## ASSESSMENT REPORT TEMPLATE  
\*\*PHD in Computer Science and Software Engineering\*\*  
  
\*\*Student Learning Outcomes\*\*  
  
\*\*Specificity of Outcomes\*\*   
  
[Please provide a list of program level student learning outcomes. Student learning outcomes articulate the knowledge, skills, and abilities that students are expected to achieve as a result of completing the academic degree program.]  
  
\*\*Comprehensive Outcomes\*\*  
  
[Please provide a brief narrative stating whether or not the list of student learning outcomes is comprehensive (i.e., the student learning outcomes accurately reflect the current scope of the program). Consider also providing a rationale for the degree/nature of comprehensiveness (e.g., student learning outcomes are aligned with disciplinary standards).]   
  
\*\*Communicating Student Learning Outcomes\*\*  
  
[Please provide a brief statement describing if and how the list of student learning outcomes is shared with others (e.g., paper copies are shared with program faculty at a meeting, the outcomes are posted to the departmental website).]  
  
\*\*Curriculum Map\*\*  
  
\*\*Curriculum Map\*\*  
  
[Please provide a curriculum map that visually represents the alignment between student learning outcomes and required courses/experiences.]  
  
The curriculum map, illustrating the alignment of required courses/experiences with the program's student learning outcomes, is presented below:  
  
| Courses | SLO1 | SLO2 | SLO3 | SLO4 |  
|--------------------------------------------------|------|------|------|------|  
| 6000 Web Application Development | 0.00 | 1.00 | 0.00 | 1.00 |  
| 6120 Database Systems I (Fall/Spring) | 1.00 | 1.00 | 0.33 | 0.66 |  
| 6130 Data Mining | 1.00 | 0.33 | 0.66 | 1.00 |  
| 6210 Compiler Construction | 0.66 | 1.00 | 0.33 | 0.66 |  
| 6320 Design and Analysis of Computer Networks | 0.66 | 0.66 | 1.00 | 0.00 |  
| 6340 Network Quality Assurance and Simulation | 0.33 | 0.66 | 1.00 | 0.00 |  
| 6350 Digital Forensics | 0.33 | 0.00 | 0.00 | 0.00 |  
| 6360 Wireless and Mobile Networks | 1.00 | 0.66 | 1.00 | 0.66 |  
| 6370 Computer and Network Security | 0.33 | 0.00 | 1.00 | 0.00 |  
| 6400 Foundation of Computer Graphics | 0.00 | 0.66 | 1.00 | 0.00 |  
| 6520 Network and Operating Sys Admin | 0.00 | 0.00 | 1.00 | 0.00 |  
| 6530 Cloud Computing | 0.00 | 1.00 | 0.33 | 0.00 |  
| 6600 Artificial Intelligence | 0.66 | 0.00 | 1.00 | 0.00 |  
| 6620 User Interface Design and Evaluation | 0.00 | 0.66 | 1.00 | 0.66 |  
| 6630 Machine Learning | 0.66 | 0.66 | 0.66 | 0.66 |  
| 6660 Intro to Evolutionary Comp | 0.66 | 0.66 | 1.00 | 0.66 |  
| 6700 Software Process | 0.00 | 1.00 | 0.00 | 0.00 |  
| 6710 Software Quality Assurance | 0.66 | 1.00 | 0.66 | 1.00 |  
| ... | ... | ... | ... | ... |  
  
\*\*Measurement\*\*  
\*\*Outcome-Measure Alignment\*\*   
  
[Please provide a description of the assessment measures, noting how they were chosen/developed to align with the student learning outcomes.]  
  
\*\*Direct Measures\*\*  
  
[Please consider indicating which assessments are direct measures of student learning (e.g., exams, rubric scores).]  
  
\*\*Data Collection Methods\*\*  
  
[Please provide a description of the assessment data collection process (i.e., information on how data were collected, who provided data, and the pertinent methodological details such as rating/scoring design).]  
  
\*\*Results\*\*  
  
\*\*Reporting Results\*\*  
  
[Please provide assessment results aligned with the student learning outcomes. If historical assessment data is available, consider providing this data to reveal any student learning trends.]  
  
The assessment results, based on course grades, are presented below:  
  
| Course\_name | Professor | A | B | C | D | F | Score | Total\_students |  
|----------------------------------|--------------------------|----|----|----|----|----|-------|----------------|  
| COMP 6000 | Marghitu | 4 | 0 | 0 | 0 | 0 | 100,0 | 4 |  
| COMP 6120 | Ku (Spring/Fall) | 5 | 0 | 0 | 0 | 0 | 100,0 | 5 |  
| COMP 6210 | Mulder | 1 | 0 | 0 | 0 | 0 | 100,0 | 1 |  
| COMP 6130 | Zhou | 3 | 0 | 0 | 0 | 0 | 100,0 | 3 |  
| COMP 6320 | Shu | 3 | 2 | 0 | 0 | 0 | 90,0 | 5 |  
| ... | ... | ... | ... | ... | ... | ... | ... | ... |  
| COMP 7990/8990 | Qualtrics Measure 1 | 45 | 13 | 4 | 0 | 0 | 91,5 | 62 |  
| COMP 7990/8990 | Qualtrics Measure 2 | 39 | 18 | 4 | 0 | 0 | 89,3 | 61 |  
| COMP 7990/8990 | Qualtrics Measure 3 | 30 | 28 | 4 | 0 | 0 | 85,5 | 62 |  
| ... | ... | ... | ... | ... | ... | ... | ... | ... |  
| COMP 7990/8990 | Qualtrics Measure 9 | 29 | 29 | 4 | 0 | 0 | 85,1 | 62 |  
  
\*\*Interpretation:\*\*   
  
The results suggest a positive trend in student learning, with most courses showing high average scores (above 80), indicating Proficient to Exemplary performance. However, certain courses, particularly those with lower enrollment, need further examination to understand the contributing factors and potential for improvement. It is noteworthy that Qualtrics Measures, representing potential research and thesis assessments, present a consistent range between 85 and 92, indicating a Proficient level of achievement across various aspects of research and thesis development.  
  
\*\*Communicating Results\*\*  
  
[Please provide a very brief narrative describing with whom the results are shared (e.g., all program faculty).]  
  
The final SLO scores, derived from course performance and assessment measures, are presented below:  
  
| SLOs | Score | Ratings |  
|-------|-------|--------------|  
| SLO1 | 91.9 | Exemplary |  
| SLO2 | 93.4 | Exemplary |  
| SLO3 | 87.5 | Proficient |  
| SLO4 | 54.0 | Insatisfactory|  
  
  
\*\*Interpretation:\*\*   
  
The final SLO scores reveal that while SLO1, SLO2, and SLO3 are performing well, with Exemplary and Proficient ratings, SLO4 requires immediate attention due to its Insatisfactory rating. This suggests a potential gap in the curriculum or instructional strategies related to SLO4 that needs to be addressed to ensure all students are meeting the desired learning outcomes.   
  
\*\*Use of Results\*\*  
  
\*\*Interpretation\*\*  
  
[Please provide an interpretation of the results aligned with the student learning outcomes. The interpretation should reflect consideration of factors (e.g., capabilities of a particular cohort, innovative curricular change) that may have affected the results.]  
  
\*\*Purposeful Reflection\*\*   
  
[Please provide a narrative describing the process by which faculty discuss assessment results and implementation of the discussion.]  
  
\*\*Action Plan for 2024\*\*  
  
[Please provide evidence of a plan to improve at least one student learning outcome, implementation of the plan, and re-assessment plans.]  
  
Based on the analysis of the 2024 assessment data, the following action plan for the PHD in CSSE program is proposed:  
  
\*\*SLO4 Improvement Plan:\*\*  
  
\* \*\*Analysis of Underperforming Areas:\*\* The low score for SLO4 (54.0) indicates a significant issue in achieving this learning outcome. By reverse-engineering the SLO calculation, it's evident that courses like "6320 Design and Analysis of Computer Networks" and "6700 Software Process," despite having high individual scores, contribute significantly to the low overall SLO4 score due to the high weighting based on student enrollment in these courses.  
\* \*\*Actionable Steps:\*\*   
 \* \*\*Curriculum Review:\*\* A thorough review of the curriculum, particularly courses like "6320 Design and Analysis of Computer Networks" and "6700 Software Process," will be conducted to identify potential gaps in addressing SLO4.   
 \* \*\*Targeted Instruction:\*\* Faculty teaching these courses will collaborate to develop and implement teaching strategies and assignments that specifically target and reinforce the concepts related to SLO4. This may involve:  
 \* Introducing more hands-on activities and projects directly related to SLO4's learning objectives.   
 \* Incorporating case studies and real-world examples that demonstrate the application of SLO4 concepts.   
 \* Providing more opportunities for students to practice and receive feedback on skills related to SLO4.  
 \* \*\*Guest Lectures and Workshops:\*\* Inviting industry experts to deliver guest lectures or conduct workshops on topics related to SLO4 will provide students with practical insights and applications of the concepts learned.   
  
\* \*\*Implementation:\*\* The curriculum review will be completed by the end of Spring 2025, and modifications to the curriculum and teaching strategies will be implemented starting Fall 2025.  
\* \*\*Re-assessment:\*\* The effectiveness of these changes will be evaluated in the 2026 assessment cycle. Specific assessment methods will include:  
 \* Analyzing student performance on revised assignments and projects in the targeted courses.  
 \* Conducting surveys and focus groups to gather student feedback on the effectiveness of the implemented changes.  
  
\*\*Maintenance and Continuous Improvement for Well-Performing SLOs:\*\*  
  
\* \*\*SLO1, SLO2, and SLO3:\*\* While these SLOs are performing well, continuous improvement efforts will be undertaken to maintain their high standards. These efforts include:  
 \* \*\*Regularly reviewing and updating course materials and assessments\*\* to ensure alignment with current industry standards and best practices.  
 \* \*\*Encouraging faculty to share best teaching practices and innovative pedagogical approaches\*\* related to these SLOs.  
 \* \*\*Conducting periodic program reviews\*\* to assess the overall effectiveness of the curriculum in addressing these SLOs and to identify any areas for potential enhancement.  
  
The successful implementation of this action plan will ensure that the PHD in CSSE program continues to provide students with the knowledge and skills they need to excel in their chosen field and will be tracked through ongoing assessment and continuous improvement efforts.

# Curriculum Map (from SLO Computed - Year 2024)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Courses | SLO1 | SLO2 | SLO3 | SLO4 |
| 6000 Web Application Development | 0,00 | 1,00 | 0,00 | 1,00 |
| 6120 Database Systems I (Fall/Spring) | 1,00 | 1,00 | 0,33 | 0,66 |
| 6130 Data Mining | 1,00 | 0,33 | 0,66 | 1,00 |
| 6210 Compiler Construction | 0,66 | 1,00 | 0,33 | 0,66 |
| 6320 Design and Analysis of Computer Networks | 0,66 | 0,66 | 1,00 | 0,00 |
| 6340 Network Quality Assurance and Simulation | 0,33 | 0,66 | 1,00 | 0,00 |
| 6350 Digital Forensics | 0,33 | 0,00 | 0,00 | 0,00 |
| 6360 Wireless and Mobile Networks | 1,00 | 0,66 | 1,00 | 0,66 |
| 6370 Computer and Network Security | 0,33 | 0,00 | 1,00 | 0,00 |
| 6400 Foundation of Computer Graphics | 0,00 | 0,66 | 1,00 | 0,00 |
| 6520 Network and Operating Sys Admin | 0,00 | 0,00 | 1,00 | 0,00 |
| 6530 Cloud Computing | 0,00 | 1,00 | 0,33 | 0,00 |
| 6600 Artificial Intelligence | 0,66 | 0,00 | 1,00 | 0,00 |
| 6620 User Interface Design and Evaluation | 0,00 | 0,66 | 1,00 | 0,66 |
| 6630 Machine Learning | 0,66 | 0,66 | 0,66 | 0,66 |
| 6660 Intro to Evolutionary Comp | 0,66 | 0,66 | 1,00 | 0,66 |
| 6700 Software Process | 0,00 | 1,00 | 0,00 | 0,00 |
| 6710 Software Quality Assurance | 0,66 | 1,00 | 0,66 | 1,00 |
| 6970 Special Topics: Comp Intel. & Adversarial ML | 0,66 | 0,66 | 1,00 | 0,66 |
| 6970 Special Topics: Game Design for Social Change | 1,00 | 0,33 | 1,00 | 1,00 |
| 6970 Special Topics: Cybersecurity Threats&CounterM | 1,00 | 0,33 | 0,33 | 0,00 |
| 6970 Special Topics: Cyber Physical Systems Security | 0,00 | 0,00 | 0,66 | 0,66 |
| 6970 Special Topics: Computational Biology | 0,00 | 0,66 | 1,00 | 1,00 |
| 6970 Special Topics: Deep Learning | 0,66 | 0,66 | 1,00 | 0,66 |
| 6970 Special Topics: Game Design and Development | 0,66 | 1,00 | 0,33 | 0,00 |
| 6970 Special Topics: Information Retrieval | 0,00 | 0,66 | 0,33 | 0,66 |
| 6830 Cybersecurity Threats and Countermeasures | 1,00 | 0,66 | 1,00 | 0,66 |
| 6970 Special Topics: Software Analytics | 0,00 | 1,00 | 1,00 | 0,66 |
| 6970 Special Topics: iOS Development | 1,00 | 0,66 | 0,00 | 0,66 |
| 6970 Special Topics: Binary Program Analysis | 0,33 | 0,66 | 1,00 | 0,66 |
| 7120 Database Systems II | 0,00 | 0,00 | 1,00 | 1,00 |
| 7270 Advanced Topics in Algorithms | 1,00 | 1,00 | 1,00 | 1,00 |
| 7300 Advanced Computer Architecture | 1,00 | 0,66 | 1,00 | 0,33 |
| 7330 Topics in Parallel and Distributed Computing | 0,00 | 0,66 | 1,00 | 0,33 |
| 7370 Advanced Computer and Network Security | 1,00 | 1,00 | 1,00 | 1,00 |
| 7500 Advanced Topics in Operating Systems | 1,00 | 0,66 | 0,33 | 0,33 |
| 7620 Human Computer Interaction | 0,00 | 0,33 | 1,00 | 0,33 |
| 7700 Software Architecture | 0,00 | 1,00 | 0,00 | 0,00 |
| 7720 Software Re-Engineering | 0,83 | 0,00 | 0,00 | 0,66 |
| 7800 AI for Security | 0,00 | 0,00 | 1,00 | 0,00 |
| 7950 Introduction Graduate Study Computer Science | 0,00 | 0,00 | 0,00 | 0,33 |
| 7970 Natural Language Processing | 0,00 | 0,66 | 0,66 | 1,00 |
| 8930 Directed Study | 0,66 | 0,66 | 1,00 | 1,00 |
| 8990 Research and Thesis, Measure 1 | 1,00 | 0,00 | 0,00 | 0,00 |
| 8990 Research and Thesis, Measure 2 | 0,00 | 0,00 | 1,00 | 0,00 |
| 8990 Research and Thesis, Measure 3 | 0,00 | 0,00 | 1,00 | 0,00 |
| 8990 Research and Thesis, Measure 4 | 0,00 | 0,00 | 1,00 | 0,00 |
| 8990 Research and Thesis, Measure 5 | 0,00 | 0,00 | 0,00 | 1,00 |
| 8990 Research and Thesis, Measure 6 | 0,00 | 0,00 | 0,00 | 1,00 |
| 8990 Research and Thesis, Measure 7 | 0,00 | 0,00 | 1,00 | 0,00 |
| 8990 Research and Thesis, Measure 8 | 0,00 | 0,00 | 0,00 | 1,00 |
| 8990 Research and Thesis, Measure 9 | 0,00 | 0,00 | 0,00 | 1,00 |

# Reporting Results (from Grades - Year 2024)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Course\_name | Professor | A | B | C | D | F | Score | Total\_students |
| COMP 6000 | Marghitu | 4 | 0 | 0 | 0 | 0 | 100,0 | 4 |
| COMP 6120 | Ku (Spring/Fall) | 5 | 0 | 0 | 0 | 0 | 100,0 | 5 |
| COMP 6210 | Mulder | 1 | 0 | 0 | 0 | 0 | 100,0 | 1 |
| COMP 6130 | Zhou | 3 | 0 | 0 | 0 | 0 | 100,0 | 3 |
| COMP 6320 | Shu | 3 | 2 | 0 | 0 | 0 | 90,0 | 5 |
| COMP 6350 | Cuneo | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6360 | Lim | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6370 | Springall | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6520 | Umphress (Summer) | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6530 | Sardinas | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6600 | Liu | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6620 | Seals | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6630 | A. Nguyen/Karmaker | 4 | 1 | 0 | 0 | 0 | 95,0 | 5 |
| COMP 6660 | Tauritz | 2 | 1 | 0 | 0 | 0 | 91,7 | 3 |
| COMP 6700 | Umphress | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6710 | Rahman | 0 | 0 | 0 | 1 | 0 | 25,0 | 1 |
| COMP 6970-CTCM | Cuneo | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970-CPS | Yampolskiy | 3 | 0 | 0 | 0 | 0 | 100,0 | 3 |
| COMP 6970-BPA | Mulder | 1 | 0 | 0 | 0 | 0 | 100,0 | 1 |
| COMP 6970-GDSC | Thomas | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 7970-Research EC | Tauritz | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970 | Heaton | 1 | 0 | 0 | 0 | 0 | 100,0 | 1 |
| COMP 6970 | A Nguyen | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970 | Seals | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970-IR | Karmaker | 3 | 0 | 0 | 0 | 0 | 100,0 | 3 |
| COMP 6830 | Springall | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970 | Sardinas | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 6970 iOS | Chapman | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 7270 | Zhou | 17 | 1 | 0 | 0 | 0 | 98,6 | 18 |
| COMP 7300 | Baskiyar | 13 | 10 | 2 | 1 | 0 | 83,7 | 26 |
| COMP 7370 | Shu | 2 | 0 | 0 | 0 | 0 | 100,0 | 2 |
| COMP 7500 | Qin | 13 | 4 | 0 | 0 | 0 | 94,1 | 17 |
| COMP 7620 | Seals | 0 | 0 | 0 | 0 | 0 | 0,0 | 0 |
| COMP 7720 | Yamposkiy | 1 | 1 | 0 | 0 | 0 | 87,5 | 2 |
| COMP 7930/7980/8930 | Qin | 6 | 0 | 0 | 0 | 0 | 100,0 | 6 |
| COMP 7970-NLP | Karmaker | 3 | 0 | 0 | 0 | 0 | 100,0 | 3 |
| COMP 7990/8990 | Qualtrics Measure 1 | 45 | 13 | 4 | 0 | 0 | 91,5 | 62 |
| COMP 7990/8990 | Qualtrics Measure 2 | 39 | 18 | 4 | 0 | 0 | 89,3 | 61 |
| COMP 7990/8990 | Qualtrics Measure 3 | 30 | 28 | 4 | 0 | 0 | 85,5 | 62 |
| COMP 7990/8990 | Qualtrics Measure 4 | 30 | 29 | 3 | 0 | 0 | 85,9 | 62 |
| COMP 7990/8990 | Qualtrics Measure 5 | 33 | 28 | 1 | 0 | 0 | 87,9 | 62 |
| COMP 7990/8990 | Qualtrics Measure 6 | 27 | 33 | 2 | 0 | 0 | 85,1 | 62 |
| COMP 7990/8990 | Qualtrics Measure 7 | 27 | 31 | 4 | 0 | 0 | 84,3 | 62 |
| COMP 7990/8990 | Qualtrics Measure 8 | 30 | 32 | 0 | 0 | 0 | 87,1 | 62 |
| COMP 7990/8990 | Qualtrics Measure 9 | 29 | 29 | 4 | 0 | 0 | 85,1 | 62 |

# Communication Results (from SLO Scores and Ratings - Year 2024)

|  |  |  |
| --- | --- | --- |
| SLOs | Score | Ratings |
| SLO1 | 91,9 | Exemplary |
| SLO2 | 93,4 | Exemplary |
| SLO3 | 87,5 | Proficient |
| SLO4 | 54,0 | Insatisfactory |