Ray Trygstad, Fred Weening
	Final Approval: Undergraduate Studies Committee (UGSC)

1. CORE CURRICULUM LEARNING GOALS/OUTCOMES EVALUATED IN THIS ASSESSMENT CYCLE: List the core curriculum learning goals/outcomes that were evaluated in this assessment cycle.

Applicable Core Curriculum Learning Goal:
Think critically, viewing problems as opportunities for innovation, able to

- Appropriately employ multiple quantitative and qualitative methods of analysis and evaluation.
- Employ the best available technology to achieve solutions.

Computing Learning Outcomes:
1. use computation to represent problems (i.e. abstraction) and implement solutions using an appropriate programming environment.
2. use computation to demonstrate algorithmic thinking.
3. utilize computational applications for modeling, simulation or visualization.
4. explain the limitations, assumptions, and trade-offs inherent in computing models.
5. apply a software development process (specification/requirements, design, programming/documentation, debugging/testing).

2. ASSESSMENT METHODOLOGY: Use the table below to describe your assessment methodology. Do not simply reference the assessment plan for this program. *Copy the table for each learning goal assessed in the last academic year.*

First Learning Goal	
Learning Goal Assessed	All learning outcomes assessed with the same methodology
Sample size	Random subset of students enrolled in the course
Semester(s) in which artifacts were collected	Spring 2022
Name of rubric used to evaluate student artifacts	Assessing student artifacts matching each learning outcome on a (0, 0.5, 1, 1.5, 2) point scale. 1.5 and above is satisfactory. Depending on the type of student artifact, a different assessment rubric is used.

<table>
<tr><td></td><td colspan="2">

multiple choice

2.0 - 85% or higher on the questions matching the outcome
1.5 - 70% to 84% on the questions matching the outcome
1.0 - 55% to 69% on the questions matching the outcome
0.5 - 40% to 59% on the questions matching the outcome
0.0 - below 40% on the questions matching the outcome

multiple choice with partial credit for explanations, or short answer or coding

2.0 - demonstrates strong achievement of outcome
1.5 - demonstrates achievement of outcome
1.0 - achievement of outcome not demonstrated to a satisfactory level
0.0 - no answer

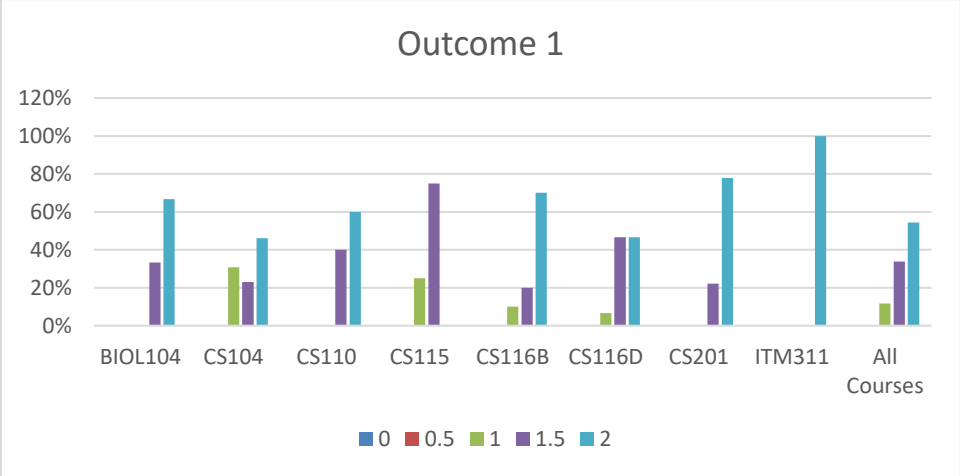
lab assignment or project

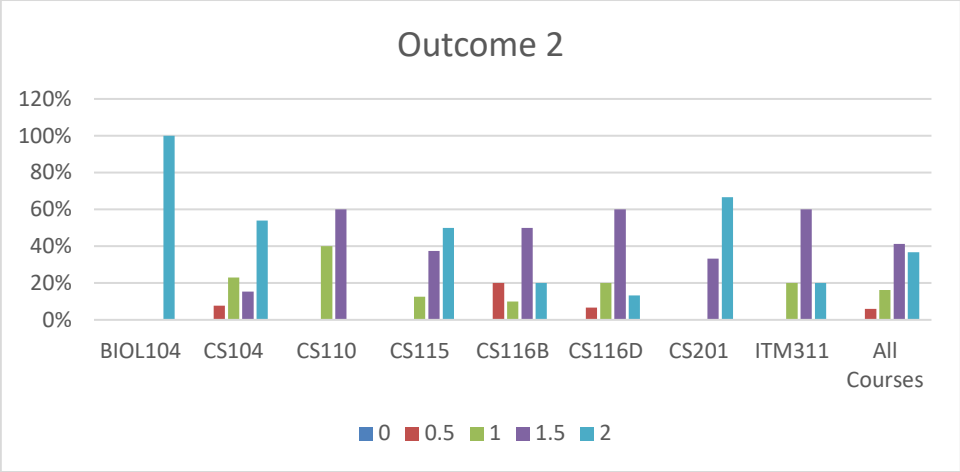
2.0 - 90% or higher or A
1.5 - 70 to 89% or B/C
1.0 - 55% to 69% or D
0.0 - below 55% or E

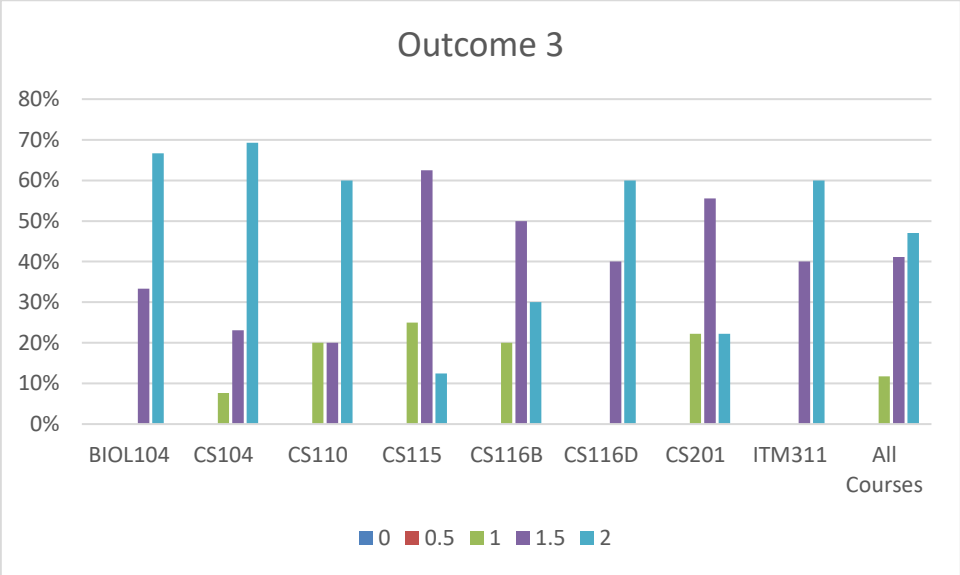
Threshold: 70% of a random student sample tested within a one-year window should achieve 1.5 points or greater (on a 0-2 point scale).
</td></tr>
<tr><td rowspan="2">Artifact source</td><td>Course(s) and Instructor(s):
BIOL104 Pombert
CS104 Hanrath
CS110 Bauer
CS115 Hanrath
CS116 Bauer
CS116 Dzikowski
CS201 Boliske
ARCH125 not taught in S22</td><td>Assignment(s):
See CSCoreAssessmentS22.xlsx</td></tr>
<tr><td colspan="2">Other (specify):</td></tr>
<tr><td>Month/Year of Assessment/Evaluation</td><td colspan="2">May 2022</td></tr>
<tr><td>Names & Titles of the evaluators</td><td colspan="2">Matthew Bauer, Senior Lecturer</td></tr>
</table>

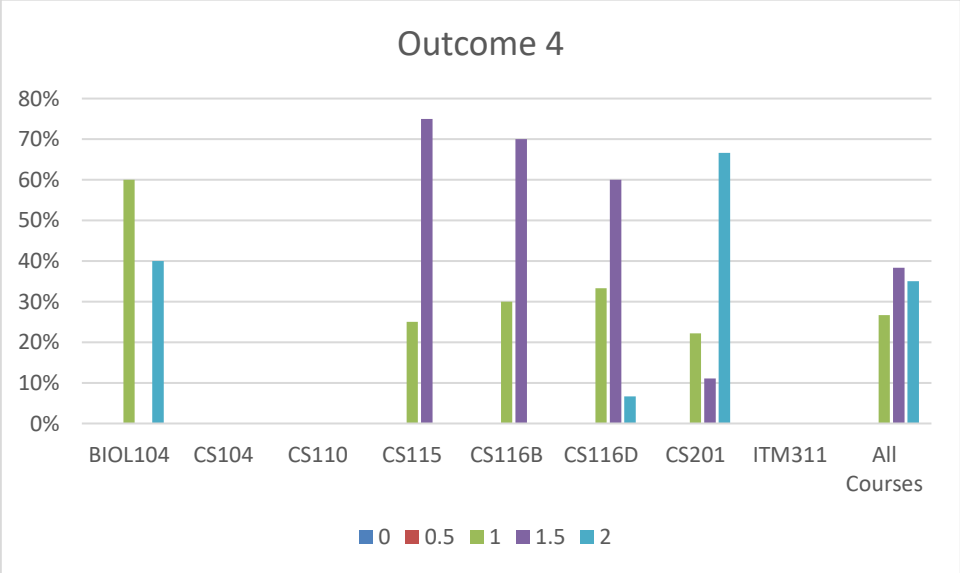
3. ASSESSMENT RESULTS: Insert a table or graph summarizing the results. Results should be presented by a performance indicator for each learning goal. If the data were collected in Blackboard Outcomes, the IIT Assessment Office will provide the information to insert into this section of the report (see samples below).

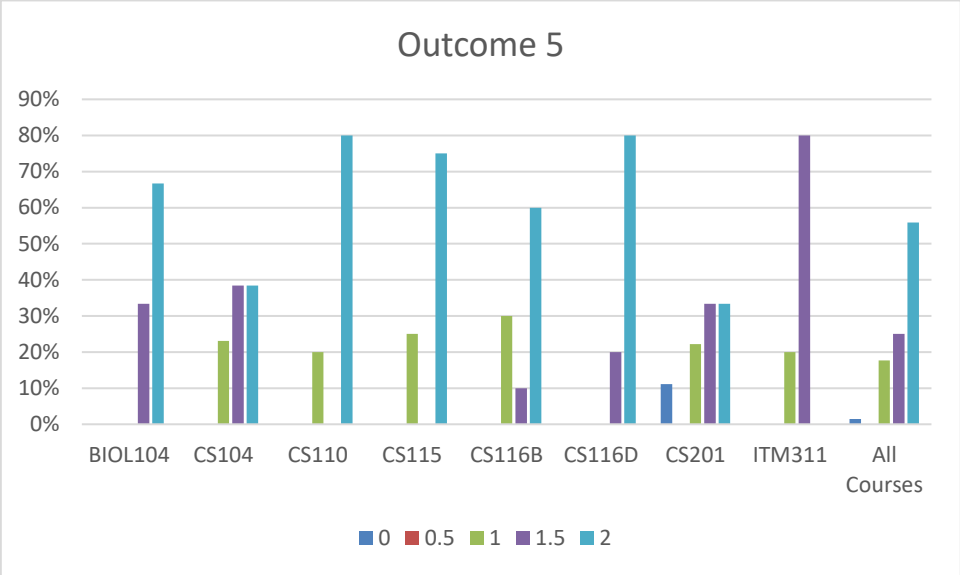
Threshold: 70% of a random student sample tested should achieve 1.5 points or greater (on a 0-2 point scale). (Students sample size/course enrollment)	BIOL104 (5/3)	CS104 (68/13)	CS110 (20/5)	CS115 (42/8)	CS116B (42/10)	CS116D (46/15)	CS201 (30/ 10)	ITM311 (39/5)	**All Courses (292/69)**
1. use computation to represent problems (i.e. abstraction) and implement solutions using an appropriate programming environment.	100%	69%	100%	75%	90%	93%	90%	100%	**88%**
2. use computation to demonstrate algorithmic thinking.	100%	69%	60%	88%	70%	73%	90%	80%	**78%**
3. utilize computational applications for modeling, simulation or visualization.	100%	92%	80%	75%	80%	100%	70%	80%	**88%**
4. explain the limitations, assumptions, and trade-offs inherent in computing models.		92%	40%	75%	70%	67%	70%		**73%**
5. apply a software development process (specification/requirements, design, programming/documentation, debugging/testing).	100%	77%	80%	75%	70%	100%	60%	80%	**81%**




Outcome 2
120%
100%
80%
60%
40%
20%
0%
BIOL104
CS104
CS110
CS115
CS116B
CS116D
CS201
ITM311
All Courses
0
0.5
1
1.5
2


Outcome 3
80%
70%
60%
50%
40%
30%
20%
10%
0%
BIOL104
CS104
CS110
CS115
CS116B
CS116D
CS201
ITM311
All Courses
0
0.5
1
1.5
2


Outcome 4
80%
70%
60%
50%
40%
30%
20%
10%
0%
BIOL104
CS104
CS110
CS115
CS116B
CS116D
CS201
ITM311
All Courses
0
0.5
1
1.5
2



4. DISCUSSION OF RESULTS: Use this section to describe the key findings and program performance issues revealed in the interpretation of the data. *The evaluators should provide input into this section of the report.*

Considering all courses together, all outcomes passed the 70% assessment threshold.

Considering individual courses. Courses/Outcomes not passing the 70% assessment threshold:
Outcome 1

- CS104 (69%) – borderline, just note to instructors needed

Outcome 2

- CS104 (69%) – borderline, just note to instructors needed

Outcome 3 – 70% threshold exceeded in all courses

Outcome 4 – This outcome is already undergoing review by the CS dept for possible removal and replacement with a less CS specific outcome on data/analysis. The discussion is centered around the question if non-CS majors need an understanding of computational limitations that CS majors receive (rounding and growth in runtime).

- CS110 (40%)
- BIOL104 and ITM311 had no assignments in support of this outcome

Outcome 5

- CS201 (60%) – Student performance on the capstone project in CS201 was affected by the adjunct faculty not being available the last 4 weeks of the term due to a job change. TA assistance was not sufficient for all students to succeed. The issue was not a content

of the course issue. CS dept is aware they have to do a better job in supporting students if an instructor becomes unavailable.

Discussion of Assessment Distribution

- Outcome 1 distribution was fine across all courses
- Outcome 2 distribution was fine across all courses except CS116, which was skewed lower, just note to instructors needed.
- Outcome 3 distribution was fine across all courses
- Outcome 4 is being revisited for possible replacement, as mentioned above
- Outcome 5 distribution was fine across all courses

5. IMPROVEMENT PLANS: Use this section to provide specific information about what elements of the curriculum may need to be modified in order to improve the program's performance. *This section should be completed and signed by the UGAA Chair.*

Specific modification to courses or assignments or curriculum.	Name and title of person responsible for implementing the changes.	Date by which changes will be in place.	Intended result
Outcome 4 review/replacement	UGCS in consultation with CS dept, Matthew Bauer, Senior Lecturer	Fall 2023	More broadly applicable data science related outcome that supports IIT and College of Computing mission.
Review CS core LOs, in particular LO4, but all LOs as well, to determine if these specific LOs are appropriate as core IIT LOs (i.e. not more appropriate as program LOs)	UGSC, in consultation with disciplinary experts in relevant AUs	Next CS assessment cycle, 2025 at earliest	A set of LOs that the IIT faculty support and are offered implemented in all CS designated classes

UGAA Approval:

UGAA Chair Name Signature Date

6. ASSESSMENT PROCESS RECOMMENDATIONS: Use this section to provide feedback on the assessment process itself.

Minimum sample size should be around 10 to get a better idea on student achievement of outcomes.

The next computer science core curriculum assessment should be done in a Fall term so ARCH125 and CS105 can be included.

Discuss in detail with each instructors at least 2-3 months before the assessment term the LOs expected, and outcomes that will be assessed. Have instructors document which student artifacts (assignments) will be used for assessment. Also discuss the rubric that will be used for each artifact.