## ASSESSMENT REPORT TEMPLATE   
\*\*PHD in Computer Science and Software Engineering (CSSE)\*\*  
\*\*Auburn University\*\*  
\*\*2025\*\*   
  
### Program Description   
The PhD in Computer Science and Software Engineering (CSSE) at Auburn University is designed to prepare students for careers in research and academia. The program offers specializations in various areas, such as Artificial Intelligence, Cybersecurity, Data Science, and Software Engineering. Students are expected to develop a strong theoretical foundation and advanced practical skills in their chosen areas of specialization.   
  
### Student Learning Outcomes   
\*\*Specificity of Outcomes\*\*   
  
Students graduating from the CSSE PhD program will be able to:   
  
\*\*SLO1:\*\* \*\*Apply\*\* advanced knowledge and skills in the theoretical foundations of computer science.   
\*\*SLO2:\*\* \*\*Analyze\*\* complex computing problems, applying appropriate tools and techniques to design innovative solutions.  
\*\*SLO3:\*\* \*\*Evaluate\*\* existing research in the field, identifying gaps and opportunities for original contributions.   
\*\*SLO4:\*\* \*\*Communicate\*\* research findings effectively in both written and oral formats to diverse audiences.   
  
\*\*Comprehensive Outcomes\*\*   
The listed student learning outcomes represent a comprehensive framework reflecting the program’s commitment to developing well-rounded researchers. These outcomes align with disciplinary standards and are regularly reviewed and revised to reflect the evolving landscape of computer science and software engineering.  
  
\*\*Communicating Student Learning Outcomes\*\*   
Student learning outcomes are reviewed annually by program faculty during the department's fall retreat. The outcomes are also posted on the department website and included in the graduate student handbook.   
  
### Curriculum Map   
  
| 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 |   
  
\*\*Measurement\*\*  
\*\*Outcome-Measure Alignment\*\*   
The assessment measures are chosen to directly assess student learning outcomes based on their alignment with the specific knowledge, skills, and abilities articulated in each outcome.   
  
\*\*Direct Measures\*\*  
Direct measures for each outcome include a combination of course-embedded assignments, comprehensive exams, dissertation proposals, and dissertation defenses.   
  
\*\*Data Collection Methods\*\*  
Assessment data is collected throughout the program from various sources, including faculty grading rubrics, exam scores, dissertation committee evaluations, and student presentations. Data is compiled and analyzed by the CSSE Graduate Program Committee.  
  
### Results   
\*\*Reporting Results\*\*   
  
| 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 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\*\*  
Initial analysis of the 2025 grades data for the PhD in CSSE program shows a positive trend, with the majority of courses demonstrating high average scores, indicating a strong performance by students across different areas. Notably, core courses like COMP 6000, COMP 6120, and COMP 6210 show a 100% score, reflecting successful knowledge acquisition in foundational subjects. However, some courses, particularly at the higher levels, show a greater distribution of grades. This variation could be attributed to the smaller class sizes in specialized electives and the increased complexity of the material.   
  
The Qualtrics Measures, which likely represent assessments related to research and thesis work (COMP 7990/8990), show scores ranging from 84.3 to 91.5. This range suggests a generally positive performance in research-oriented tasks. Further investigation into the specific content and context of each Qualtrics measure is needed to provide a more in-depth interpretation.  
  
### Communication of Results   
  
\*\*SLO Scores and Ratings:\*\*   
  
| SLOs | Score | Ratings |  
|---|---|---|  
| SLO1 | 91.9 | Exemplary |  
| SLO2 | 93.4 | Exemplary |   
| SLO3 | 87.5 | Proficient |  
| SLO4 | 54.0 | Insatisfactory |  
  
\*\*Interpretation:\*\*  
The overall performance of the PhD in CSSE program in 2025 is commendable. SLO1 and SLO2, focusing on applying advanced knowledge and analyzing complex problems, exhibit 'Exemplary' scores, demonstrating the program’s success in equipping students with a robust theoretical understanding and problem-solving abilities. SLO3, evaluating existing research, also reflects a 'Proficient' rating, indicating a good grasp of research methodologies.  
  
However, the 'Insatisfactory' rating for SLO4, which emphasizes communication skills, raises concerns. This suggests a significant gap in students' ability to effectively disseminate research findings.   
  
  
### Action Plan for 2025   
  
\*\*SLO1 & SLO2: (Exemplary):\*\*  
  
- \*\*Maintenance:\*\* Continue to monitor student performance in core courses and ensure alignment between curriculum and learning outcomes.   
- \*\*Continuous Improvement:\*\* Encourage faculty to incorporate innovative teaching methods that further enhance students' theoretical understanding and problem-solving skills. Explore emerging technologies and trends to update course content regularly.   
  
\*\*SLO3: (Proficient):\*\*  
  
- \*\*Maintenance:\*\* Maintain the current rigor in research methodology courses and continue to provide students with opportunities to present and receive feedback on their research.   
- \*\*Continuous Improvement:\*\* Offer specialized workshops on advanced research topics, literature review techniques, and scientific writing to further strengthen research skills.  
  
\*\*SLO4: (Insatisfactory):\*\*  
  
- \*\*Analysis of Underperforming Areas:\*\* The low score for SLO4 suggests a need to improve students' communication skills, particularly in presenting research findings effectively.   
- \*\*Implementation:\*\*   
 - \*\*Curriculum Enhancement:\*\* Integrate dedicated communication modules within existing courses, focusing on technical writing, presentation skills, and effective data visualization.   
 - \*\*Workshop Series:\*\* Introduce a mandatory workshop series for PhD students on scientific communication, covering oral presentation techniques, poster design, and manuscript writing for academic publications.   
 - \*\*Peer Review and Feedback:\*\* Implement peer-review sessions within research seminars and coursework to provide students with constructive feedback on their communication style and content.  
- \*\*Re-assessment Plan:\*\* Evaluate the effectiveness of implemented interventions by analyzing student performance in communication-focused assignments and presentations throughout the 2025-2026 academic year. Gather student feedback on the implemented initiatives to gauge their impact and identify areas for further refinement.  
  
By addressing the identified areas for improvement and maintaining existing strengths, the CSSE PhD program can ensure that its graduates are well-equipped with the necessary skills and knowledge to excel in their future careers.

# Curriculum Map (from SLO Computed - Year 2025)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 2025)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 2025)

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