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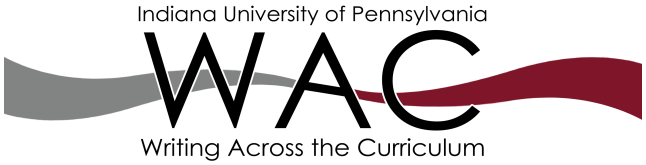

DEPARTMENT OF MATHEMATICAL AND COMPUTER SCIENCES

Computer Science Writing Plan

Compiled by
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Submitted to:
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Table of Contents

Summary

In preparing to work on their Department Writing Plans, Drs. Stoudt and Reilly served as liaisons between WAC and the Department of Mathematical and Computer Sciences (MACS). In May 2021 Dr. Bryna Siegel Finer ran a WAC Workshop on Writing Plans and Drs. Reilly and Stoudt both participated. Dr. Reilly agreed to work on a Computer Science Writing Plan while Dr. Stoudt worked on the Mathematics Writing Plan. This way the entire department would be included in writing and communication as a department goal. Using resources provided on the Writing Across the Curriculum Summer Workshop housed on D2L and available syllabi of record for all Computer Science courses, Dr. Reilly identified where and how writing was already being taught in the Computer Science curriculum, and where and how writing instruction could be added to the curriculum, in order to draft the Computer Science Writing Plan.

There were several email communications between Dr. Reilly, Dr. Rick Adkins, Assistant Chair of MACS, and the Computer Science faculty during the week of the May 2021 WAC Writing Workshop. We are particularly gratefully to Dr. Terence Fries who provided detailed examples of writing assignments carried out in their courses. Dr. Fries provided the Protocol to be used to assess the students' writing following their completion of the program as well as providing access to students' that was used to create the "baseline" results.

A statement of "Department Commitment to Writing" has been developed to be included on all syllabi for courses that will be a part of the writing-enriched curriculum.

At a meeting on April 28th 2022 of the Mathematical and Computer Sciences Department, faculty voted to support the Department Writing Plans as described below in addition to the WAC Director's recommendations for continuing program facilitation on page 22 of this document.

Department of Mathematical and Computer Sciences
Computer Science Writing Plan
Rollout Fall 2022

Professional and Academic Genres In DISCIPLINE

In order to be successful in an organization, professional employees must have strong communication skills. The IUP Mathematical and Computer Sciences Department is committed to helping students improve their writing skills toward the goal of being able to effectively communicate as professionals in their selected fields. Writing skills are essential in order to be able to explain programming solutions clearly to the customers, making a case of the approaches used while creating a product, and be able to write instructions and documentation well.

There are several types of writing that professionals in the discipline of Computer Science need to know. Some examples include: proposals and recommendations, technical arguments, policy statements, and grant proposals.

Writing in the field of Computer Science must be logical and carefully organized. Practitioners need to be able to follow a set of language, using iterative processes that need to be refined constantly. As with most professional writing, knowing how to writing for a particular audience is paramount. Since much of the writing can be technical in nature, being able to explain the implementation or recommendations is a crucial skill to develop.

In addition to writing skills, computer scientists also need to be able to create graphs, charts, illustrations, and diagrams and insert them into easy-to-understand documents and products.

Writing in Computer Science should include:

- Product documentation
- Release notes
- Training Manuals
- Security Policies and Notices
- Software Programs
- Analysis of a technology need or a problem
- Critical analysis of technology and computational methodologies

The IUP Department of Mathematical and Computer Sciences is committed to helping students improve their writing skills toward the goal of being able to communicate as professionals in the field are required to do.

Student Writing Skills and Abilities

Upon completion of their undergraduate degree, students graduating with a Computer Science degree need a variety of writing skills and abilities. These include:

- Effective technical writing pedagogy with emphasis on audience and task analysis,
- Writing with a purpose, careful organization and development of ideas, and a concise and accurate style, paying attention to precision.
- Communicate effectively with a wide range of technical and non-technical audiences,
- Present high-quality analysis on important aspects of a problem or system.

The IUP Mathematical and Computer Science Department is committed to introducing, emphasizing, and reinforcing these skills and abilities throughout the curriculum, and will do so through the purposeful mapping of writing assignments and activities that follows at the end of this document.

Integration of Writing into Undergraduate Curriculum

Department faculty have participated in professional development training in writing-to-learn pedagogy[1] through writing workshops with the WAC director, participation in the end-of-year Liberal Studies writing workshop, and in meetings with the WAC director.

Student success in a Computer Science setting requires students to have practical and technical skillsets and professional communication skills. The department will use a variety of writing-to-learn (WTL) and writing-to-communicate (WTC, i.e. professional writing) activities to contribute to student learning outcomes.

a. Current state of writing in the curriculum:
    - The writing is not integrated into the curriculum; the required writing is very instructor dependent even in upper level courses that do require writing.
    - COSC 319 and COSC 493 are currently the two courses that have the Writing Intensive designation.
    - The Computer Science workforce requires writing. Employees need strong writing skills and the ability to communicate to advance in their careers.

b. Structural changes for writing/writing instruction:
    - How can we require writing from the introductory courses on up?
    - How can we guarantee that, in courses where writing skills are part of the course outcomes, they are being addressed?
    - How can we make this be part of our assessment?

[1] "What is Writing to Learn?" *Writing Across the Curriculum Clearinghouse*. Colorado State University. 2015. http://wac.colostate.edu/intro/pop2d.cfm

- Plan to make ENGL 222 be a required course for Computer Science majors in place of ENGL 202.

We plan to answer these questions by the time of the first biennial revision of this plan.

Writing instruction in the Computer Science programs is to be integrated in the following ways:
Writing-to learn-activities allow students to develop Computer Science knowledge and technical skills through writing. These activities enhance student learning by encouraging critical thinking. Students practice writing-to-learn activities through the Computer Science program curriculum in order to:

- Develop critical thinking and knowledge of course material,
- Assess their own understanding and identify misconceptions,
- Discover connections between course content and everyday life,
- Develop viewpoints and describe evidence that supports those viewpoints,
- Evaluate and interpret data presented in computer science datasets.

In all courses, Computer Science faculty will use writing-to-learn activities, such as writing assignments which engage students and lead to student classroom discussions of the topics covered, in order to enhance student learning.

Writing-to-communicate activities are used in computer science courses to assess student proficiency at technical writing and understanding of course content. These activities typically involve direct communication about computer science topics and/or independent research projects, such as writing an IT Security Policy, but may also include research posters and oral presentations. Specifically, students use WTC to develop the following discipline-specific skills:

- Express ideas in a clear, concise manner, including logical flow from one point to the next.
- Basic proof-reading and peer review, such as identifying thesis statements and arguments, as well as editing paragraph and sentence construction, flow, word choice, and citation format.
- Correct grammar, appropriate word choice, and cohesive sentence and paragraph structure.
- Understanding of the basic components of writing code and algorithms, including data analysis, as well as appropriately formatted tables and graphs.
- Inform and persuade varied audiences (e.g., peers, academic, public, policy) about computer science topics in an engaging, reader-friendly manner.

In appropriate courses, Computer Science faculty will use writing-to-communicate activities, such as case analyses which result in student presentations, to facilitate student in-class discussion with feedback provided by faculty.

Students majoring in Computer Science will not be required to take ENGL 202 Composition II. Instead, students will meet the objectives of ENGL 202 through their written assignments in COSC 319, 380, and 480, three courses all computer science majors are required to take. Students in the B.S. in Management Information Systems / Information Technology Track take COSC 341 in addition to COSC 380 and 480. These courses include some writing to-learn, but the required writing is primarily writing-to-communicate, focusing on the following areas: 1) locate and utilize the sources, contents, and style of technical literature in the field of computer science; 2) design, organize and deliver a presentation of a technical topic to an audience using the seminar approach; 3) lead and participate in the discussion of current technical topics in computer science; and 4) articulate and explain at a high level a number of current advances in computer science. In all cases writing in the accepted style will be stressed, and students will have the opportunity to receive feedback from the instructor and revise their written reports.

Communicating Writing Expectations to Students

Writing expectations are to be communicated through the Computer Science Program Student Learning Outcomes (PSLO), specific course syllabi, course learning outcomes, course requirements, in-class and online instructor-student interaction, and course project assessment rubrics.

The Program Student Learning Outcomes (PSLOs) for all Computer Science tracks contain writing and communication goals. "**Communicate effectively in a variety of professional contexts**" is PSLO #3 in all three of the Computer Science B.S. tracks as well as one of the SLOs in the BA in Computer Science program. The assessment tools identified to measure this outcome are written assignments and oral presentations. Of the remaining PSLOs, three of them indicate that some form of writing can be used to measure them. PSLO #1 for all four programs is "**Analyze** a computing problem and **apply principles** of computing;" PSLO #2 is "**Design and implement** a computing-based solution;" and SLO#4 is "**Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles**."

A review of course syllabi also indicate that several Student Learning Outcomes (SLOs) also indicate that writing in an important tool in the learning and assessing of these course outcomes. Reference to these SLOs can be found in the Writing Outcomes Curriculum Map below.

The importance of writing skills to the discipline of computer science is communicated both in and out of the classroom. For writing enriched courses, writing activities and assignments are described in the course syllabi. Instructors often use rubrics tailored for specific assignments and discuss their expectations about good writing with students. In addition to WTL activities in class, some instructors are expected to devote class time to peer review and to class discussion of writing projects and the writing process when appropriate. Instructors also provide individual feedback to students on their writing

assignments and often require revised drafts of major writing activities.

Students are encouraged to utilize the Writing Center for extra assistance with writing assignments. Overall, students are provided with opportunities to develop writing skills as a central component to their major in Computer Science. Students enter the program with widely varying levels of writing proficiency. However, our goal is to ensure that all students are challenged and encouraged to develop excellent writing skills, to learn and think about the technical writing needed to be a successful computer science graduate through the process of writing, and to articulate their passions and skills through writing that will allow them to excel professionally and academically.

The curriculum map that follows illustrates a variety of writing assignments required throughout the curriculum. The Department's Commitment to Writing syllabus statement will be included on all Syllabi of Record to reinforce the Computer Science program commitment to student writing explicitly in each course.

Syllabus Statement

The Department of Mathematical and Computer Sciences is committed to developing student writing throughout the curriculum. In this class, as in almost every class in the department, you will complete writing assignments and activities designed to improve your communication skills in this course, other courses, and in the profession.

Implementation and Assessment of Department Writing Plan

The WAC Director recommends the following action items for continuing program facilitation:

- Elect at least one faculty member to continue to be the WAC/DEPT liaison (this should count as Department Service)
- Provide all newly hired faculty a copy of the DWP, and recommend attendance at least two WAC workshops or the May 2-day writing workshop for Liberal Studies faculty
- All faculty should add "Department Commitment to Writing" statement to syllabus as appropriate
- Department should continue to collect samples of senior writing every two years and analyze results with WAC Director
- Through faculty development seminars with WAC director, workshop attendance, and writing-enriched curriculum, attempt to move assessment results to target 75% and maintain results in other areas
- Add areas for the teaching and assessment of writing as goals on department and faculty five-year review documents
- Continue to update the writing outcomes curriculum map as courses are added, removed, and revised in the DEPT curriculum (and communicate these changes to the WAC Director)

We plan two new strategies for assessing WTC and WTL in the Mathematical and Computer Sciences department:

1. **Writing-to-Communicate Assessment** – Proficiency in professional technical writing will be assessed for senior computer science majors by a committee of Computer Science and Mathematics faculty (MACS Writing Committee). The outline below explains the steps in the assessment process, concerning both students and faculty.
    i. Expectations for writing and the assessment process will be introduced to Computer Science students in their introductory courses (COSC 105 and 110).
    ii. In COSC 319 and 380, students will be instructed on how and where more formal writing is needed for the profession.
    iii. During their senior year, students will produce formal writing pieces in COSC 473 to be included in the writing plan assessment.
    iv. During their senior year students will submit their final product to the MACS Writing Committee. This should be done before March 15th in the spring semester of their senior year.
    v. The MACS Writing Committee will consist of Mathematics and Computer Science faculty. The committee will randomly select a representative sample of the graduating class from which student writing samples will be evaluated using a standard rubric. After student names have been removed, all committee members will read the writing sample provided. Averages will be computed for each rubric category and a holistic score.
    vi. Finally, the MACS Writing Committee will report results to the MACS department and the WAC director for discussion and feedback. Modifications to the Writing Plan and to the Computer Science course curriculum will be made as appropriate based on feedback and implemented the following year. All results, meeting minutes, and discussion notes will be archived to allow for analysis of long-term trends and inform faculty about areas in need of improvement (based on scores for individual rubric categories).

2. **Writing-to-Learn Assessment** – Trends in faculty implementation of WTL activities will be tracked using annual surveys of both students and faculty.
    i. Faculty will be asked annually to update their courses on the Writing Outcomes Curriculum Map. Responses will be summarized by the writing committee and archived.
    ii. Student perceptions about writing will be surveyed by asking senior computer science students for feedback. The survey may include questions about attitudes toward writing, use of writing as a learning tool, perceived importance of writing in computer science professions, how often writing was emphasized in courses, self-perceived proficiency in writing, etc.

Writing Outcomes Curriculum Map

The Writing Outcomes Curriculum Map demonstrates:

- Conscious effort on the part of computer science faculty at placing core disciplinary genres at appropriate levels of the curriculum, scaffolding and reinforcing the writing skills necessary for students to succeed in writing those genres,
- Integration of writing-to-learn activities in a number of courses in the curriculum; includes use of writing as a tool to reinforce concepts, organize thoughts, and assess one's own understanding,
- Professional technical writing skills are also taught and evaluated in a sequential manner.
- 18 out of 31 courses use WTL and/or WTC = 58% of courses are writing-enriched

Course number and title	**Course Outcomes that address Writing Skills**	**Writing Activities- Writing to Learn (WTL) Writing to Communicate (WTC)**	**Introduced, Reinforced, or Emphasized**
COSC 105 – Fundamentals of Computer Science	Develop a foundation on the relevance and inter-relationship of COSC courses. Develop solutions to complex problems within the field of Computer Science	Discussion board responses on D2L in response to a journal article (WTL) Written explanations of solutions to problems Essay questions on exams (WTC)	Introduced
COSC 110 - Problem Solving and Structured Programming	Develop algorithms from user problem statements Transform solutions into a standard programming language	Problem statements/solutions; one minutes essay, class warm-ups (WTL) Essay questions on exams (WTL)	Introduced
COSC 210 – Object-Oriented and GUI Programming			
COSC 216 – Introduction to Cyber Security	Explain basic cryptography concepts	Essay questions on assignments, exams and labs (WTL)	Introduced
COSC 220 - Applied Computer Programming			

COSC 300 - Computer Organization and Assembly Language	Explain how standard arithmetic operations are performed Describe how information of various data types are represented Read, write, and debug programs Explain the uses of various machine addressing modes Explain the internal workings of the machine on a procedure call and describe the structure of the call	Open-ended questions on assignments and exams (WTL)	Reinforced
COSC 310 - Data Structures and Algorithms			
COSC 319 - Software Engineering Concepts	Communicate in writing and orally technical material regarding software engineering.	Software assignments with artefacts and documentation (WTL) Essay questions on exams (WTL) Design and implement a real-world assignment using the software engineering techniques covered in the course (WTC)	Emphasized
COSC 341 - Introduction to Database Management Systems			
COSC 343 - Introduction to Numerical Methods	Be able to explain how error accumulates and discuss the errors inherent in using standard floating point numbers.	Learning logs and problem statements/solutions (WTL) Essay questions on exams (WTL)	Reinforced

COSC 345 - Computer Networks	Evaluate specific features of protocols. Analyze the methodology and rationale…	Discussion board responses on D2L to share analysis (WTL) Essay questions on exams (WTL) Document creation (WTC)	Reinforced
COSC 355 - Computer Graphics	10 SLOs in the revised course 9 out of the 10 have the words explain, describe, or discuss	In-class activities, short open-ended questions on quizzes, exams, exit slips, can all be used to assess (WTL and WTC)	Reinforced
COSC 356 - Network Security	Identify threats to network … Specify procedures… Develop security policies	In-class activities, short open-ended questions on quizzes, exams, exit slips, can all be used to assess (WTL) Create security policies (WTC)	Emphasized
COSC 362 - Unix Systems			
COSC 365 - Web Architecture and Application Development			
COSC 380 - Seminar on the Computer Profession and Ethics	Produce documents required for work position Plan, develop, and deliver professional presentations Recognize various key ethical issues.	Reading assignments and reports (WTL) Professional Goal Report (WTC) Professional Presentation (WTC)	Emphasized
COSC 405 - Artificial Intelligence	Explain and implement expert systems Assess strength and weakness of machine learning algorithms Explain and implement uncertainty representations	Open-ended homework assignments and quizzes/test questions (WTL) Programming project (WTC)	Reinforced
COSC 410 - Computer Architecture	Explain the importance of computer architecture.	Open-ended homework assignments and quizzes/test questions (WTL)	Reinforced

	Describe computer components Discuss relationships between computer design systems Identify and evaluate various processor performance		
COSC 420 - Modern Programming Languages	Demonstrate the strengths and weaknesses of different programming languages	Open-ended homework assignments and quizzes/test questions (WTL) Language project (WTC)	Reinforced
COSC 424 - Compiler Construction			
COSC 427 - Introduction to Cryptography	Discuss cryptographic algorithms. Evaluate the role of cryptography in security information systems.	Open-ended lab assignments and quizzes/test questions (WTL) Language project (WTC)	Reinforced
COSC 429 - Digital Forensics	Explain digital forensics Identify and articulate probable cause Explain the principles and practices of ethics and law Explain how to manage/conduct a computer crime investigation Present the evidence Describe core computer science theory	Open-ended exam questions (WTL) Digital Forensic Investigative Project (WTC)	Emphasized
COSC 430 - Introduction to Systems Programming			
COSC 432 - Introduction to Operating Systems	Compare different approaches to memory management Evaluate in detail virtual address translation	Open-ended lab assignments and exam questions (WTL) Operating Systems Project (WTC)	Emphasized

	Explain the interactions among operating systems Discuss various threats to system security and compare protection mechanisms		
COSC 454 - Information Assurance Administration			
COSC 460 - Theory of Computation			
COSC 465 - Distributed Processing and Web Services			
COSC 473 - Software Engineering Practice	Apply knowledge to real-world software development project Explain concepts in the computing field such as user interaction Organize career goals Develop writing skills necessary for the professional world of computing	Formal Problem Statement Document and Project Plan for Proposed System (WTC) Emails to clients (WTC) Systems Manual (WTC) Reflection Report (WTC)	Emphasized
COSC 480 - Seminar on Technical Topics	Locate and utilize the sources, contents, and style of technical literature in the field of computer science. Design, organize and deliver a presentation of a technical topic to an audience using the seminar approach. Both lead and participate in the discussion of current technical topics in computer science. Articulate and explain at a high level a number of	Reaction papers technical literature in computer science (WTC)	Emphasized

	current advances in computer science.		
COSC 482 - Independent Study			
COSC 493 - Internship in Computer Science	Provides on-the-job experience in computer science with private and government employers. Complete related academic work in the form of progress reports, final report, and oral presentation.	Daily Logs (WTL) Resume (WTC) Project logs (WTC) Company write up (WTC) Internship Report (WTC)	Emphasized

Appendix A – Senior Writing Samples Assessment

Protocol

A random sample of writing will be collected from COSC 319 Software Engineering Concepts, COSC 380 Seminar on the Computer Profession and Ethics, COSC 473 Software Engineering Practicum, and COSC 493 Internship in Computer Science. An overview of the assignment from each course is provided below.

Ethics statement for syllabi: The Computer Sciences undergraduate program is undergoing programmatic evaluation. Please be advised that your writing assignments may be randomly chosen for program assessment purposes. Program assessment activities will have no bearing on your course grade and, should your work be selected, your name will not be attached to it. If you have any questions about program assessment or wish to withdraw permission for use of your work, please contact Mathematical and Computer Sciences Writing Coordinator, Dr. Edel M. Reilly (ereilly@iup.edu).

COSC 319 Software Engineering Concepts

30 % of the final grade is based on a semester-long group project which requires four separate milestone reports:

1. Project Proposal
2. Software Requirements Specification
3. Software Design Document
4. Sprint Increment Report

Each report has a standard format and grading rubric.

COSC 380 Seminar on the Computer Profession and Ethics

COSC 380 has a major writing component as shown below. Below is the standard set of assignments and the point values of each according to the syllabus of record. I last taught the course in Spring 2017. Raj has taught this course since then, so you should ask him for the materials he uses.

The final grade of the course will be determined as follows:

Readings/Executive Summary (15 points each)	***90 points***
Resume (1st draft)	***10 points***
Cover Letter	***15 points***
Resume (final revision)	***30 points***
Career Objective Presentation	25 points
Mock Interview	40 points
Major Technical Presentation	50 points
Major Technical Presentation Questions	10 points
Out of Class Activities Write Up (15 points each)	***60 points***
Mid-Term (Technical Topics) Exam	50 points

Ethics Case Outline	***10 points***
Ethics Case Presentation	50 points
Ethics Case Paper	***60 points***
Ethics Final Exam	100 points
Total	600 points

275 of 600 possible points are based on writing assignments (those in bold and italics) which are graded for content, grammar, organization, consistency, and completeness.

COSC 473 Software Engineering Practicum

This is a project-based course in which students are divided into groups, each of which develops a large-scale software product. Below is a distribution of grading for Fall 2021 with components that involve writing in italics (75 of 100 points).

	Task	**Duration (weeks)**	**Points**
1	*Project Management Plan (PMP)*	1	*10*
2	Project Planning Presentation		5
3	*Iteration 1*	2	*10*
4	*Iteration 2*	2	*10*
5	*Iteration 3*	2	*10*
6	*Iteration 4*	2	*10*
7	*Iteration 5*	2	*10*
8	Completed Software / Demo	2	20
9	*Project Report*	1	*15*
	Total		**100**

Each Sprint Iteration involves developing a deliverable software component and writing a report documenting the work that was done for that iteration and progress on the overall project.

COSC 493 Internship in Computer Science

The internship is a 6 or 12 credit course which requires that a student work in a full-time career-related job for a minimum of 12 or 23 weeks, respectively. The 6-credit section may be repeated once. The distribution of effort for grading is shown below. Items based on writing assignments (those in italics) are graded for content, grammar, organization, consistency, and completeness.

Item	**One 12-cr Unit**	**First 6-cr Unit**	**Second 6-cr Unit**	**Due**
Resume	*5%*	*5%*	*5%*	*with application*
Fact Sheet	*5%*	*5%*	*5%*	*end first week*
Company Information & Expectation Paper	*5%*	*5%*	*5%*	*end second week*
Site Visit with Demo	25%	25%	25%	as scheduled by coordinator
Daily & Project Logs	*10%*	*10%*	*10%*	*one week after internship*
Supervisor Evaluation	10%	10%	10%	one week after internship
Outline	*5%*	*10%*	*5%*	*2 weeks after internship*
Draft & Final Report	*25%*	*30%*	*25%*	*6 weeks after internship*
Oral Presentation	10%	n/a	10%	as scheduled by coordinator
Total	**100%**	**100%**	**100%**	

Each written component has a standard format and is graded using a rubric.

Rubric

	Exemplary = 4	Accomplished = 3	Developing = 2	Beginning = 1
Introducing the thesis: Problem Statement	The topic is introduced, and groundwork is laid as to the direction of the report.	Audience is made aware of the overall problem, challenge, or topic that is to be examined.	Neither implicit nor explicit reference is made to the topic that is to be examined.	Little or no attempt has been made to introduce the issue or problem
Body: Flow of the paper/project/ report	The report goes from general ideas to specific conclusions. Transitions tie sections and paragraphs together.	There is a basic flow from one section to the next, but not all sections or paragraphs follow in a natural or logical order.	The paper/project/report appears to have no direction, with subtopics appearing disjointed.	Little or no attempt has been made to make the paper flow smoothly. No transitions.
Coverage of content: Given a case study, identify legal and ethical issues of software design	Clearly articulates an organized response to ethical issues in software design and can distinguish ethical issues from legal issues.	Can voice a fundamental ethical position regarding software design but tends to confuse ethical issues with legal issues.	Incapacity to recognize how software design introduces legal or ethical issues.	Little or no attempt has been made to cover content.
Clarity of writing technique	Writing is crisp, clear, and succinct. The writer incorporates the active voice when appropriate. The use of pronouns, modifiers, parallel construction, and non-sexist	Writing is generally clear, but unnecessary words are occasionally used. Meaning is sometimes hidden. Paragraph or sentence structure is too repetitive.	Major sections of pertinent content have been omitted or greatly run-on. The topic is of little significance to the educational/training field.	Little or no attempt has been made to write clear communication

	language are appropriate.			
Organization	Information is organized coherently, presenting a well-reasoned argument that concludes with a recommendation for a future research strategy.	Information presents a coherent argument and concludes with a recommendation for future research.	Information presents a recommendation for a future research strategy but needs additional work on building an argument.	Information is disorganized, does not provide an argument that recommends a research strategy
Mechanics: Grammar, Punctuation, Spelling	Report consistently uses correct grammatical structures and vocabulary, as well as correct spelling, capitalization, accentuation, underlining, and punctuation. Sentence structure is varied. Report is fully comprehensible and easy to read.	Report has a few errors in grammatical structures, vocabulary, spelling, capitalization, accentuation, underlining, and/or punctuation. Sentence structures is generally varied, and is mostly comprehensible and easy to read.	Report has many errors in spelling, capitalization, underlining, accentuation, and/or punctuation. BUT paper has FEW errors in grammatical structures or vocabulary; sentence structure is generally varied, and is generally comprehensible.	Report has many errors in grammatical structures and/or in vocabulary. Report is often difficult to comprehend because of these errors. Report also has many errors in spelling, capitalization, underlining, accentuation, and/or punctuation
Quotations and Citation Format	All needed citations were included in the report. References matched the citations, and all were encoded in APA format.	Citations within the body of the report and a corresponding reference list were presented. Some formatting problems exist, or components were missing.	Major sections of pertinent content have been omitted or greatly run-on. The topic is of little significance to the educational/training field.	Little or no attempt has been made to following rules for writing papers.

Holistic Score: _____

Appendix B –Writing Assessment Results, Fall 2021

These are considered "baseline" survey results.

Response Rate= 25

Areas in which student writing is ABOVE expectations: 77+

Criterion: Mechanics: Grammar, Punctuation, Spelling

year(s)	exceeds/meets	emerging/below
2021-2022	**96% 24 (0/24)**	**4% (1/0)**

Areas in which student writing is MEETING expectations: 68-77

Criterion: Coverage of content: Given a case study, identify legal and ethical issues of software design

year(s)	exceeds/meets	emerging/below
2021-2022	**72% 18 (2/16)**	**28% 7 (7/0)**

Areas in which student writing is BELOW expectations below 67 and below

Criterion: Introducing the thesis: Problem Statement

year(s)	exceeds/meets	emerging/below
2021-2022	**52% 13 (2/11)**	**48 % 12 (10/2)**

Criterion: Body: Flow of the paper

year(s)	exceeds/meets	emerging/below
2021-2022	**40% 10 (2/8)**	**60% 15 (13/2)**

Criterion: Clarity of writing technique

year(s)	exceeds/meets	emerging/below
2021-2022	**60% (15 (2/13)**	**40% 10 (10/0)**

Criterion: Organization

year(s)	exceeds/meets	emerging/below
2021-2022	**32% 8 (3/5)**	**68% 17(14/3)**

Criterion: Quotations and Citation Format

year(s)	exceeds/meets	emerging/below
2021-2022	**8% 2 (1/1)**	**92% 23 (6/17)**

Recommendations from the WAC Director based on Assessment Results

It appears that seniors in COSC are struggling in almost all of the criteria developed in the department rubric. Closer examination, however, reveals that students are meeting expectations in the most important rhetorical (as opposed to surface-level or structural) concepts defined by the department: coverage of content. So, while students might be struggling with format and at the sentence level, **they are meeting expectations for demonstrating critical thinking about the disciplinary content through writing**.

Students are also demonstrating some proficiency in the clarity of writing technique and introducing the problem/thesis. These are also important aspects of the rubric that should be noted.

Areas in which student writing is below expectations are, primarily, citation formatting. In particular, writing is evidencing struggle in quotations/citation format.

Having this data now that the first version of the writing plan is completed makes this an excellent time to consider ways to scaffold writing pedagogy that will help students strengthen the skills and abilities they need as they graduate. Specific recommendations are as follows:

Add a true holistic score as another criterion on the rubric (not an average of all the criteria scores). A true holistic score (a score based on an overall impression of the full piece of writing) can allow for comparisons to individual criterion and often allows a more reliable picture of students' strengths and struggles. It also allows for department faculty to identify their values more specifically (for instance, when high holistic scores align strongly with certain criteria, it is usually because those criteria signal stronger writing).

While certainly all faculty in COSC have expertise in the *use* of citation format, a faculty member in the department should facilitate professional development for all instructors in the *pedagogy* of citation format (the Writing Center director or WAC director could also assist in this). The faculty should also use the course outcomes map in this document to consider ways, over the next two years, to better scaffold citation skills into their courses so that students begin with an introduction in some classes, and then those skills are reinforced continually (and expectations for mastery are higher) in their other classes.