PURDUE SCHOOL OF ENGINEERING AND TECHNOLOGY 2009-2010 ACADEMIC YEAR ASSESSMENT REPORT

Prepared by the School's Assessment Committee and Karen Alfrey, Chair

July 15, 2010

Introduction

The Purdue School of Engineering and Technology, IUPUI (E&T) continues its tradition of reporting its outcomes assessment activities by department or (where appropriate) by academic program. The assessment activities of most programs in the school are guided by the discipline-specific accreditation requirements of ABET, Inc. (http://abet.org/, formerly the Accreditation Board for Engineering and Technology), which accredits our engineering, technology, and computing programs; of the National Association of Schools of Music (NASM, http://nasm.arts-accredit.org/), through which the department of Music and Arts Technology is seeking accreditation; and of the Council for Interior Design Technology (CIDA, http://www.accredit-id.org/), the accrediting body for our Interior Design Technology program. The Organizational Leadership and Supervision (OLS) program, which is not accredited at the program level, uses the campus's Principles of Undergraduate Learning (PULs) as their framework for program assessment. Technical Communications offers a certificate program and provides supporting coursework, as well as assessment data on student learning outcomes in those courses, for many of the programs in the school.

School Assessment Processes

The program outcomes defined by ABET, NASM, and CIDA to describe the knowledge, skills, and habits of mind expected of successful graduates of these programs cover the same broad areas as IUPUI's Principles of Undergraduate Learning, but with more specificity appropriate to the needs of each discipline. (ABET outcomes for engineering programs, for example, include several outcomes that could be considered specific examples of Quantitative Skills, one of the PULs.) Thus, by focusing on attainment of discipline-specific outcomes, programs are assured of meeting the more broadly-defined PULs. Each course taught in the school has identified one or more emphasized PULs, as well as any discipline-specific outcomes emphasized in the course. Based on these defined areas of emphasis, specific courses may be targeted for assessment of a given outcome. The bulk of program assessment is administered and performed at the department level, with the school assessment committee providing a mechanism for sharing resources and best practices, as well as disseminating information and guidance on new campus-level assessment processes.

Prior to this year, most of the assessment of student learning outcomes focused on program-specific outcomes, with attainment of the PULs primarily demonstrated as a by-product of attaining discipline-specific outcomes. However, beginning in Spring 2010, student attainment of PULs is being quantified and reported for each undergraduate class on a five-year cycle. Currently the results of that assessment are being aggregated and reported as averages of all 100-, 200-, 300-, and 400-level classes in each school. Because the School of Engineering and Technology houses a wide diversity of programs, these lumped averages are of only limited use compared to the much richer program-specific outcomes data being collected by each department. For that reason, the school's Faculty Senate voted in May to allow reporting of PUL data by program rather than as a school-wide aggregate. We hope this new PUL assessment process will provide a valuable source of outcomes data to supplement our existing outcomes assessment processes.

Assessment Milestones

The 2009-10 academic year saw several major assessment milestones for the School of Engineering and Technology:

The Computer Information Technology (CIT) and Computer Graphics Technology (CGT) programs underwent an ABET accreditation visit in October 2009. The CIT department has already responded to the concern that several courses in the program were being taught by instructors without either advanced degrees or equivalent industry experience by establishing new instructor guidelines. Both programs are on-track for re-accreditation by ABET.

The Department of Music and Arts Technology had their first accreditation visit by NASM, also in October. Following constructive feedback from that visit, the department anticipates consideration for accreditation at the June 2011 NASM Commission meetings.

The Biomedical, Mechanical, Electrical, and Computer Engineering programs, in preparation for an ABET accreditation visit scheduled for September 2010, completed and submitted self-studies detailing their processes for assessing program outcomes and educational objectives, most recent assessment results, and the ongoing process by which those results are used to motivate and evaluate program improvements. The upcoming visit will be an initial visit for the new Biomedical Engineering program, and a re-accreditation visit for the other three programs.

In addition to being submitted to ABET or NASM for review, copies of the self-studies compiled by all these programs in advance of their accreditation visits are on file in the Dean's Office of the School of Engineering and Technology.

The E&T 2009-2010 Assessment Committee

This year the E&T Assessment Committee was co-chaired by Elaine Cooney, Professor and Chair of Electrical and Computer Engineering Technology, and Karen Alfrey, Director of the Undergraduate Program in Biomedical Engineering. The members of the 2009-2010 committee were the following:

Karen Alfrey, Biomedical Engineering
Jerome Clark, Computer and Information Technology
Elaine Cooney, Engineering Technology
Cliff Goodwin, Organizational Leadership and Supervision
Stephen Hundley, Associate Dean for Undergraduate Programs
Alan Jones, Mechanical Engineering
Betty Klein, Design and Communication Technology
Ginger Lauderback, Mechanical Engineering
Roberta Lindsey, Music and Arts Technology
Emily McLaughlin, Design Technology
Janet Meyer, New Student Academic Advising Center
Darrell Nickolson, Design and Communication Technology
Kenneth Rennels, Engineering Technology
Maher Rizkalla, Electrical and Computer Engineering
Jane Simpson, Electrical and Computer Engineering
Sam White, Dean's Office
Bill White, Engineering Technology
Wanda Worley, Technical Communications
H. Öner Yurtseven, Dean

Departmental and Program Annual Reports for 2009-2010

The 2009-2010 departmental and program assessment reports included in this school report represent the collected works of the following:

Computer Information Technology and Computer Graphics Technology (CIT/CGT)
Music and Arts Technology (MAT)
Biomedical Engineering (BME)
Biomedical Engineering Technology and Electrical Engineering Technology (BMET/ECET)
Construction Engineering Management Technology (CEMT)
Mechanical Engineering (ME)
New Student Academic Advising Center (NSAAC)
Technical Communications (TCM)

Summary of Assessment and Accreditation Activities for Computer Information Technology (CIT), Computer Graphics Technology (CGT), and Music and Arts Technology (MAT)
2009-2010 Academic Year

In Fall of 2009, three programs in the School of Engineering and Technology underwent an initial visit by their respective accrediting bodies: Computer Information Technology (CIT) and Computer Graphics Technology (CGT) hosted program evaluators representing the Computing Accreditation Commission (CAC) of ABET, Inc., while Music and Arts Technology (MAT) hosted evaluators from the National Association of Schools of Music (NASM). In preparation for these visits, all three programs compiled and submitted self-study documents describing in detail their processes for admission, student advisement, outcomes assessment, program improvement, and other major features of the programs, their resources, and their administration. Copies of these self-studies are on file in the Dean's office of the School of Engineering and Technology.

The major assessment-related activities of these three programs focused on preparing for the accreditation visit in the fall, and subsequently responding to the recommendations of the evaluators. These activities are summarized below for each program.

Computer Graphics Technology

Program evaluators found that the mathematics requirements for the BS in CGT – which previously included only Algebra and Trigonometry I and Algebra and Trigonometry II, together the equivalent of a precalculus course – might not be sufficient to meet the program educational objectives with respect to quantitative reasoning. In response to this finding, effective Spring 2010 the CGT Plan of Study was amended to incorporate new math requirements, including MATH 118 (Finite Math) and MATH 119 (Brief Survey of Calculus I).

The program evaluators affirmed the effectiveness of CGT's ongoing assessment of program outcomes. In the near term, improvements to the assessment process will primarily target program educational objectives (that is, the degree to which graduates meet program goals for job or graduate placement and early career achievement). This will be achieved by improved data gathering and updates to the database of program alumni and their employers, as well as improvements to employer and alumni survey instruments and refinement of data collection and analysis processes.

In order to ensure adequate faculty resources to provide adequate curriculum coverage and an appropriate mix of teaching, professional development, scholarship, and service for each faculty member, a new full-time faculty hire was added in 2009, and a faculty candidate search was conducted in the 2009-10 academic year. Because no candidates were hired as a result of this search, (although offers were made to two candidates), the position is being re-advertised.

Computer Information Technology

Feedback from program evaluators has led to a greater emphasis in the program on ABET CAC outcome 'g': an ability to analyze the local and global impact of computing on individuals, organizations, and society. Faculty defined performance criteria for this outcome and identified five courses in which these criteria are to be incorporated. Revised syllabi and new assignments targeting this outcome have been developed and are being implemented starting in Spring 2010.

As a result of concerns that the academic credentials and expertise of the program faculty did not encompass the entire spectrum of the program's curricular offerings, particularly in the areas of web development and networking, the department initiated an effort to recruit academically qualified

instructors in the local market. This resulted in the hiring of several new associate faculty members, all with Master's degrees, to teach in the Spring 2010 term.

Music and Arts Technology

The Music and Arts Technology department welcomed its first freshman class in Music Technology in Fall 2009. During the 2009-10 academic year the department sought approval for the sequences of upper division Music Technology classes (MUS N310, MUS N320, and MUS N410) that will be required of all majors seeking the BSMT degree. Consistent with school requirements, learning outcomes have been defined for each of these classes, and corresponding Principle(s) of Undergraduate Learning identified for each outcome. Assessment of these outcomes and PULs will help target areas for improvement of these courses and program.

The preliminary review by NASM of the Department of Music and Arts Technology during and following the Fall 2009 visit found that several existing departmental programs (the Post-Baccalaureate Certificate in Music Therapy Equivalency and the Master of Science in Music Therapy (Distance Learning and Distance Learning, Resident)), as well as the department's Music Academy, all meet NASM standards. The department and NASM continue to dialogue about the new and innovative Bachelor of Science in Music Technology, to ensure the program meets NASM standards in anticipation of consideration for accreditation at the June 2011 NASM Commission meetings.

DEPARTMENT OF BIOMEDICAL ENGINEERING 2009-10 ASSESSMENT REPORT NARRATIVE
Written July, 2010

The main focus of assessment activities in the Biomedical Engineering (BME) Program over the last year has been to prepare for the initial program accreditation visit by ABET, Inc., scheduled for September 2010. Full details of these activities are available in the 2010 BME self-study compiled for ABET; a copy of this self-study is on-file for reference in the Dean's Office in the School of Engineering and Technology. Assessment activities in the 2009-10 academic year include direct assessment of program outcomes as demonstrated by student performance on samples of submitted work; indirect assessment of outcomes via exit interviews with graduating seniors; a student satisfaction survey administered to sophomore, junior, and senior BME students; and assessment of program objectives via an alumni focus group, alumni survey, and employer survey. Major findings and planned program improvements are summarized below.

Student Learning Outcomes

In summer 2009, the BME faculty undertook the first comprehensive review of student performance on the Program Outcomes defined by ABET. Performance on each outcome was determined by direct assessment of samples of student work. Rubrics were used to define the level of performance at which each outcome would be deemed satisfactorily met. The fourteen ABET Program Outcomes cover the same broad learning outcomes as the Principles of Undergraduate Learning (PULs), but with more specificity appropriate to the discipline-specific focus of ABET accreditation. Therefore, by meeting these outcomes as defined by ABET, our program also achieves the PULs. This initial round of comprehensive assessment suggests that overall we are successfully achieving most of the ABET Program Outcomes, but revealed two main areas we wish to target for improvement:

- Students are not performing as well as we would like in their ability to apply higher math (e.g. differential equations, statistics) to solving engineering problems; and more generally, students are not sufficiently retaining mathematical concepts from one semester to the next. Some of this problem may be addressed by recent improvements to the engineering math curriculum in the freshman and sophomore years; the first students to go through the new curriculum have just completed the sophomore year, so the effects of these changes on subsequent performance in engineering classes will not be evident until they advance further in the curriculum. In addition, beginning this year the BME department plans to coordinate and better publicize the office hours of teaching assistants in the department in order to ensure that appropriate tutoring is available for students who need extra help with these mathematical concepts.
- Students could use additional practice with hands-on and design-oriented problems. To address this, we intend to expand the laboratory portion of the sophomore-level Biomechanics class (BME 24100) to make it less demonstration oriented and more hands-on inquiry-based. In addition, we will be adding elective courses as "gateways" to each of the three depth area elective streams, and will expect that each of these courses incorporate a hands-on or design component.

Evidence from this comprehensive assessment, as well as from feedback from faculty and from an alumni focus group held in December, indicate that the decision two years ago to increase the amount of writing in two BME courses in the junior year is having a positive effect on both students' ability to write long reports and their confidence in their writing ability. In particular, all alumni who participated in the focus group indicated that they do a lot of writing in their jobs, more than they would have expected; but while those from our first graduating class indicated

that they would like to have had more BME-specific writing practice as part of their undergraduate experience, those from our second graduating class, who had the advantage of the increased writing expectation in the junior year, overall felt satisfied with their preparation.

In the BME Master's program, evaluation of the thesis, rather than assessment at the course level, continues to be used as a summative assessment of program effectiveness.

Program Educational Objectives

In addition to monitoring student progress and assessing performance on learning outcomes, we evaluate our program's effectiveness in preparing graduates for and successfully placing them in jobs or graduate school after graduation. Feedback from alumni, both through surveys and through a well-attended focus group, indicates that our graduates are overall satisfied with their undergraduate experiences and felt well-prepared for their jobs or graduate programs.

Even in these challenging economic times, our placement rates for graduates within a year of graduation remains strong. Of the 23 students who graduated between May 2008 and August 2009:

- eight are pursuing (or have just completed) further schooling, with
    - two completing BME Master's degrees in May 2010
    - two more continuing in the BME Master's program
    - one enrolled in medical school
    - one pursuing a second B.S. degree
    - two pursuing graduate degrees in other health-related disciplines
- ten are employed in engineering, pharmaceutical, or health-related industries;
- one entered the military;
- one is employed outside his field;

and for the remaining three we have no data on current employment. By these statistics, at least 18 out of 23 graduates (78%) have found placement related to their field of interest, and at least 20 out of 23 (87%) have found some kind of employment or educational placement. In addition, some of our most recent graduates (May 2010) have for the first time been accepted into BME PhD programs at other universities (The Ohio State University, Washington University in St. Louis) and into law school (Indiana University).

Unfortunately, because we still have a small number of graduates, and only a subset of those have pursued jobs rather than further schooling, an employer survey administered this year by the School of Engineering and Technology did not return enough data to be useful (although the single employer of a BME graduate who responded reported high satisfaction with the employee). We hope that as our population of BME graduates grows, future employer surveys will give us a clearer picture of the effectiveness of our graduates in the workplace.

Other Department Goals

To help meet the research and teaching missions of the department – and in particular to support the addition of new "gateway" electives as mentioned above, two new full-time tenure-track faculty members were recruited this year and will join the BME department in the fall. This brings the department to ten full-time tenured/tenure-track faculty members, plus one full-time Lecturer overseeing undergraduate curriculum development and assessment, and one Clinical Associate Professor, a researcher in residence from Medtronic, Inc. who also oversees the senior design class. Search and screen activities will continue in the coming year due in part to the untimely death this summer of Dr. Charles Turner, the department's associate chair.

Overall, we are on track with establishing our department and implementing our new curriculum. We will continue to develop and implement appropriate assessment strategies and to close the loop on assessment, and eagerly await the results of our September program accreditation visit.

Program Assessment Report for BMET and ECET 2009-2010

This report will summarize changes in the curriculum and assessment practices of three programs within the department of Engineering Technology: Biomedical Engineering Technology (BMET), Computer Engineering Technology (CpET), and Electrical Engineering Technology (EET). These three programs share many common courses in the first two years, and CpET and EET share elective and capstone courses in the last two years of the curriculum. (The course prefix for both CpET and EET is ECET, and this prefix is used throughout this report.) There have been no major modifications in the plans of study or assessment in the last year, but this report will present some changes to streamline our efforts and to implement newly discovered best practices.

Faculty Changes

There have been changes in personnel which have changed some foci within the programs. Elaine Cooney, who has been the ECET assessment coordinator, is now the ENT department chair. Two new ECET faculty members with expertise in energy have revised the existing power and controls classes, and developed new classes in renewable energy and energy efficiency. This has reinvigorated our power and controls emphasis in the EET curriculum, and is creating a new area of concentration for our graduate students.

The emphasis on **renewable energy and energy efficiency** was endorsed by our Industrial Advisory Committee during both our fall and spring meetings. Based on this input, and student interest, we will be increasing our offerings in this area.

During the documentation of our Business Continuity Plan (BCP), we developed recommendations for course binders and **course coordinators**. Full time course coordinators were assigned for all courses in the department, as well as guidelines for course binders to be kept in the coordinators' offices. (We are also pursuing electronic documentation, but the BCP emphasized being prepared for working without power or computers, so our first step is to assemble hard copies of the documentation.) This standard will help consistency and documentation of improvements in our classes.

Accreditation Activities

In March, 2010, representatives from the **Federal Aviation Authority** (FAA) Technical Operations came to our campus for a **Collegiate Training Initiative reaccreditation** visit of our EET program. Over three days, the representatives reviewed our course objectives and materials, met with faculty and students, and toured our laboratories. The team was very complementary of our program, but asked us to add MOSFETs and power electronics back into the EET curriculum. We have addressed this by offering a new dual level power electronics course for fall 2010. We expect that with this addition, the FAA will reaccredit our program.

Laptop program

ECET 28400, Computer Communications, is a course that students learn how communications is performed through computing devices. As such, students are expected to be truly proficient in utilizing

the state-of-the-art IT technology, especially in computing devices after taking this course. Students are encouraged to bring in their own laptop computers and integrate them into class activities. These activities include basic note-taking to complicated computer networking in the laboratory exercises. Lectures in the class and laboratory exercises are tailored closely to accommodate student's learning. For example, concept of virtual machine is introduced early in the semester so that students who are interested in using their own laptop computers in the class activities can be adequately prepared for this technology. It is also worthy to point out that since this course focuses strongly in active learning, most students learn and realize the fact that having a laptop computer with them all the time is truly advantageous in learning. The techniques and lessons from ECET 28400 will be useful when the ENT department implements a laptop requirement during the 2010-2011 academic year.

Professionalism content in BMET

Students enrolled in the BMET program participate in professionalism course content in BMET 105, BMET 240 and BMET 290. Professionalism content is presented in stages and builds on previous course discussions.

In BMET 105, work-place expectations are discussed during the ethics portion of the lecture. To clearly articulate employer ideals, a rubric is included for self-reflection. The rubric contains 11 characteristics including organization, timeliness, communication skills, ability to accept criticism, empathy, demeanor, grooming, collaboration, initiative, self-improvement, and adaptability. Each attribute has descriptors that identify excellent, satisfactory, and unacceptable indicators.

Late in the semester, BMET 240 students are required to self-assess themselves against the same professional attribute rubric as presented in BMET 105. Students evaluate themselves on each of the 11 characteristics. The students indicate whether they feel they possess excellent, satisfactory or unacceptable attributes. The student should right click in the appropriate cell and change the cell shading to indicate the personal level of quality they possess. Students turn in these rubrics to the assignment tool. Although no grade is required, faculty may reflect on a student's self-assessment, providing feedback to guide development. The completed professional rubric is required to be submitted in order to receive a grade in the class.

Prior to the internship assignment in BMET 290, the program director and the student together reflect on the professional attributes rubric. Students must be satisfactory or excellent in each area in order to be placed in a clinical location. Students who have an area of unacceptable attributes are encouraged to participate in workshops (offered on campus) to increase professional awareness and encourage personal development.

The rubric was designed in cooperation with local and national employers of BMETs. It reflects the general expectations of the clinical setting.

Other Updates

Each semester, instructors of every ECET and BMET course complete **end of semester reflections.** These list suggestions and changes made in each course. This year, changes included new textbooks, software, lab assignments, and microprocessor development boards. As the result of an academic misconduct incident, some policies regarding materials students may bring into tests have been refined.

The **PUL assessment** being done on the campus level is quite in line with our usual data collection. We hope to be able to use the PUL data from our courses as part of our assessment and accreditation program. Previously, we have collected similar data using rubrics and spread sheets. Having access to the PUL data for each course in the ECET and BMET programs would greatly reduce the amount of redundant data collection.

Program Review and Assessment Committee (PRAC)
2009-2010 Annual Report

Construction Engineering Management Technology (CEMT)
Department of Engineering Technology

June 4, 2010
J. William White

The following report mirrors the outline recommended by the IUPUI / PRAC via its web site as retrieved 6/4/10 from http://www.planning.iupui.edu/43.html.

1. **General Outcomes (What general outcome are you seeking?)***
   - Technical competence – "Demonstrate excellent technical capabilities in construction technology and related fields. Also "competently use mathematical, measurement, instrumentation testing techniques."
   - Citizen skills – "Be responsible citizens. "
   - Advancement potential – "Continue professional advancement through life-long learning."
   - Process capability – "Apply sound methodology in related multidisciplinary fields and be sensitive to the health, safety and welfare of the public."
   - Communication skills – "Practice effective oral, written and visual communication skills."
   - Diversity sensitivity – "Understand the environmental, ethical, diversity, cultural and contemporary aspects of their work."
   - Collaboration skills – "Work effectively and collaboratively in architectural, engineering and construction industries."

*Retrieved from the CEMT web site March, 2009.

2. **Outcome Identifiers (How would you know it (the outcome) if you saw it?)**
   Because CEMT is accredited by ABET, there is a certain amount of overlap / redundancy which CEMT can utilize to monitor outcomes. Because the PUL's have been mapped to ABET's a-k outcomes, the same indicators for ABET can apply to the PUL's. As CEMT is continuing its effort to assign ABET outcomes to every course in the CEMT program, outcome identifiers either have been or are being assigned for each course.

   CEMT is also increasing its coordination with the Office of Career Services. A database which documents student placement rates and starting salaries as well as more long term surveys, e.g., five years following graduation, are

3. **Student Opportunities (What opportunities do students have to learn it?)**
   The CEMT program consists of a broad spectrum of classes and hands-on laboratories which reflect current thinking within the construction industry. In response to our IAB's recommendations, the CEMT program incorporates group activities in a number of different courses including but not limited to CEMT 12000, 28000, and 44700. At least one course, CEMT 28000 mixes CEMT students with interior design and architectural technology students to simulate multi-discipline teams working towards a common goal.

   In addition, with the revitalization of our student group, the Society of Student Constructors (SSC), more and different field trips, construction site tours and industry-related experiences are being made available.

4. **Measurement (How are you measuring each of the desired behaviors?)**
   1. Student evaluation surveys
   2. Faculty personal reflections

3. Industry / IAB meetings & presentations
4. ABET a – k indicator assessments
5. Intern employer evaluations
6. Annual assessment program review via Self Assessment matrix.
7. Course work (assignments, tests, projects, etc.)
8. Senior projects

5. Findings (What are the assessment findings?)

Two (2) measurement methods were enhanced for this academic year.

1) For the first time, students in our capstone course, CEMT 447 Project Management, were required to present posters which summarized their senior projects to IAB members at the end of the semester. There were a number of comments and observations which were noted in the minutes of the proceedings as authored by the program director, Dr. Tom Iseley. The observations will assist the CEMT program with implementing improvements in the CEMT 447 course in particular and the CEMT program in general.

2) The Course Reflection process became a more meaningful evaluation of course effectiveness for the 2009-2010 academic year as the response rate has more than doubled from the previous year (71% vs. 33%). The quality of the responses appeared thorough and well considered. Although this indicator is an indirect measure of course effectiveness, the instructor's personal observations remain of value and deserve review and comment. Detailed responses appear in Table 2.

Criteria	***YES***	***NO***
Expectations met?	88%	12%
Tried something new?	71%	29%
Deficiency noted?	76%	24%
Remedy implemented?	23%	77%
Proposed change for next time?	65%	35%

Table 1 Course Reflection Summary

Common issues

- Although adjunct faculty response rate remains low (44% or 4/9), the overall response rate for the entire department has improved to 71% (17/24).
- Full time faculty response rate was excellent at 93%; only one (1) course taught by a full time faculty member was not reported.
- Most instructors (88%) felt as though overall course expectations were achieved.
- A sizeable majority of instructors (71%) revised course content ("tried something new") from the previous semester.
- A majority of instructors (76%) noted deficiencies in student performance. Common concerns included
    - Inadequate mastery of prerequisite skills
    - Deficiency in scheduling as noted by the necessity to review scheduling fundamentals and Primavera P3 software manipulation
    - Poor overall performance on tests and assignments as noted by low grades
- When deficiencies were noted very few instructors implemented corrections during the school term – at least as noted within the reflection document.

- Most instructors proposed changes / revisions to the class for the upcoming academic year in an effort to respond to the noted student deficiencies.

6. Improvements (What improvements have been made based on assessment findings?)

The majority of the CEMT faculty implements ongoing improvements to their courses with each passing semester. As new challenges arise each instructor addresses the challenges accordingly. These improvements are detailed in Table 2 by course and by instructor.

Also, as part of the program's ABET obligations, the program evaluates itself in terms of its progress to various ABET assessment goals. Improvements are noted in Table 3.

CEMT Reflection Tabulation Fall 2009 – Spring 2010								
	Course / Instructor	***Title***	**1- Expectations met?**	**2- Tried some-thing new?**	**3- Deficiency noted?**	**4- Correction Implemented?**	**5- Proposed changes for next term?**	***Remarks***
1)	104 Kinsey	Survey Fundamentals	YES	NO	YES	NO	YES	3-Weak AutoCAD skills 5-Lab manual for new equip-ment, speak w/TECH104 director
2)	120 Johnson	Construction Materials & Methods	YES	YES	NO	NO	NO	2-Supplemental information for project, wood framing lab exer-cise.
3)	160 Kinash	Statics	YES	YES	YES	YES	NO	2-Participation enforcement, textbook 3-Poor midterm performance. 4-Spoke w/ students
4)	260 Kinsey	Strength of Materials	YES	NO	YES	NO	YES	3-Poor assignment performance 5-Stress assignment importance
5)	267 Kinsey	Materials Testing	YES	NO	YES	NO	YES	3-Built-up lab exercise limitations 5-Revise built-up lab exercises
6)	275 Kinash	Civil Engineering Drafting	YES	YES	YES	YES	NO	2-Participation enforcement, textbook. 3-Poor midterm performance 4-Spoke w/ students
7)	280 White	Quantity Take-Off	YES	YES	YES	NO	YES	2-New custom text book, new lab assignments, new Adobe take-off tool 3-Poor test performance 5-Increase quiz weight, reduce PPT information
8)	330 Sener	Field Operations	YES	YES	NO	NO	NO	2-New PowerPoints, targeted as-signments
9)	342 Kinash	Cost & Bid-ding	YES	YES	YES	YES	YES	2-Participation enforcement, textbook 3-Poor midterm performance. 4-Spoke w/ students 5-FA10: update software.
10)	347 White	Construction Administration & Specifications	YES	YES	YES	NO	YES	2-Topic order changed, new top-ic added, increased use of Adobe for printing. 3-Poor test performance, inade-quate use of textbook. 5-Simplified PPT slides to increase note-taking
11)	350	Cost &	YES	YES	YES	NO	YES	2-Changed final exam for final

CEMT Reflection Tabulation **Fall 2009 – Spring 2010**								
	Course / Instructor	***Title***	**1- Expectations met?**	**2- Tried some-thing new?**	**3- Deficiency noted?**	**4- Correction Implemented?**	**5- Proposed changes for next term?**	***Remarks***
	McCaan	Control						project, increased group work 3-Inadequate P3 software skills 5-Upgrade software
12)	430 Sener	Soils & Foundations	NO	YES	YES	NO	YES	1-Basic competencies not met 2-New PowerPoint information, lab assignments, course topics 3-Lab deficiency due to poor sample 5-Better samples will be obtained
13)	447 White	Project Management	NO	YES	YES	NO	NO	1-Students were unprepared for scheduling and estimating as-signments. 2-Added poster session & review process 3-Textbook not adequately cov-ered.
14)	452 Sener	Hydraulics & Drainage	YES	YES	YES	YES	YES	2-Topics, assignments, solutions, quiz questions 3-Students resist lengthy research, fundamental retention 4-Simplify & focus assignments, pre-tests on fundamentals 5-Search for better text continues
15)	455 Mehta	Safety & Inspection	YES	NO	YES	NO	YES	1-Expectations were exceeded 3-Inadequate class participation 5-Reduce class size to increase participation
16)	484 Kinsey	Wood & Timber	YES	NO	NO	NO	NO	
17)	494 Kieser	Construction Economics	YES	YES	NO	NO	YES	2-Textbook, addl. civil examples. 5-Switch to old textbook
	END OF TABLE							

Table 2. CEMT Reflection Tabulation

	RATING
0	Not in place
1	Beginning stage of development
2	Beginning stage of implementation
3	In place & implemented
4	Implemented & evaluated for effectiveness
5	Implemented, evaluated and 1 cycle of improvement

Stakeholder Involvement	***Rating***	***Program Objectives***	***Rating***	***Program Outcomes***	***Rating***	***Outcomes + Practices***	***Rating***	***Assessment Processes***	***Rating***	***Evaluation***	***Rating***
Stakeholders identified	**5**	Objectives defined	**3**	Outcomes defined	**2**	Outcomes mapped to curriculum	**3**	Assessment ongoing	**2**	Assessment data re-view	**1**
Primary stakeholders involved in identifying objectives	**5**	Objectives publicly documented	**3**	Number of outcomes are mana-geable	**3**	Practices systematically evaluated using out-come data	**1**	Multiple methods used	**3**	Evaluation done by change agents	**2**
Primary stakeholders involved in evaluating objectives	**5**	Number of objectives are mana-geable	**3**	Outcomes are publicly documented	**3**	Education practices are modified per assessment data	**0**	Indirect & direct measures of student learning are used	**2**	Evaluation of data linked to curricular practices	**0**
Sustained partnerships w/ stake-holders established	**5**	Objectives aligned with mission statement	**3**	Outcomes linked to objectives	**1**			Assessment processes reviewed for effectiveness	**2**	Evaluation leads to decisions / action	**0**
		Objectives periodically assessed	**3**	Outcomes defined by measurable performance indicators	**2**			Assessment methods modified based on evaluation	**0**		

Ranking decreased from previous year.

Ranking increased from previous year.

Table 3. CEMT assessment program self evaluation table.

DEPARTMENT OF MECHANICAL ENGINEERING
2009 ASSESSMENT REPORT NARRATIVE

Prepared by Jie Chen and Ginger Lauderback
Written July 2010

The Department of Mechanical Engineering (ME) is comprised of 11 full time faculty and one full time advisor who support BS through PhD programs. Since Fall 2000, we have assessed our programs for continuous improvement, guided by ABET, Inc. standards and the internal assessment processes of the IUPUI School of Engineering and Technology and the campus at large. We are accredited by ABET, Inc. and are undergoing review this coming September. Substantial effort has been invested in the production of the 2010 ABET Self-Study, located on our department's assessment website (www.engr.iupui.edu/me/fassessment.shtml). The self study is very comprehensive and contains information about our constituents, assessment processes, findings, and associated changes over the last six years as well as details of the ME course outcomes and their relationships with the IUPUI Principles of Undergraduate Learning (PUL).

Recent Improvements

Each semester significant data is collected from the senior Capstone Design course. The course culminates with student group presentations, and the ME Industrial Advisory Board (IAB) juries the presentations. In Spring 2009 the IAB told us that the presentations were not very efficient. One of the board members volunteered to produce a presentation template that echoes Raytheon's presentation practices. The template was implemented in Fall 2009. The outcomes from Spring 2010 were well received by the IAB members.

In Spring 2009 the IAB also indicated the department should encourage students to gain a broader understanding of engineering systems beyond the scope of the required ME coursework. In response, the Bachelor of Science in Mechanical Engineering (BSME) curriculum was revised in Fall 2009 by updating a required three credit science elective to allow either a science or engineering elective. The new structure has been very popular, and the majority of the ME students have taken an engineering elective in their area of personal interest, including other departments such as Electrical Engineering – the response we had hoped to encourage.

The new curriculum also implemented a one credit Fundamentals of Engineering (FE) exam preparation course, ME 40500. The intent of the course is to promote life-long learning among our students by helping to familiarize them with the FE exam – a prerequisite for professional licensure. The course is offered during the senior year, providing students the opportunity to review key information from their engineering studies. An abbreviated version of the exam is being administered to monitor student performance against national averages for the FE exam. Contemporary issues are also incorporated into the course via guest lectures covering topics such as project management, intellectual property law, and career development. Data is being collected from our recent alumni (one to five years post-graduation) to determine if the course is increasing student participation and success in the FE exam.

Historically, alumni feedback plays a key role in our program assessment. We regularly survey alumni to determine if our course and program outcomes are framing our program in a way that leads to ultimate success for our graduates. In the past a basic online survey was used. This year we utilized Survey Monkey, an online tool, to collect and analyze the alumni data. Survey Monkey allowed us to build logic into the survey and helped us obtain more data than in the past because we were able to keep the survey short by eliminating questions the logic determined impertinent based on previous survey answers.

The analysis provided some apparently contradictory results, so we developed a new advisory board to assist data interpretation – the Alumni Advisory Board (AAB). The AAB provided valuable insight into the rationale behind the responses. The general consensus was that the survey questions were too vague to address the breadth of occupational roles ME graduates fill and should be redesigned with logic to make the questions more applicable to the variety of fields in which the alumni work. The survey was sent out again using the new questions, and the response rate increased from 28 to 66 and had clearer results. The AAB currently consists of 11 alumni and will meet at least twice a year for business-related issues, including assessment.

In addition to Survey Monkey, another new assessment tool was utilized for the first time this academic year. The ME Undergraduate Education and Assessment Committee developed a direct assessment tool utilizing Excel to evaluate how well student work met the published course and program outcomes. In Fall 2009 the ME Course Coordinators evaluated selected course(s) whose course outcomes were strongly or uniquely linked to the program outcomes. All program outcomes were evaluated and Course Coordinators provided comments about what factors were likely to be affecting the students' performance. Analysis revealed areas of strength and potential improvement for future semesters. The analysis was repeated in Spring 2010 to confirm the data. We plan to use this tool to directly assess our student work every two to three years.

The New Student Academic Advising Center ASSESSMENT ANNUAL REPORT
Prepared by Janet Meyer and the New Student Academic Advising Staff
June, 2010

In the fall of 2008 the existing Office of Freshman Engineering essentially merged with the newly-formed freshman technology advising program to form the New Student Academic Advising Center in the School (NSAAC) of Engineering and Technology at IUPUI. The vision of the NSAAC is to "increase retention of engineering and technology students by providing high quality academic guidance, support and motivation for engineering and technology study and strategies for success in upper level coursework as well as future careers." The way to achieve this vision is through implementation of the mission of the NSAAC. It is to:

- Help students develop strategies for success in engineering and technology study,
- Provide a welcoming environment and high quality academic guidance to current and prospective students,
- Assist with transfer credit evaluation and other academic procedures,
- Implement best practices through development and instruction of introductory engineering and technology courses

All students new to the School of Engineering and Technology are now admitted to the New Student Academic Advising Center. Engineering students have always been assigned a separate major plan code by the Admission's Office. This code indicates that they are in the first year of their engineering studies and their academic advising was done by Freshman Engineering academic advisors. When the students completed their freshman engineering coursework, their plan codes are changed to what is called the major code and their files are moved to their major department. Further academic advising is then done in the major department. Having freshman engineering codes has facilitated the identification of first year engineering students and has assisted in following students' progression in their studies. In the fall of 2008, to assist with the identification, servicing, and tracking of students in technology majors, new freshman technology plan codes for the technology majors were requested and approved by the Office of the Registrar. All technology majors who had not yet completed the first year curricula of their major were reassigned the appropriate freshman code. As with engineering students, technology students who complete their freshman program are assigned major codes and moved to the department of their choice. In summary, the freshman codes provide a new tool for assessing student success in the School of Engineering and Technology.

Data provided by Information Management and Institutional Research (IMIR) services at IUPUI reports the number of students served by the NSAAC.

Fall Headcount	2007	2008	2009
Engineering	401	457	505
Technology	0	7	734

This chart shows the number of students with freshman codes in the years indicated and clearly demonstrates the impact of the freshman technology codes in identifying students completing their first year of studies in the School of Engineering and Technology. As mentioned above, the fundamental outcome of the New Student Academic Advising Center is the retention of students. For several years the four year retention in engineering rate has been tracked. Retention data for students entering during the 2005/2006 academic year is found below.

Retention Statistics for Students Entering Freshman Engineering during 2005-2006 Academic Year as of June, 2009

Academic Standing	New (FYU)	External Transfers	IUPUI Transfers	EDDP
Graduated or at Senior Status in Engineering	26	35	17	9
Still in Engineering at Freshman – Junior Level	4	6	4	0
Known to have Transferred to Another University	1	0	1	2
Graduated from or Enrolled in Technology	6	5	8	0
Graduated from or Enrolled in a Major other than Engineering or Technology	10	3	0	10
Dropped Out	21	27	15	2
Total	**69**	**76**	**45**	**23**
Percentage Retained in ENGR	**43.47**	**53.94**	**46.66**	**39.13**

The chart above includes new, first year undergraduates (FYU), external transfers who are students new to IUPUI but have taken coursework at another institution (these also include second degree students), IUPUI transfers are those students who began their studies at elsewhere in the Indiana University system, and EDDP refers to students in the Engineering Dual Degree Program at Butler University. Additionally, retention data over time has been collected and appears in the chart below.

Retention Summary Percentages of Students Retained in Engineering

Admission Category	Students Entering 2000-2001 % Retained	Students Entering 2001-2002 % Retained	Students Entering 2002-2003 % Retained	Students Entering 2003-04 % Retained	Students Entering 2004-05 % Retained	Students Entering 2005-2006 % Retained
Beginners	45.24	40.62	26.41	31.15	42.59	43.47
External Transfers	42.57	53.52	45.33	44.74	61.29	53.94
IUPUI Transfers	69.57	53.66	42.37	46.43	61.54	46.66
EDDP	40.0	30.58	37.93	29.5	44.12	39.13

Overall Retention (All Students)	**40.82 (n = 196)**	**45.79 (n = 214)**	**38.88 (n = 216)**	**38.81 (n=237)**	**54.09 (n=220)**	**47.41 (n=213)**

Data about engineering students has been gathered for many years. With the formation of the New Student Academic Advising Center a new database has been designed that will more easily capture information about all students – engineering and technology - admitted to the School of Engineering and Technology. The use of freshman admission codes allows tracking of student progression in engineering and technology programs. As the database matures, this information will be used to calculate the retention and persistence of students as they move through their degree plans.

Below are satisfaction surveys done for spring and fall 2009. The respondents are students in classes taught out of the New Student Academic Advising Center. One of the more marked results is that students report overall a higher satisfaction with their freshman experience during the fall semester when compared to the spring semester. While the reasons for this are not known, typically the respondents are in a more challenging curriculum their spring semester than in the fall. However, more assessment is needed to determine the reasons for this discrepancy. Quality of help sessions also are rated low. Again, more investigation into these results is needed. Finally, ET students rated the quality of student support in adjusting to college lower both semesters than did UCOL and other students. This result is different from that of past years. Continuing assessment is needed for follow-up and improvement. These results will receive attention from those in the NSAAC during the current year.

FRESHMAN ADVISING SPRING 2009 STUDENT SATISFACTION SURVEY/SCHOOL SPECIFIC

QUESTIONS 1-11 N = 190	**Overall Average**	**ET Students**	**UCOL Students**	**Other Schools**
Quality of Academic Advising	4.10	4.04	4.28	4.67
Quality of student support in adjusting to college	3.92	3.88	4.03	4.33
Availability of academic advising	4.24	4.21	4.33	4.67
Scheduling of ENGR 195, 196, 197 and TECH 102 (class times and frequency of courses offered)	4.02	4.04	3.90	4.67
Classroom environment conducive to learning	4.09	4.01	4.32	4.67
Quality of Engineering & Technology computer labs	4.26	4.22	4.38	4.67
Quality of ENGR 196/197 help sessions in aiding classroom performance	3.65	3.56	3.96	4.00
Assistance in time management and study skills development.	3.73	3.66	3.92	4.33
Opportunities for networking with	3.79	3.73	4.00	3.67

fellow students and faculty through professional societies and student organizations.				
Career planning assistance and major selection	3.81	3.81	3.74	4.67
Overall freshman experience on the IUPUI campus	3.93	3.84	4.21	4.33

5 = Very Satisfied and **1 = Very Dissatisfied**

N = total number of responses in the entire survey

FRESHMAN ADVISING FALL 2009 STUDENT SATISFACTION SURVEY/SCHOOL SPECIFIC

QUESTIONS N=218	Overall Average	E&T Students	UCOL	Other Schools
Quality of Academic Advising	4.36	4.04	4.28	4.67
Quality of student support in adjusting to college	4.17	3.88	4.03	4.33
Availability of academic advising	4.36	4.21	4.33	4.67
Scheduling of ENGR 195, 196, 197 and TECH 102 (class times and frequency of courses offered)	4.1	4.04	3.90	4.67
Classroom environment conducive to learning	4.33	4.01	4.32	4.67
Quality of Engineering & Technology computer labs	4.37	4.22	4.38	4.67
Quality of ENGR 196/197 help sessions in aiding classroom performance	4.04	3.56	3.96	4.00
Assistance in time management and study skills development.	4.05	3.66	3.92	4.33
Opportunities for networking with fellow students and faculty through professional societies and student organizations.	4.02	3.73	4.00	3.67
Career planning assistance and major selection	4.12	3.81	3.74	4.67
Overall freshman experience on the IUPUI campus	4.27	3.84	4.21	4.33

5 = Very Satisfied and **1 = Very Dissatisfied**

( ) = number of responses for question in this category **N** = total number of responses in the entire survey

FRESHMAN ADVISING SPRING 2009 STUDENT SATISFACTION SURVEY/AGE SPECIFIC

QUESTIONS 1-11 N = 190	Overall Average	Ages 17 - 20	Ages 21 - 25	Age 25+
Quality of Academic Advising	4.10	4.14	3.87	4.67
Quality of student support in adjusting to college	3.92	3.92	3.84	4.43
Availability of academic advising	4.24	4.23	4.08	4.67
Scheduling of ENGR 195, 196, 197 and TECH 102 (class times and frequency of courses offered)	4.02	4.01	3.87	4.50
Classroom environment conducive to learning	4.09	4.04	4.14	4.33
Quality of Engineering & Technology computer labs	4.26	4.28	4.10	4.67
Quality of ENGR 196/197 help sessions in aiding classroom performance	3.65	3.60	3.62	3.40
Assistance in time management and study skills development.	3.73	3.72	3.68	3.57
Opportunities for networking with fellow students and faculty through professional societies and student organizations.	3.79	3.82	3.76	3.17
Career planning assistance and major selection	3.81	3.84	3.72	4.11
Overall freshman experience on the IUPUI campus	3.93	3.93	3.97	4.00

5 = Very Satisfied and **1 = Very Dissatisfied** **N** = total number of responses in the entire survey

FRESHMAN ADVISING FALL 2009 STUDENT SATISFACTION SURVEY/AGE SPECIFIC

QUESTIONS N=218	Overall Average	E&T Students	UCOL	Other Schools
Quality of Academic Advising	4.36	4.04	4.28	4.67
Quality of student support in adjusting to college	4.17	3.88	4.03	4.33
Availability of academic advising	4.36	4.21	4.33	4.67

Scheduling of ENGR 195, 196, 197 and TECH 102 (class times and frequency of courses offered)	4.1	4.04	3.90	4.67
Classroom environment conducive to learning	4.33	4.01	4.32	4.67
Quality of Engineering & Technology computer labs	4.37	4.22	4.38	4.67
Quality of ENGR 196/197 help sessions in aiding classroom performance	4.04	3.56	3.96	4.00
Assistance in time management and study skills development.	4.05	3.66	3.92	4.33
Opportunities for networking with fellow students and faculty through professional societies and student organizations.	4.02	3.73	4.00	3.67
Career planning assistance and major selection	4.12	3.81	3.74	4.67
Overall freshman experience on the IUPUI campus	4.27	3.84	4.21	4.33

5 = Very Satisfied and **1 = Very Dissatisfied**

( ) = number of responses for question in this category **N** = total number of responses in the entire survey

TECHNICAL COMMUNICATION 2009-2010 ASSESSMENT REPORT
Prepared by Wanda L. Worley
Spring 2010

FALL 2009 & Spring 2010 REVIEW

EXECUTIVE SUMMARY

The Technical Communication Program (TCM) continued its assessment activities during the fall semester of 2009 and spring semester of 2010. Fall 2009 semester activities focused specifically on our engineering students; spring 2010 semester continued to focus on the engineering students, but added two technology courses for PUL assessment. We collected student artifacts from TCM 36000, a course taken by our engineering students: a total of 37 students in fall 2009 and 27 students in spring 2010 for a writing skills assessment and 9 students in fall 2009 for an oral presentation skills assessment. For IUPUI's Principles of Undergraduate Learning assessment, we used the same student artifacts collected in TCM 36000 (27 students) spring 2010 and also collected artifacts from TCM 35000 (4 group projects) and TCM 46000 (8 students) spring 2010.

Data indicate that the students in TCM 36000 are performing adequately in oral communication, but improvement needs to take place in written communication in the areas of "content fits purpose and audience," "data and analysis are logical, sound, and sufficient," and "credit is given for work from other sources." Data collected for the PUL assessment indicate that with the exception of two subcategories of the PUL 1A, students are meeting the PUL outcomes effectively or very effectively.

INTRODUCTION

The Technical Communication program continued its practice of collecting student artifacts in the fall of 2009 and spring 2010. During fall 2009, assessment focused specifically on our engineering students in TCM 36000 *Communication in Engineering Practice* in both oral and written communication. In spring 2010, writing samples only were evaluated. In all, we assessed a total of 64 final written products and 9 oral presentations from students in TCM 36000.

As part of the assessment activities for TCM, we also assessed student outcomes in terms of IUPUI's Principles of Undergraduate Learning. We focused on spring 2010 and courses TCM 35000 *Visual Elements of Technical Documents* (4 group projects), TCM 36000 *Communication in Engineering Practice* (27 students), and TCM 46000 *Engineering Communication in Academic Contexts* (8 students).

A brief summary of the results follows, with detailed data given in Appendix C.

Oral Presentations

The strategy for evaluating the students' oral presentations was to invite interested engineering faculty as well as TCM faculty to the final presentations of the semester in TCM 36000. In our efforts to keep the process simple and to encourage as many faculty members as possible to attend at that busy time of the year, we limited assessment to two days, one for a Monday/Wednesday section and one for a Tuesday/Thursday section. In total, nine students were evaluated. The four students from the M/W section were evaluated by five faculty, three from TCM and two from engineering; the five students from the T/R class were evaluated by two faculty, one from engineering and one from TCM. The evaluation results were very strong and very consistent. Of the nine

students, six averaged over 4.0 (5.0 pt.), and of the 13 criteria, 10 averaged over 4.0 (5.0 pt.), a remarkable accomplishment.

The engineering instructors who participated were Karen Alfrey, BME (M/W); Jie Chen, ME (M/W); and Razi Nalim, ME (T/R). From TCM, Gabe Harley (M/W) and Wanda Worley (both days) participated.

Using a rubric judging 13 discrete criteria of the oral presentation, the jurors scored each of the criteria on a scale of 1-5. The criteria (categories) assessed were Introduction, Content, Data & Analysis, Conclusion, Organization, Visuals, Language, Length, Grammar, Preparation, Pace & Volume, Body Language, and Q&A Time. An "Overall Impression" is also included as a 14th category.

The goal of the assessment was two-fold: (a) 70% or more of the students would achieve an overall average score of 3.5 or higher; and (b) 70% or more of the criteria would be judged at 3.5 or higher.

All nine students achieved total scores higher than 3.5. Of the 13 criteria, 11 of them were evaluated above 3.5, with 10 of the 11 at 4.0 or above.

Figures A-1 and A-2 and Table A-1 in Appendix A reveal a more detailed look at the average scores both of the individual criteria and of each student.

Written Reports

During fall 2009 and spring 2010, a total of 64 written final products were randomly collected from students in TCM 36000 and assessed holistically by three TCM faculty: 37 in fall 2009 (49% of the total enrollment); 27 in spring 2010 (41% of the total enrollment). These three faculty had all taught TCM 36000 at some point and so were familiar with the goals of the course. Using a rubric of 12 criteria (Introduction, Content Fits Audience and Purpose, Data & Analysis, Conclusion, Organization, Visuals, Layout, Language, Length, Mechanics, Sentence Structure, and Credit for Sources), the jurors scored each of the criteria on a scale of 1-4.

As with the oral presentations, the goal of the assessment was two-fold: (a) 70% or more of the students achieve an average score of 2.5 or above; and (2) 70% or more of the criteria would be judged at 2.5 or above.

- **In fall 2009**, of the 12 criteria, 8 of them had averages ranking 2.5 or above. The three criteria ranking only slightly below 2.5 were Content, Data & Analysis, and Visuals. The one ranking below 2.0, and one that definitely needs attention was Credit for Sources.

- **In spring 2010**, all 12 criteria had averages ranking 2.5 or above, with four criteria ranking above 3.0.

- **In fall 2009**, 21 of the 37 students who were assessed ranked 2.5 or above (54%), with 7 of the 21 ranking above 3.0 (33%).

- **In spring 2010**, 20 of the 27 students who were assessed ranked 2.5 or above (74%), with 15 of the 20 ranking above 3.0 (75%).

Figures A-3 through A-6 and Tables A-2 and A-3 in Appendix A give a detailed look at the scores of both the individual criteria and of each student. Table A-4 gives a comparison of written averages by criterion by year.

Tables B-1 through B-9 in Appendix B give a detailed look at the scores of both the individual criteria and of each student by department. Figures B-1 and B-2 give a comparison of the written averages by department by criterion.

PUL Assessment

The same 27 written final products randomly collected from students in TCM 36000 *Communication in Engineering Practice,* and used in the holistic written evaluation, were used for the PUL assessment. In addition, artifacts were collected from all of the students in TCM 35000 *Visual Elements of Technical Documents* (4 group projects) and TCM 46000 *Engineering Communication in Academic Contexts* (8 students) for PUL assessment. Two TCM instructors holistically assessed the PUL outcomes. Using a rubric of the PUL criteria provided by IUPUI, the faculty ranked each artifact on the Major and Moderate Emphasis categories on a scale of 0 – 3. A copy of the rubric is attached.

- **In TCM 35000,** in the Major Emphasis category, 4 of the 6 students (67%) scored half way between Somewhat Effective and Effective; 2 of the 6 students (33%) scored a perfect 3 (Very Effective). In the Moderate Emphasis category, all 6 students (100%) scored Effective or Very Effective.

- **In TCM 36000,** in the Major Emphasis category, 7 of the 27 students (26%) scored just under Effective; all remaining students (74%) scored above Effective. In the Moderate Emphasis category, only 2 of the 27 students (.07%) scored slightly below Somewhat Effective; all remaining students (99.9%) scored between Effective and Very Effective.

- **In TCM 46000,** in the Major Emphasis category, all 8 students (100%) scored between Effective and Very Effective. In the Moderate Emphasis category, all 8 students (100%) scored between Effective and Very Effective.

ANALYSIS AND FEEDBACK

We are all aware that assessment activities do no good if they exist in a vacuum. Learning from the results is a crucial component of the process, and that learning includes sharing the findings with department chairs and the faculty and administrators of the Program. TCM uses the data it collects as a basis for faculty discussions geared towards the improvement of curriculum and teaching methodologies. For example, we have increased our emphasis on graphical representation of information as a result of past weaknesses revealed by the assessment process, but as this assessment shows, we need to do more. As can be seen, the spring 2010 assessment showed significant improvement over fall 2009. However, with less than 70% of the students achieving at least 3.5 in both fall 2009 and less than 2.5 in spring 2010, several criteria need attention. Three of the criteria consistently ranked low in both fall 2009 and spring 2010: Visuals, Credit for Sources, and Content Fits Audience and Purpose. NOTE: We revised the scale from a 5-point system to a 4-point system in spring 2010.

Teaching when visuals are needed in a report and the ideal way to depict the visuals remains an area we need to focus on in the classroom, along with giving Credit for Sources. TCM faculty are often torn between teaching the academic way of approaching giving Credit for Sources and the way it might be handled in industry. The third area that remains a challenge and needs our attention in the classroom is Content Fits Audience and Purpose. Students who have never been in the corporate world often have difficulty with this one. We have attempted to address this issue by involving the students in an experiential, real-world problem analysis/recommendation assignment, which has helped a great deal. But we still need to do more work in this area.

Some questions about evaluating (and by extension, instructing) remain from our last year's look at the data collected. Specifically, we need to look at what constitutes a visual that "help[s] understanding and [is] clear, easy to read, and error free." If, for example, the evaluator does not see the value of the visual – in other words, if the visual seems to not serve a purpose – how does the evaluator measure its efficacy? Similarly, if the evaluator sees a need for a visual and one is not there, how does s/he evaluate the missing piece? The same issue surfaces with credit from other sources. If the evaluator thinks that the report would have benefited from outside sources, does s/he reflect that interpretation in the scoring? If the evaluator sees a list of references at the end of the report, but no references to sources in the body of the report, how does s/he rate that? Or, does the evaluator assess the presence of Credit for Sources only or "how well" the student has used the conventions of the documentation style or both? These and similar questions need to be discussed among the evaluators before the scoring takes place.

Specific plans for TCM faculty feedback include a presentation at our fall faculty meeting, where the results of this report will be shared.

Overall, we are pleased with the outcome of the PUL assessment. In the Major Emphasis category, the majority of the students in all three assessed courses scored Effective or better. In the Moderate Emphasis category, an overwhelming majority of the students scored Effective or better.

NEXT STEPS

The ongoing assessment process requires constant attention. While TCM has some good news to report for 2009-2010, we continue to revisit and retune our approaches to assessment. Finding viable ways to engage our faculties – engineering, technology, and TCM – to aid in the evaluative and feedback processes is crucial to ongoing improvement.

Two specific goals emerge. One is our ongoing challenge of encouraging our colleagues in *both* engineering and technology to participate in the juries for the final oral presentations. As a service program, we firmly believe that the feedback that both the students and we receive from those constituents is a valuable tool for our improvement. The second challenge is to restructure our evaluative tools so that they are on a 4-point rather than a 5-point scale, which has been done for the writing rubric, but not for the oral presentation rubric; that rerating will realign them with the campus initiative for evaluations on a 4-point measure. In future semesters, the PULs will be assessed by the faculty member teaching the course; the challenge will be to find a viable way to access that data.

As always, we continue to work on ways to improve not only our courses, but also the assessment process.

APPENDIX A

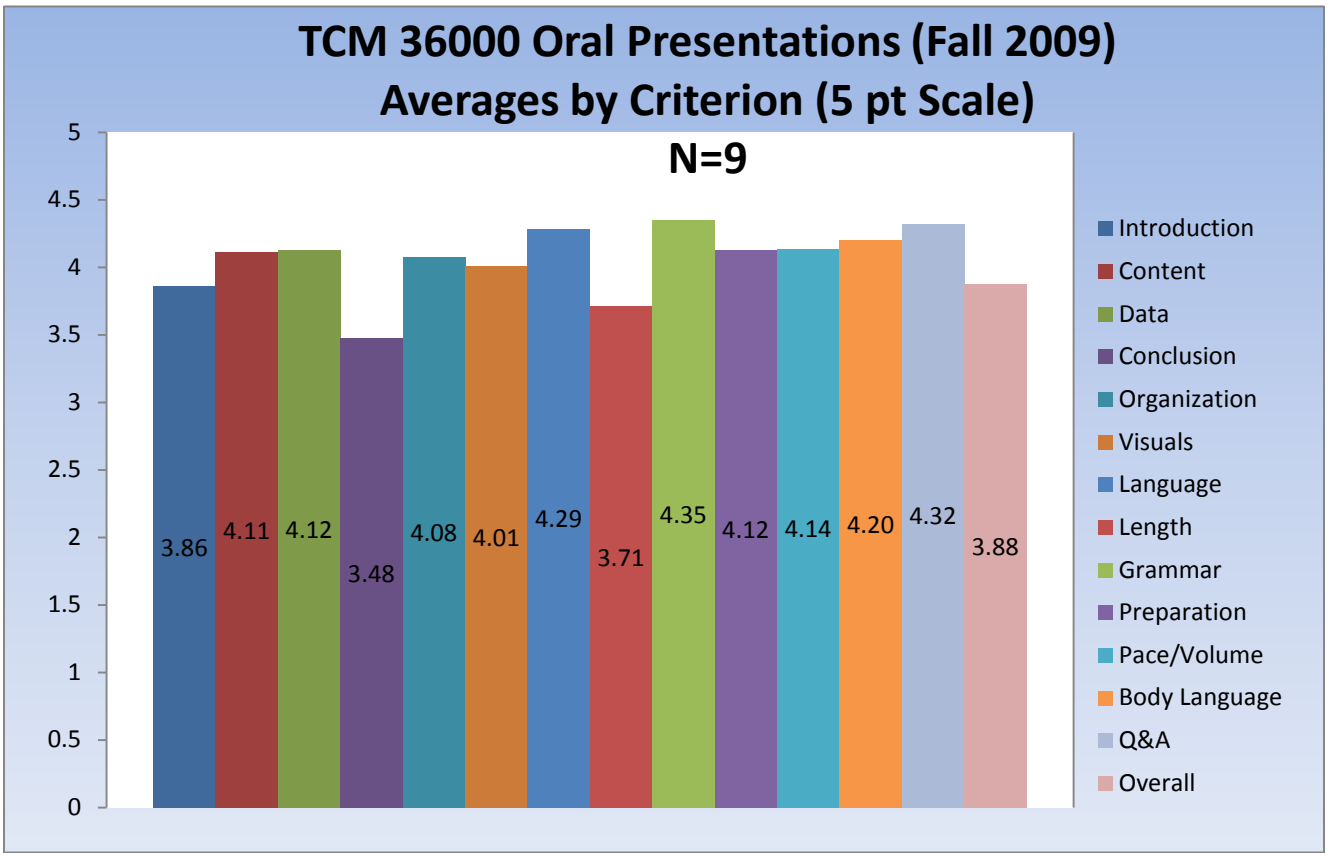

Figure A-1. Evaluators' Assessments of TCM 36000 Oral Presentations (Fall 2009)

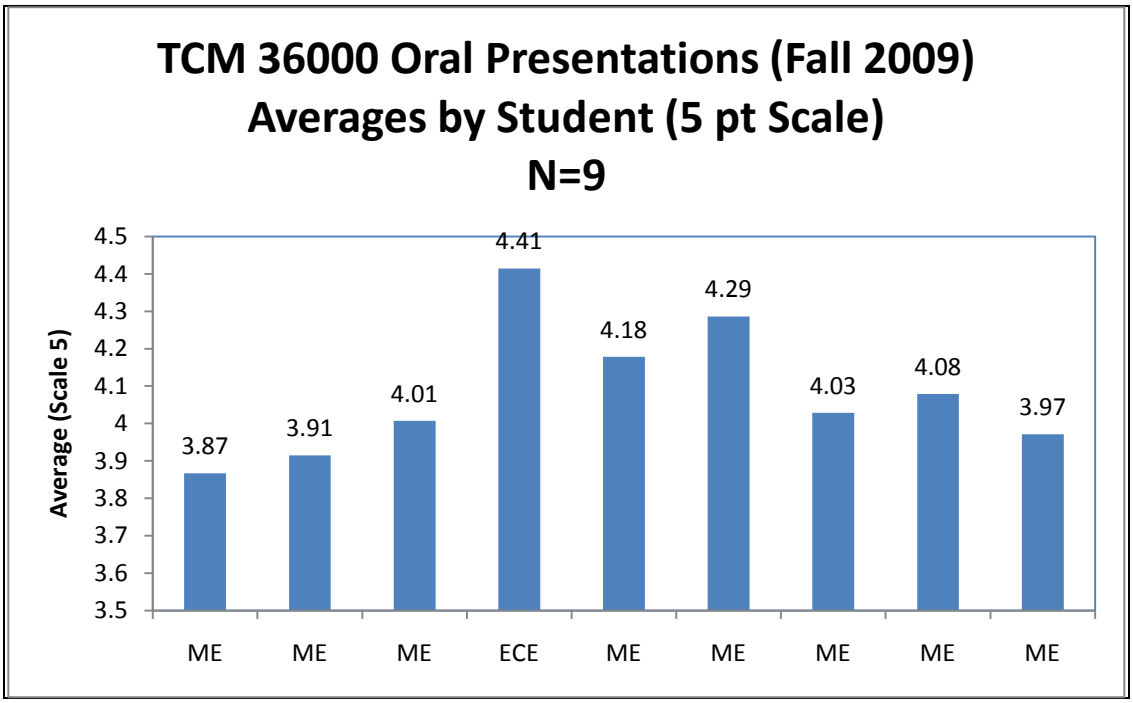

Figure A-2. Evaluators' Assessments of TCM 36000 Oral Presentations (Fall 2009)

Table A-1. Speaking Condensed Data (Fall 2009) (5 Pt. Scale)

TCM 36000 SPEAKING CONDENSED DATA (FALL 2009)*

ITEMS	#1 (ME)	#2 (ME)	#3 (ME)	#4 (ECE)	#5 (ME)	#6 (ME)	#7 (ME)	#8 (ME)	#9 (ME)	AVG	# > 3.5	% > 3.5	AVG > 3.5?	70% > 3.5?	IS EITHER SATISFIED?
Introduction	4.30	4.00	4.30	4.00	3.50	3.00	2.50	4.80	4.50	**3.88**	7	78	YES	YES	YES
Content	4.20	4.00	4.20	4.30	4.50	4.50	4.00	4.00	3.50	**4.13**	9	100	YES	YES	YES
Data	3.80	4.00	4.20	4.20	4.50	4.50	4.00	4.00	4.00	**4.13**	9	100	YES	YES	YES
Conclusion	3.90	4.40	4.00	4.70	3.40	3.00	3.00	3.00	3.00	**3.60**	5	56	YES	NO	YES
Organization	3.90	3.60	4.60	4.20	4.00	4.50	4.00	4.00	4.00	**4.09**	9	100	YES	YES	YES
Visuals	4.00	3.30	3.80	3.90	4.50	3.50	4.00	4.50	4.50	**4.00**	8	89	YES	YES	YES
Language	4.20	3.40	3.90	4.60	4.50	4.50	4.30	5.00	4.50	**4.32**	8	89	YES	YES	YES
Length	4.40	3.60	4.20	4.80	3.00	4.50	4.00	3.00	3.00	**3.83**	6	67	YES	NO	YES
Grammar	4.00	3.50	3.80	4.60	4.50	5.00	5.00	5.00	4.00	**4.38**	9	100	YES	YES	YES
Preparation	3.30	4.30	3.40	4.60	5.00	5.00	5.00	3.50	3.50	**4.18**	7	56	YES	YES	YES
Pace/Volume	3.80	4.30	4.20	4.60	4.00	4.50	3.80	4.00	4.50	**4.19**	9	100	YES	YES	YES
Body Language	3.20	4.50	3.30	4.30	5.00	4.50	4.80	4.00	4.30	**4.21**	7	78	YES	YES	YES
Q/A	4.00	4.10	4.20	4.60	4.00	5.00	4.00	4.50	4.80	**4.36**	9	100	YES	YES	YES
Overall Impression	3.90	3.80	4.00	4.40	4.00	4.00	4.00	3.80	3.50	**3.93**	9	100	YES	YES	YES
AVG	**3.92**	**3.91**	**4.01**	**4.41**	**4.17**	**4.29**	**4.03**	**4.08**	**3.97**	**4.09**					

*NOTE:
Instructors from engineering departments and the Technical Communication program, acting as jurors, attended the students' final oral presentations and ranked the presentations according to criteria. A sample criteria sheet is attached.

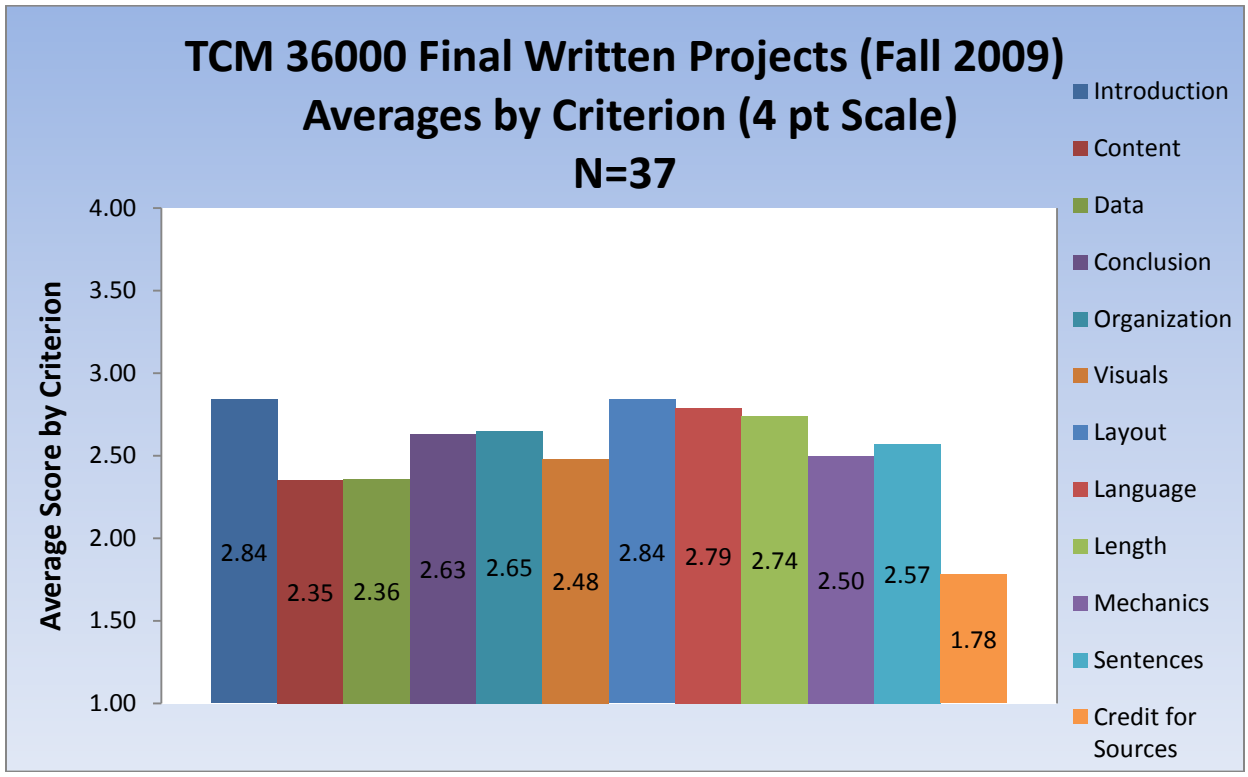

Figure A-3. Evaluators' Assessments of TCM 36000 Final Written Projects (Fall 2009)

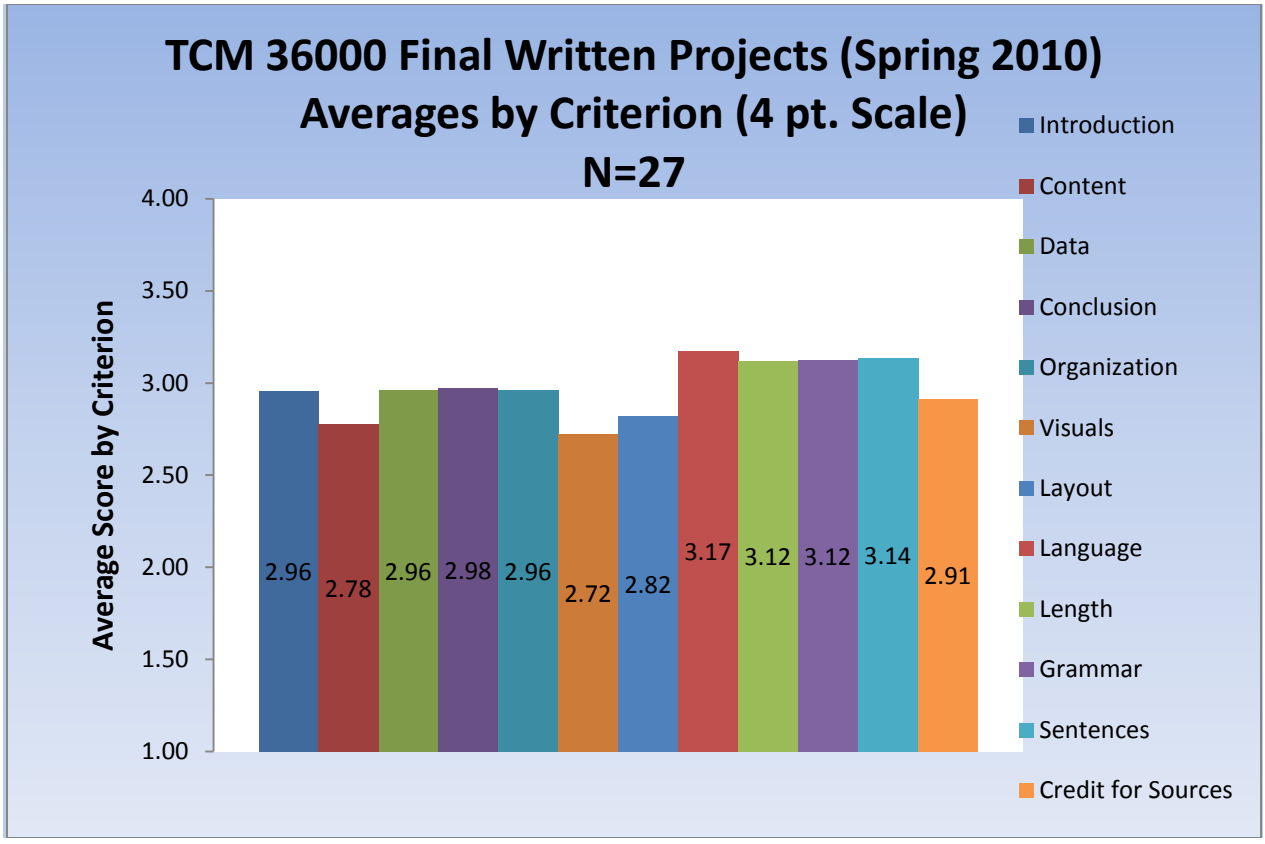

Figure A-4. Evaluators' Assessments of TCM 36000 Final Written Projects (Spring 2010)

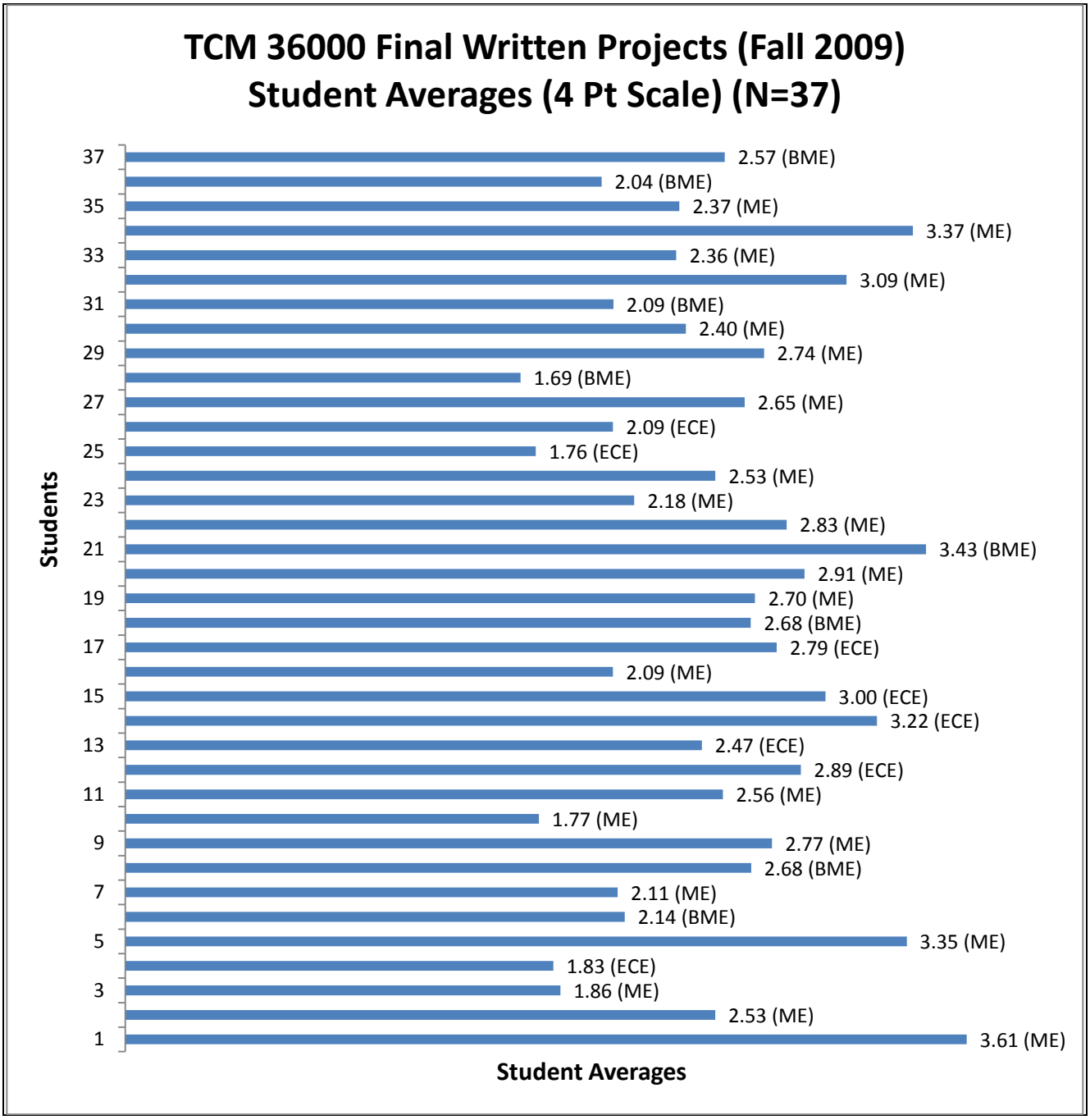

Figure A-5. Evaluators' Assessments of TCM 36000 Final Written Projects (Fall 2009)

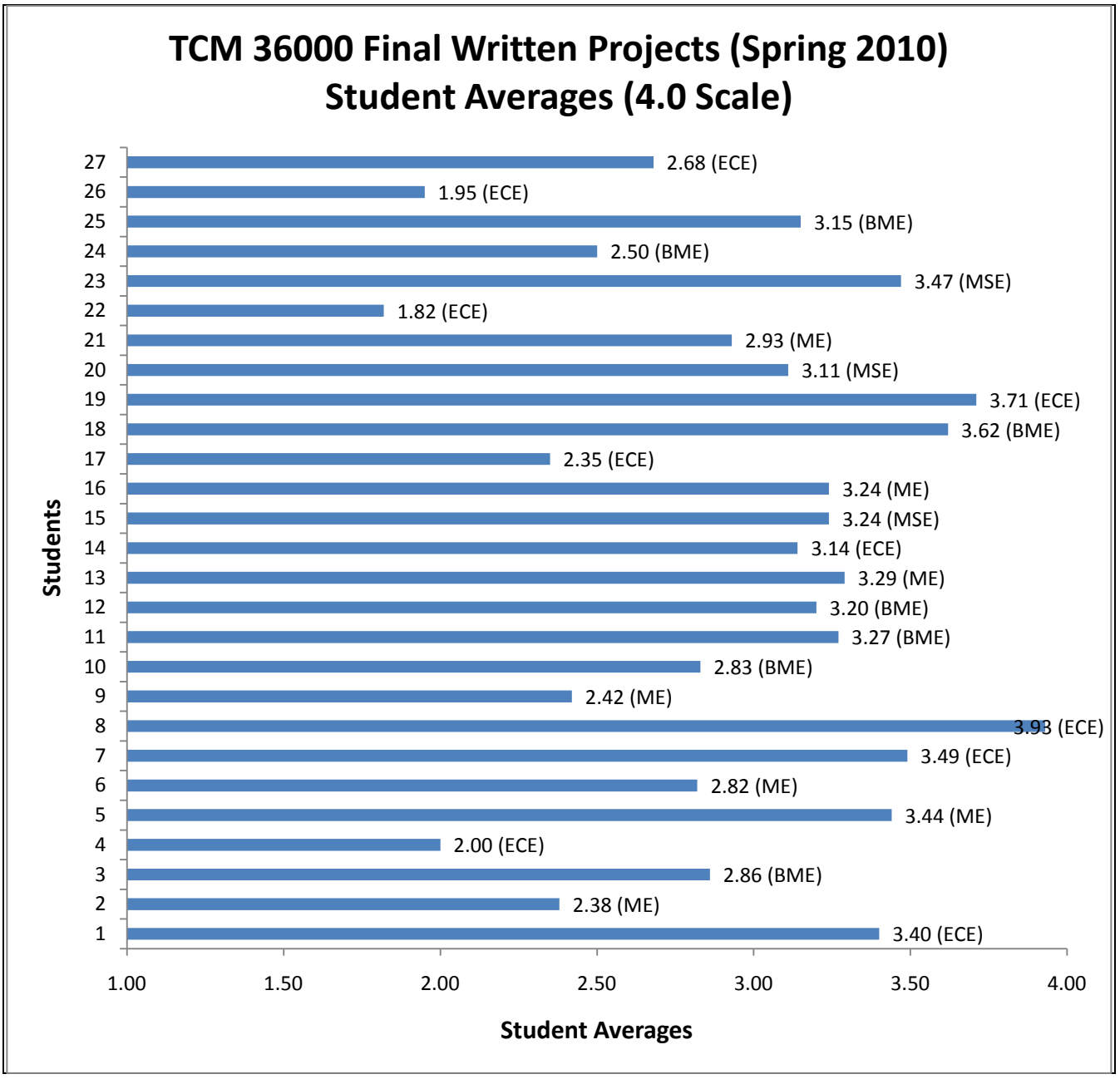

Figure A-6. Evaluators' Assessments of TCM 36000 Final Written Projects (Spring 2010)

Table A-2. Evaluators' Assessments of TCM 36000 Final Written Projects (Fall 2009)

TCM 36000 WRITTEN CONDENSED DATA (FALL 2009)*

ITEMS	#1 (ME)	#2 (ME)	#3 (ME)	#4 (ECE)	#5 (ME)	#6 (BME)	#7 (ME)	#8 (BME)	#9 (ME)	#10 (ME)	#11 (ME)	#12 (ECE)
Introduction	4.00	2.83	2.00	3.17	3.67	1.83	2.00	3.50	3.00	1.83	3.00	2.83
Content	3.50	2.33	2.17	1.50	3.50	1.50	2.00	2.83	2.50	1.33	2.17	2.50
Data	3.33	2.50	1.67	1.50	3.33	2.00	2.33	2.67	2.67	1.17	2.33	2.17
Conclusion	4.00	2.33	1.50	1.50	3.33	2.00	2.33	3.17	2.83	1.67	3.00	2.83
Organization	3.83	2.33	2.00	1.50	3.33	2.67	2.00	3.33	3.33	1.50	2.83	2.67
Visuals	N/A	3.17	N/A	N/A	N/A	1.67	1.83	N/A	3.00	N/A	N/A	N/A
Layout	3.67	3.67	2.50	2.67	3.33	2.33	2.33	3.33	2.83	2.33	2.50	4.00
Language	3.83	2.33	2.17	2.00	3.17	2.67	2.50	2.67	3.17	2.67	3.33	3.00
Length	4.00	3.00	2.33	1.00	3.33	2.67	2.67	3.33	3.33	1.00	2.67	3.00
Mechanics	4.00	1.67	1.67	2.17	3.17	2.67	2.00	1.67	2.17	2.33	2.33	2.67
Sentences	4.00	2.17	1.50	2.17	3.00	2.67	1.83	2.00	1.75	2.67	3.00	2.50
Cr for Sources	1.50	2.00	1.00	1.00	3.67	1.00	1.50	1.00	2.67	1.00	1.00	3.67
AVG	***3.61***	***2.53***	***1.86***	***1.83***	***3.35***	***2.14***	***2.11***	***2.68***	***2.77***	***1.77***	***2.56***	***2.89***

#13 (ECE)	#14 (ECE)	#15 (ECE)	#16 (ME)	#17 (ECE)	#18 (BME)	#19 (ME)	#20 (ME)	#21 (BME)	#22 (ME)	#23 (ME)	#24 (ME)	#25 (ECE)	#26 (ECE)	#27 (ME)
2.50	3.33	3.17	2.33	3.50	2.67	3.00	3.67	3.50	2.83	2.00	2.50	2.50	2.83	2.67
2.33	3.33	3.00	1.00	2.33	2.50	2.17	2.83	3.50	3.00	1.67	2.67	1.67	2.00	1.67
1.83	3.33	2.50	1.50	2.00	3.00	2.50	2.33	3.33	2.50	2.67	2.50	1.17	1.67	2.67
2.33	3.33	3.33	2.50	2.33	2.83	3.00	2.67	3.50	3.00	2.17	3.17	1.17	2.67	3.33
2.33	3.00	3.00	2.00	3.50	2.83	2.67	3.17	3.67	3.00	2.17	2.50	2.17	2.33	2.83
2.83	2.67	2.50	N/A	2.33	2.17	N/A	N/A	3.33	N/A	1.83	2.33	N/A	N/A	2.67
2.00	3.33	3.33	3.33	3.00	3.00	3.50	3.17	3.67	3.00	2.33	2.67	2.33	2.17	3.00
2.50	3.33	3.17	2.33	3.50	2.83	3.17	3.17	3.67	3.17	2.67	3.00	2.00	2.33	2.83
2.67	3.33	3.67	2.00	3.00	3.33	3.33	3.33	3.67	3.00	2.33	2.50	1.17	1.33	3.67
2.33	3.00	2.83	2.50	3.50	3.00	2.67	2.50	3.33	3.00	2.33	2.17	2.00	2.33	2.83
2.33	3.00	2.83	2.50	3.50	3.00	2.67	2.50	3.33	3.00	3.00	2.00	2.17	2.33	2.67
3.67	3.67	2.67	1.00	1.00	1.00	1.00	2.67	2.67	1.67	1.00	2.33	1.00	1.00	1.00
2.47	***3.22***	***3.00***	***2.09***	***2.79***	***2.68***	***2.70***	***2.91***	***3.43***	***2.83***	***2.18***	***2.53***	***1.76***	***2.09***	***2.65***

#28 (BME)	#29 (ME)	#30 (ME)	#31 (BME)	#32 (ME)	#33 (ME)	#34 (ME)	#35 (ME)	#36 (BME)	#37 (BME)	AVG	# > 2.5	% > 2.5	AVG > 2.5?	70% > 2.5?	IS EITHER SATISFIED?
2.67	3.17	2.33	2.50	3.50	2.17	3.17	3.00	2.50	3.33	***2.84***	**29**	**78**	**YES**	**YES**	**YES**
1.83	2.00	2.17	1.67	3.50	2.33	3.33	2.00	1.83	2.67	***2.35***	**15**	**41**	**NO**	**NO**	**NO**
1.00	3.33	2.33	2.00	2.83	2.33	3.33	2.50	1.83	2.83	***2.36***	**19**	**51**	**NO**	**NO**	**NO**
1.50	3.00	2.33	2.50	3.00	2.33	3.50	2.33	2.17	3.00	***2.63***	**22**	**60**	**YES**	**NO**	**YES**
1.67	2.83	2.33	2.17	3.33	2.33	3.50	2.33	2.00	3.17	***2.65***	**21**	**57**	**YES**	**NO**	**YES**
1.83	2.67	2.00	N/A	N/A	2.83	3.33	2.67	2.00	2.48	***2.48***	**12**	**32**	**YES**	**NO**	**YES**
1.83	2.67	2.83	2.50	3.33	2.50	3.67	2.33	1.83	2.33	***2.84***	**26**	**70**	**YES**	**YES**	**YES**
2.00	2.83	3.00	2.17	3.33	2.67	3.33	1.83	2.33	2.67	***2.79***	**27**	**73**	**YES**	**YES**	**YES**
1.00	3.50	3.33	2.67	3.17	2.67	3.00	2.50	2.00	2.83	***2.74***	**28**	**76**	**YES**	**YES**	**YES**
1.67	2.17	2.67	1.83	3.33	2.67	3.33	2.17	2.00	1.67	***2.50***	**18**	**49**	**YES**	**NO**	**YES**
2.33	2.50	2.50	1.83	3.67	2.50	3.33	2.33	2.17	1.67	***2.57***	**22**	**60**	**YES**	**NO**	**YES**
1.00	2.17	1.00	1.17	1.00	1.00	3.67	2.50	1.83	2.17	***1.78***	**10**	**27**	**NO**	**NO**	**NO**
1.69	***2.74***	***2.40***	***2.09***	***3.09***	***2.36***	***3.37***	***2.37***	***2.04***	***2.57***	***2.54***					

*NOTE:
Instructors from the Technical Communication program, acting as jurors, ranked the final written projects according to criteria. A sample criteria sheet is attached.

Table A-3. Evaluators' Assessments of TCM 36000 Final Written Projects (Spring 2010)

TCM 36000 WRITTEN CONDENSED DATA (SPRING 2010)*

ITEMS	#1 (ECE)	#2 (ME)	#3 (BME)	#4 (ECE)	#5 (ME)	#6 (ME)	#7 (ECE)	#8 (ECE)	#9 (ME)
Introduction	3.67	2.83	3.83	2.17	2.83	2.83	2.50	4.00	2.50
Content	3.50	1.50	2.83	1.33	3.50	2.67	3.50	4.00	2.17
Data	3.33	1.83	2.00	1.33	3.50	2.83	3.67	4.00	2.33
Conclusion	3.50	2.33	3.00	1.33	4.00	3.33	3.33	4.00	2.50
Organization	3.33	2.67	2.83	2.00	3.33	2.67	3.50	4.00	2.50
Visuals	3.33	N/A	3.33	N/A	3.33	2.33	3.50	4.00	2.17
Layout	3.33	2.50	2.67	2.33	3.17	3.00	3.67	4.00	2.83
Language	3.50	3.00	3.17	2.00	3.50	2.83	3.50	4.00	2.67
Length	3.50	2.67	2.83	1.67	3.17	3.00	3.17	3.83	3.00
Grammar	3.33	2.83	3.33	2.67	3.50	2.83	3.83	3.50	2.00
Sent Structure	3.00	3.00	3.17	2.67	3.67	2.83	3.67	3.83	2.33
Cr for Sources	3.50	1.00	1.33	2.50	3.83	2.67	4.00	4.00	2.00
AVG	***3.40***	***2.38***	***2.86***	***2.00***	***3.44***	***2.82***	***3.49***	***3.93***	***2.42***

#10 (BME)	#11 (BME)	#12 (BME)	#13 (ME)	#14 (ECE)	#15 (MSE)	#16 (ME)	#17 (ECE)	#18 (BME)	#19 (ECE)	#20 (MSE)
2.17	3.87	3.17	2.83	2.83	3.50	3.17	2.00	3.33	4.00	3.00
2.83	2.33	2.83	2.83	3.50	3.50	3.17	1.17	3.83	4.00	2.67
2.83	3.67	3.00	3.17	3.83	3.50	3.67	1.17	4.00	4.00	3.00
3.67	4.00	3.67	3.33	3.67	2.50	3.00	2.33	4.00	2.00	3.00
2.33	3.33	3.50	3.67	3.17	3.50	2.83	2.67	4.00	3.50	2.67
2.25	3.33	N/A	3.33	N/A	2.00	3.00	2.67	N/A	3.83	N/A
2.00	3.33	2.17	3.17	2.50	2.67	3.17	2.50	3.00	4.00	2.50
3.50	3.50	3.50	3.50	3.50	3.83	3.50	3.17	3.67	3.83	3.33
3.17	2.50	3.50	3.67	3.67	3.83	3.17	2.33	3.50	4.00	3.00
2.67	3.00	3.50	3.00	3.50	3.50	3.17	3.00	3.50	3.83	3.50
3.17	3.00	3.33	3.50	3.33	4.00	3.50	2.83	3.50	3.50	3.50
2.33	3.33	3.00	3.50	1.00	2.50	3.50	2.33	3.50	4.00	4.00
	3.27	***3.20***	***3.29***	***3.14***	***3.24***	***3.24***	***2.35***	***3.62***	***3.71***	***3.11***

#21 (ME)	#22 (ECE)	#23 (MSE)	#24 (BME)	#25 (ECE)	#26 (ECE)	#27 (ECE)	AVG	# > 2.5	% > 2.5	Avg > 2.5?	70% > 2.5?	Is Either Satisfied?
3.00	1.83	3.17	2.83	3.17	2.00	2.83	**2.96**	**22**	**81**	**YES**	**YES**	**YES**
2.33	1.67	3.67	2.17	3.17	1.67	2.67	**2.78**	**18**	**67**	**YES**	**NO**	**YES**
3.33	1.67	3.67	2.83	3.17	2.17	2.50	**2.96**	**20**	**74**	**YES**	**YES**	**YES**
2.83	1.50	3.67	2.67	2.83	1.67	2.67	**2.98**	**21**	**78**	**YES**	**YES**	**YES**
2.67	2.00	3.17	2.83	3.33	1.33	2.67	**2.96**	**23**	**85**	**YES**	**YES**	**YES**
2.67	2.17	1.33	1.50	2.67	N/A	1.67	**2.72**	**12**	**44**	**YES**	**NO**	**YES**
3.00	2.17	3.00	2.17	3.33	1.00	3.00	**2.82**	**21**	**78**	**YES**	**YES**	**YES**
2.17	1.33	4.00	2.33	3.33	2.83	2.67	**3.17**	**23**	**85**	**YES**	**YES**	**YES**
3.00	2.83	4.00	3.00	3.17	2.17	2.83	**3.12**	**24**	**89**	**YES**	**YES**	**YES**
3.50	1.17	4.00	2.83	3.33	2.83	2.67	**3.12**	**25**	**93**	**YES**	**YES**	**YES**
3.17	1.33	4.00	2.50	3.17	2.83	2.33	**3.14**	**24**	**89**	**YES**	**YES**	**YES**
3.50	2.17	4.00	2.33	3.17	1.00	3.67	**2.88**	**18**	**67**	**YES**	**NO**	**YES**
2.93	***1.82***	***3.47***	***2.50***	***3.15***	***1.95***	***2.68***						

*NOTE:
Instructors from the Technical Communication program, acting as jurors, ranked the final written projects according to criteria. A sample criteria sheet is attached.

Table A-4. Comparison of Written Averages by Criterion by Year

Table A- COMPARISON OF TCM 36000 WRITTEN AVERAGES BY CRITERION BY YEAR
Fall 2009 (37 Students) / Spring 2010 (27 Students)
(Scale 4.0)

	F'09	Sp'10	F'09	Sp'10	F'09	Sp'10	F'09	Sp'10	F'09	Sp'10	F'09	Sp'10
ITEMS	AVG	AVG	# > 2.5	# > 2.5	% > 2.5	% > 2.5	AVG > 2.5?	Avg > 2.5?	70% > 2.5?	70%> 2.5?	Is Either Satisfied?	Is Either Satisfied?
Introduction	2.84	2.96	29	22	78	81	YES	YES	YES	YES	YES	YES
Content	2.35	2.78	15	18	41	67	NO	YES	NO	NO	NO	YES
Data	2.36	2.96	19	20	51	74	NO	YES	NO	YES	NO	YES
Conclusion	2.63	2.98	22	21	60	78	YES	YES	NO	YES	YES	YES
Organization	2.65	2.96	21	23	57	85	YES	YES	NO	YES	YES	YES
Visuals	2.48	2.72	12	12	32	44	YES	YES	NO	NO	YES	YES
Layout	2.84	2.82	26	21	70	78	YES	YES	YES	YES	YES	YES
Language	2.79	3.17	27	23	73	85	YES	YES	YES	YES	YES	YES
Length	2.74	3.12	28	24	76	89	YES	YES	YES	YES	YES	YES
Grammar	2.50	3.12	18	25	49	93	YES	YES	NO	YES	YES	YES
Sent Structure	2.57	3.14	22	24	60	89	YES	YES	NO	YES	YES	YES
Cr for Sources	1.78	2.88	10	18	27	67	NO	YES	NO	NO	NO	YES

APPENDIX B
OUTCOMES BY DEPARTMENT

Table B-1. TCM 36000, *Oral* Averages by Student by Criterion for ECE, Fall 2009

Items	#4 (ECE)
Introduction	4.00
Content	4.30
Data	4.20
Conclusion	4.70
Organization	4.20
Visuals	3.90
Language	4.60
Length	4.80
Grammar	4.60
Preparation	4.60
Pace/Volume	4.60
Body Language	4.30
Q/A	4.60
Overall Impression	4.40
AVG	4.41

Table B-2. TCM 36000, *Oral* Averages by Student by Criterion for ME, Fall 2009

Items	#1 (ME)	#2 (ME)	#3 (ME)	#5 (ME)	#6 (ME)	#7 (ME)	#8 (ME)	#9 (ME)	Average
Introduction	4.30	4.00	4.30	3.50	3.00	2.50	4.80	4.50	3.86
Content	4.20	4.00	4.20	4.50	4.50	4.00	4.00	3.50	4.11
Data	3.80	4.00	4.20	4.50	4.50	4.00	4.00	4.00	4.13
Conclusion	3.90	4.40	4.00	3.40	3.00	3.00	3.00	3.00	3.46
Organization	3.90	3.60	4.60	4.00	4.50	4.00	4.00	4.00	4.08
Visuals	4.00	3.30	3.80	4.50	3.50	4.00	4.50	4.50	4.01
Language	4.20	3.40	3.90	4.50	4.50	4.30	5.00	4.50	4.29
Length	4.40	3.60	4.20	3.00	4.50	4.00	3.00	3.00	3.71
Grammar	4.00	3.50	3.80	4.50	5.00	5.00	5.00	4.00	4.35
Preparation	3.30	4.30	3.40	5.00	5.00	5.00	3.50	3.50	4.13
Pace/Volume	3.80	4.30	4.20	4.00	4.50	3.80	4.00	4.50	4.14
Body Language	3.20	4.50	3.30	5.00	4.50	4.80	4.00	4.30	4.20
Q/A	4.00	4.10	4.20	4.00	5.00	4.00	4.50	4.80	4.33
Overall Impression	3.90	3.80	4.00	4.00	4.00	4.00	3.80	3.50	3.88
AVG	3.92	3.91	4.01	4.17	4.29	4.03	4.08	3.97	4.05

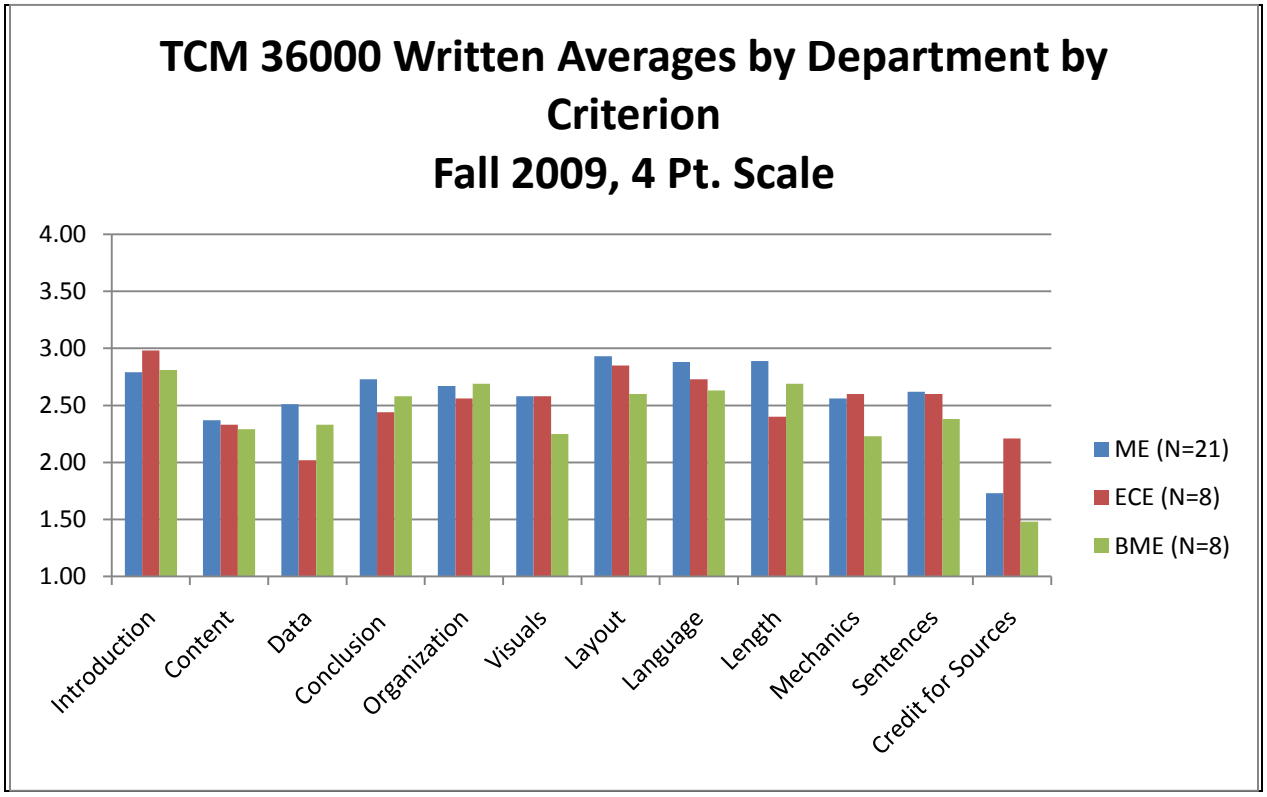

Figure B-1. TCM 36000, *Written* Averages by Department by Criterion, Fall 2009

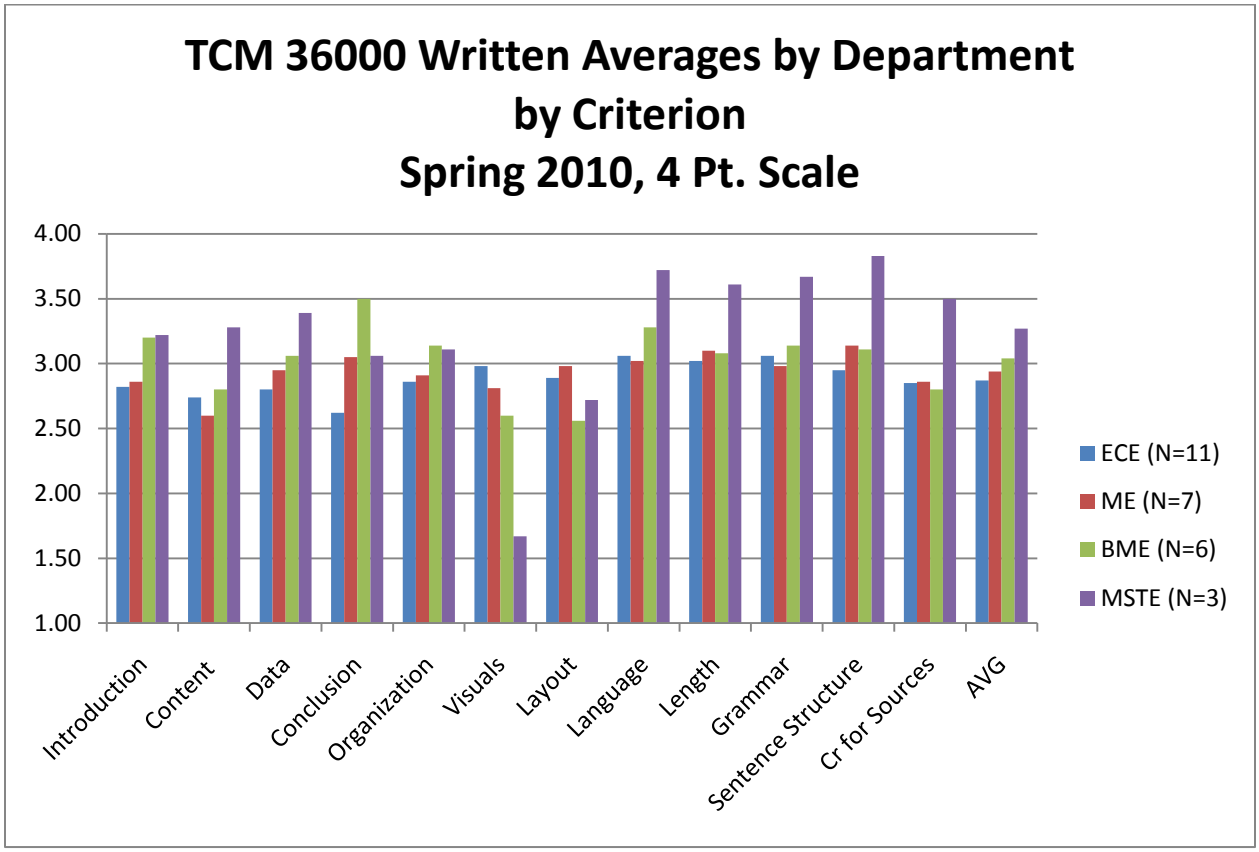

Figure B-2. TCM 36000, *Written* Averages by Department by Criterion, Spring 2010

Table B-3. TCM 36000, *Written* Averages by Student by Criterion for ME, Fall 2009

ITEMS	#1 (ME)	#2 (ME)	#3 (ME)	#5 (ME)	#7 (ME)	#9 (ME)	#10 (ME)	#11 (ME)	#16 (ME)	#19 (ME)	#20 (ME)
Introduction	4.00	2.83	2.00	3.67	2.00	3.00	1.83	3.00	2.33	3.00	3.67
Content	3.50	2.33	2.17	3.50	2.00	2.50	1.33	2.17	1.00	2.17	2.83
Data	3.33	2.50	1.67	3.33	2.33	2.67	1.17	2.33	1.50	2.50	2.33
Conclusion	4.00	2.33	1.50	3.33	2.33	2.83	1.67	3.00	2.50	3.00	2.67
Organization	3.83	2.33	2.00	3.33	2.00	3.33	1.50	2.83	2.00	2.67	3.17
Visuals	N/A	3.17	N/A	N/A	1.83	3.00	N/A	N/A	N/A	N/A	N/A
Layout	3.67	3.67	2.50	3.33	2.33	2.83	2.33	2.50	3.33	3.50	3.17
Language	3.83	2.33	2.17	3.17	2.50	3.17	2.67	3.33	2.33	3.17	3.17
Length	4.00	3.00	2.33	3.33	2.67	3.33	1.00	2.67	2.00	3.33	3.33
Mechanics	4.00	1.67	1.67	3.17	2.00	2.17	2.33	2.33	2.50	2.67	2.50
Sentences	4.00	2.17	1.50	3.00	1.83	1.75	2.67	3.00	2.50	2.67	2.50
Cr / Sources	1.50	2.00	1.00	3.67	1.50	2.67	1.00	1.00	1.00	1.00	2.67
AVG	**3.61**	**2.53**	**1.86**	**3.35**	**2.11**	**2.77**	**1.77**	**2.56**	**2.09**	**2.70**	**2.91**

Table B-3 (Cont.). TCM 36000, *Written* Averages by Student by Criterion for ME, Fall 2009

ITEM	#2 (ME)	#5 (ME)	#6 (ME)	#9 (ME)	#13 (ME)	#16 (ME)	#21 (ME)	AVG
Introduction	2.83	2.83	2.83	2.50	2.83	3.17	3.00	**2.86**
Content	1.50	3.50	2.67	2.17	2.83	3.17	2.33	**2.60**
Data	1.83	3.50	2.83	2.33	3.17	3.67	3.33	**2.95**
Conclusion	2.33	4.00	3.33	2.50	3.33	3.00	2.83	**3.05**
Organization	2.67	3.33	2.67	2.50	3.67	2.83	2.67	**2.91**
Visuals	N/A	3.33	2.33	2.17	3.33	3.00	2.67	**2.81**
Layout	2.50	3.17	3.00	2.83	3.17	3.17	3.00	**2.98**
Language	3.00	3.50	2.83	2.67	3.50	3.50	2.17	**3.02**
Length	2.67	3.17	3.00	3.00	3.67	3.17	3.00	**3.10**
Grammar	2.83	3.50	2.83	2.00	3.00	3.17	3.50	**2.98**
Sentences	3.00	3.67	2.83	2.33	3.50	3.50	3.17	**3.14**
Cr / Sources	1.00	3.83	2.67	2.00	3.50	3.50	3.50	**2.86**
AVG	**2.38**	**3.44**	**2.82**	**2.42**	**3.29**	**3.24**	**2.93**	**2.94**

Table B-4. TCM 36000, *Written* Averages by Student by Criterion for ME, Spring 2010

ITEM	#22 (ME)	#23 (ME)	#24 (ME)	#27 (ME)	#29 (ME)	#30 (ME)	#32 (ME)	#33 (ME)	#34 (ME)	#35 (ME)	AVG
Introduction	2.83	2.00	2.50	2.67	3.17	2.33	3.50	2.17	3.17	3.00	**2.79**
Content	3.00	1.67	2.67	1.67	2.00	2.17	3.50	2.33	3.33	2.00	**2.37**
Data	2.50	2.67	2.50	2.67	3.33	2.33	2.83	2.33	3.33	2.50	**2.51**
Conclusion	3.00	2.17	3.17	3.33	3.00	2.33	3.00	2.33	3.50	2.33	**2.73**
Organization	3.00	2.17	2.50	2.83	2.83	2.33	3.33	2.33	3.50	2.33	**2.67**
Visuals	N/A	1.83	2.33	2.67	2.67	2.00	N/A	2.83	3.33	2.67	**2.58**
Layout	3.00	2.33	2.67	3.00	2.67	2.83	3.33	2.50	3.67	2.33	**2.93**
Language	3.17	2.67	3.00	2.83	2.83	3.00	3.33	2.67	3.33	1.83	**2.88**
Length	3.00	2.33	2.50	3.67	3.50	3.33	3.17	2.67	3.00	2.50	**2.89**
Grammar	3.00	2.33	2.17	2.83	2.17	2.67	3.33	2.67	3.33	2.17	**2.56**
Sentences	3.00	3.00	2.00	2.67	2.50	2.50	3.67	2.50	3.33	2.33	**2.62**
Cr / Sources	1.67	1.00	2.33	1.00	2.17	1.00	1.00	1.00	3.67	2.50	**1.73**
AVG	**2.83**	**2.18**	**2.53**	**2.65**	**2.74**	**2.40**	**3.09**	**2.36**	**3.37**	**2.37**	**2.61**

Table B-5. TCM 36000, *Written* Averages by Student by Criterion for ECE, Fall 2009

ITEMS	#4 (ECE)	#12 (ECE)	#13 (ECE)	#14 (ECE)	#15 (ECE)	#17 (ECE)	#25 (ECE)	#26 (ECE)	AVG
Introduction	3.17	2.83	2.50	3.33	3.17	3.50	2.50	2.83	**2.98**
Content	1.50	2.50	2.33	3.33	3.00	2.33	1.67	2.00	**2.33**
Data	1.50	2.17	1.83	3.33	2.50	2.00	1.17	1.67	**2.02**
Conclusion	1.50	2.83	2.33	3.33	3.33	2.33	1.17	2.67	**2.44**
Organization	1.50	2.67	2.33	3.00	3.00	3.50	2.17	2.33	**2.56**
Visuals	N/A	N/A	2.83	2.67	2.50	2.33	N/A	N/A	**2.58**
Layout	2.67	4.00	2.00	3.33	3.33	3.00	2.33	2.17	**2.85**
Language	2.00	3.00	2.50	3.33	3.17	3.50	2.00	2.33	**2.73**
Length	1.00	3.00	2.67	3.33	3.67	3.00	1.17	1.33	**2.40**
Mechanics	2.17	2.67	2.33	3.00	2.83	3.50	2.00	2.33	**2.60**
Sentences	2.17	2.50	2.33	3.00	2.83	3.50	2.17	2.33	**2.60**
Cr /Sources	1.00	3.67	3.67	3.67	2.67	1.00	1.00	1.00	**2.21**
AVG	**1.83**	**2.89**	**2.47**	**3.22**	**3.00**	**2.79**	**1.76**	**2.09**	**2.51**

Table B-6. TCM 36000, *Written* Averages by Student by Criterion for ECE, Spring 2010

ITEM	#1 (ECE)	#4 (ECE)	#7 (ECE)	#8 (ECE)	#14 (ECE)	#17 (ECE)	#19 (ECE)	#22 (ECE)	#25 (ECE)	#26 (ECE)	#27 (ECE)	AVG
Introduction	3.67	2.17	2.50	4.00	2.83	2.00	4.00	1.83	3.17	2.00	2.83	**2.82**
Content	3.50	1.33	3.50	4.00	3.50	1.17	4.00	1.67	3.17	1.67	2.67	**2.74**
Data	3.33	1.33	3.67	4.00	3.83	1.17	4.00	1.67	3.17	2.17	2.50	**2.80**
Conclusion	3.50	1.33	3.33	4.00	3.67	2.33	2.00	1.50	2.83	1.67	2.67	**2.62**
Organization	3.33	2.00	3.50	4.00	3.17	2.67	3.50	2.00	3.33	1.33	2.67	**2.86**
Visuals	3.33	N/A	3.50	4.00	N/A	2.67	3.83	2.17	2.67	N/A	1.67	**2.98**
Layout	3.33	2.33	3.67	4.00	2.50	2.50	4.00	2.17	3.33	1.00	3.00	**2.89**
Language	3.50	2.00	3.50	4.00	3.50	3.17	3.83	1.33	3.33	2.83	2.67	**3.06**
Length	3.50	1.67	3.17	3.83	3.67	2.33	4.00	2.83	3.17	2.17	2.83	**3.02**
Grammar	3.33	2.67	3.83	3.50	3.50	3.00	3.83	1.17	3.33	2.83	2.67	**3.06**
Sentences	3.00	2.67	3.67	3.83	3.33	2.83	3.50	1.33	3.17	2.83	2.33	**2.95**
Cr / Sources	3.50	2.50	4.00	4.00	1.00	2.33	4.00	2.17	3.17	1.00	3.67	**2.85**
AVG	**3.40**	**2.00**	**3.49**	**3.93**	**3.14**	**2.35**	**3.71**	**1.82**	**3.15**	**1.95**	**2.68**	**2.87**

Table B-7. TCM 36000, *Written* Averages by Student by Criterion for BME, Fall 2009

ITEMS	#6 (BME)	#8 (BME)	#18 (BME)	#21 (BME)	#28 (BME)	#31 (BME)	#36 (BME)	#37 (BME)	AVG
Introduction	1.83	3.50	2.67	3.50	2.67	2.50	2.50	3.33	**2.81**
Content	1.50	2.83	2.50	3.50	1.83	1.67	1.83	2.67	**2.29**
Data	2.00	2.67	3.00	3.33	1.00	2.00	1.83	2.83	**2.33**
Conclusion	2.00	3.17	2.83	3.50	1.50	2.50	2.17	3.00	**2.58**
Organization	2.67	3.33	2.83	3.67	1.67	2.17	2.00	3.17	**2.69**
Visuals	1.67	N/A	2.17	3.33	1.83	N/A	2.00	2.48	**2.25**
Layout	2.33	3.33	3.00	3.67	1.83	2.50	1.83	2.33	**2.60**
Language	2.67	2.67	2.83	3.67	2.00	2.17	2.33	2.67	**2.63**
Length	2.67	3.33	3.33	3.67	1.00	2.67	2.00	2.83	**2.69**
Mechanics	2.67	1.67	3.00	3.33	1.67	1.83	2.00	1.67	**2.23**
Sentences	2.67	2.00	3.00	3.33	2.33	1.83	2.17	1.67	**2.38**
Cr / Sources	1.00	1.00	1.00	2.67	1.00	1.17	1.83	2.17	**1.48**
AVG	**2.14**	**2.68**	**2.68**	**3.43**	**1.69**	**2.09**	**2.04**	**2.57**	**2.42**

Table B-8. TCM 36000, *Written* Averages by Student by Criterion for BME, Spring 2010

ITEM	#3 (BME)	#10 (BME)	#11 (BME)	#12 (BME)	#18 (BME)	#24 (BME)	AVG
Introduction	3.83	2.17	3.87	3.17	3.33	2.83	**3.20**
Content	2.83	2.83	2.33	2.83	3.83	2.17	**2.80**
Data	2.00	2.83	3.67	3.00	4.00	2.83	**3.06**
Conclusion	3.00	3.67	4.00	3.67	4.00	2.67	**3.50**
Organization	2.83	2.33	3.33	3.50	4.00	2.83	**3.14**
Visuals	3.33	2.25	3.33	N/A	N/A	1.50	**2.60**
Layout	2.67	2.00	3.33	2.17	3.00	2.17	**2.56**
Language	3.17	3.50	3.50	3.50	3.67	2.33	**3.28**
Length	2.83	3.17	2.50	3.50	3.50	3.00	**3.08**
Grammar	3.33	2.67	3.00	3.50	3.50	2.83	**3.14**
Sentences	3.17	3.17	3.00	3.33	3.50	2.50	**3.11**
Cr / Sources	1.33	3.33	3.33	3.00	3.50	2.33	**2.80**
AVG	**2.86**	**2.83**	**3.27**	**3.20**	**3.62**	**2.50**	**3.04**

Table B-9. TCM 36000, *Written* Averages by Student by Criterion for MSE, Spring 2010

ITEM	#15 (MSE)	#20 (MSE)	#23 (MSE)	AVG
Introduction	3.50	3.00	3.17	**3.22**
Content	3.50	2.67	3.67	**3.28**
Data	3.50	3.00	3.67	**3.39**
Conclusion	2.50	3.00	3.67	**3.06**
Organization	3.50	2.67	3.17	**3.11**
Visuals	2.00	N/A	1.33	**1.67**
Layout	2.67	2.50	3.00	**2.72**
Language	3.83	3.33	4.00	**3.72**
Length	3.83	3.00	4.00	**3.61**
Grammar	3.50	3.50	4.00	**3.67**
Sentences	4.00	3.50	4.00	**3.83**
Cr / Sources	2.50	4.00	4.00	**3.50**
AVG	3.24	3.11	3.47	**3.27**

TCM 35000 PUL ASSESSMENT SPRING 2010									
	1A - Language Skills [Reading and understanding books, articles, and instruction manuals]	1A - Language Skills [Delivering a prepared presentation to a group]	1A - Language Skills [Writing a final report on a project or other work assignment]	1A - Language Skills [Contributing to a team to solve problems]	2 - Critical Thinking [Analyzing other people's ideas and proposed solutions]	2 - Critical Thinking [Systematically reviewing your own ideas about how to approach an issue]	2 - Critical Thinking [Creatively thinking about new ideas or ways to improve things]	2 - Critical Thinking [Discussing complex problems with co-workers to develop a better solution]	Student Major
	1	2	2	2	2	2	2	2	ECE
	1	2	1	2	2	2	2	2	ECE
	1	2	1	2	2	2	2	2	ME
	1	2	1	2	2	2	2	2	ME
	3	3	3	3	3	3	3	3	BME
	3	3	3	3	3	2	3	3	BME
Avg	1.7	2.3	1.8	2.3	2.3	2.1	2.3	2.3	

TCM 36000
PUL ASSESSMENT
SPRING 2010

1A – Language Skills [Reading and understanding books, articles, and instruction manuals]	1A – Language Skills [Delivering a prepared presentation to a group]	1A – Language Skills [Writing a final report on a project or other work assignment]	1A – Language Skills [Contributing to a team to solve problems]	2 – Critical Thinking [Analyzing other people's ideas and proposed solutions]	2 – Critical Thinking [Systematically reviewing your own ideas about how to approach an issue]	2 – Critical Thinking [Creatively thinking about new ideas or ways to improve things]	2 – Critical Thinking [Discussing complex problems with co-workers to develop a better solution]	Student Major
3	2	3	2	3	3	3	2	ECE
3	2	3	2	3	3	3	3	ME
1	2	0	2	1	2	1	2	ME
3	2	3	2	3	3	3	3	ME
3	2	3	2	3	3	3	3	ME
3	2	3	2	3	3	3	3	ECE
2	2	2	2	2	2	2	2	BME
3	2	3	2	3	3	3	3	ECE
3	2	3	2	3	3	3	3	BME
3	2	3	2	3	3	3	3	CE/BME
1	2	0	2	0	0	0	2	ECE
3	2	3	2	3	3	3	3	ECE
3	2	3	2	3	3	3	3	ME
3	2	3	2	3	3	3	3	BME
3	2	3	2	3	3	3	3	MSTE
2	2	2	2	3	3	3	3	ME
1	2	1	2	1	2	2	2	ME
1	2	1	2	2	2	2	2	ECE
3	2	3	2	3	3	3	3	MSTE
3	2	3	2	3	3	3	3	BME
3	2	3	2	3	3	3	3	ECE
3	2	2	2	3	2	2	2	BME
2	2	2	2	3	3	3	3	ECE
3	2	3	2	3	3	3	3	ECE
2	2	2	2	2	2	2	2	ME
3	2	3	2	3	2	3	2	MSTE
3	2	1	2	3	1	3	2	ECE
3	2	3	2	3	3	3	2	EE
3	2	3	2	3	3	3	3	ECE
1	2	1	2	2	2	2	2	ME
2	2	3	2	3	3	3	2	BME
2	2	1	2	2	2	2	2	ECE
2	2	2	2	2	3	3	3	ME
3	2	3	2	3	2	3	2	ECE
2	2	2	2	3	3	3	3	ECE
2	2	1	2	2	2	2	2	ME
2	2	2	2	3	3	3	3	BME
3	2	3	2	3	3	3	3	BME
1	2	2	2	2	2	2	2	CE/BME
2	2	2	2	2	2	2	2	ME
3	2	3	2	3	3	3	3	ECE
2	2	2	2	2	2	2	2	MSTE
3	2	3	2	3	3	3	3	ME
2	2	2	2	2	2	2	2	ECE
3	2	3	2	3	3	3	3	BME
2	2	2	2	2	2	2	2	ECE
2	2	2	2	2	2	2	2	MSTE
2	2	2	2	2	2	2	2	ME
1	2	1	2	2	2	2	2	ECE
3	2	3	2	3	3	3	3	MSTE
2	2	2	2	2	2	2	2	BME
2	2	2	2	2	2	2	2	ECE
1	2	2	2	2	2	2	2	ECE
3	2	2	2	2	2	2	2	ECE
Avg 2.4	2.0	2.3	2.0	2.5	2.5	2.5	2.5	

TCM 46000 SPRING 2010 PUL ASSESSMENT									
	1A - Language Skills [Reading and understanding books, articles, and instruction manuals]	1A - Language Skills [Delivering a prepared presentation to a group]	1A - Language Skills [Writing a final report on a project or other work assignment]	1A - Language Skills [Contributing to a team to solve problems]	2 - Critical Thinking [Analyzing other people's ideas and proposed solutions]	2 - Critical Thinking [Systematically reviewing your own ideas about how to approach an issue]	2 - Critical Thinking [Creatively thinking about new ideas or ways to improve things]	2 - Critical Thinking [Discussing complex problems with co-workers to develop a better solution]	Student Major
	3	2	3	2	3	3	3	3	ECE
	3	2	3	2	3	2	2	2	ECE
	3	2	3	2	3	3	3	2	ECE
	3	2	2	2	3	2	2	2	ME
	3	2	2	2	3	2	3	2	ECE
	3	2	1	2	3	2	3	2	ECE
	3	2	3	2	3	2	3	3	ECE
	3	3	3	3	3	3	3	2	BME
	3	3	3	2	3	3	3	2	ECE
	3	2	2	2	3	2	3	3	ECE
	3	3	3	2	3	3	3	2	ECE
	3	2	2	2	3	2	2	2	ME
	3	2	3	3	3	2	3	3	BME
	2	2	1	2	1	1	2	2	ECE
	3	2	2	2	3	2	3	3	ECE
	3	2	2	2	2	3	3	2	ECE
Avg.	2.9	2.2	2.4	2.1	2.8	2.3	2.7	2.3	

APPENDIX C

Criteria for Assessing Students' Workplace Speaking Abilities

Rater's Initials_____ Major of Student _____ Speaker Number _____

		Excellent		Good		Weak	N/A
Content	Introduction gives overview and states purpose of presentation.	5	4	3	2	1	n/a
	Content fits purpose and audience.						
	Data and analysis seem logical and sound.						
	Conclusion flows from content and brings closure to presentation.						
	Organization of content is easy to follow.						
Visuals	Visuals help understanding and are clear, easy to read, and error-free.						
Presentation Style	Language used is appropriate.						
	Length fits purpose.						
	Grammar is consistently standard.						
	Presentation is well prepared and well rehearsed.						
	Pace and volume are at appropriate levels.						
	Body Language is relaxed with adequate eye contact.						
	Question and answer time is handled well.						
**	Overall Impression	5	4	3	2	1	n/a

Criteria for Assessing Students' Workplace Writing Abilities

Rater's Initials_____ Major of Student _____ Date _____

		Excellent	Good		Weak	N/A
Content	Introduction gives overview and states purpose of document.	4	3	2	1	
	Content fits purpose and audience.					
	Data and analysis are logical, sound, and sufficient.					
	Conclusion flows from content and brings closure to document.					
	Organization of content is logical and flows smoothly.					
Visuals	Visuals help understanding and are clear, easy to read, and error-free.					
	Page layout is effective and professional looking.					
Presentation	Language used is appropriate.					
	Length is appropriate to audience, situation, and content.					
	Grammar, punctuation, and spelling are consistently correct.					
	Sentence structure is clear and concise.					
	Credit is given for work from other sources.					

PUL Questionnaire

To Program Faculty: Please select only those items in the list below that pertain to the one or two PULs to which you have given major or moderate emphasis in this course.

---

* Required

Artifact ID Number *

Evaluator's Initials *

Semester * 2010 - Spring

Course Number *

- TCM35000 - 1A, 2, 5
- TCM36000 - 1A, 2, 5
- TCM46000 - 1A, 2, 3

Student Major

1A - Language Skills 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Reading and understanding books, articles, and instruction manuals				
Delivering a prepared presentation to a group				
Writing a final report on a project or other work assignment				
Contributing to a team to solve problems				

1B - Quantitative Skills 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Solving mathematical problems				
Using mathematics in everyday life				
Understanding a statistical report				
Preparing a report using quantitative data				

1C - Information Resource Skills 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Identifying the sources of information that are most appropriate for a project				

	3	2	1	0
Using computer software for work (word processing, spreadsheet, graphics, etc.)	☐	☐	☐	☐
Evaluating the quality and accuracy of information found on a web site	☐	☐	☐	☐
Recognizing which ideas or material need to be fully acknowledged to avoid plagiarizing	☐	☐	☐	☐

2 - Critical Thinking 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Analyzing other people's ideas and proposed solutions	☐	☐	☐	☐
Systematically reviewing your own ideas about how to approach an issue	☐	☐	☐	☐
Creatively thinking about new ideas or ways to improve things	☐	☐	☐	☐
Discussing complex problems with co-workers to develop a better solution	☐	☐	☐	☐

3 - Integration and Application of Knowledge 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Applying what you learned in college to issues and problems you face every day	☐	☐	☐	☐
Gather information from a variety of sources when deciding what action to take	☐	☐	☐	☐
Finding new ways to use what you have learned as you encounter new situations/problems	☐	☐	☐	☐
Putting ideas together in new ways	☐	☐	☐	☐

4 - Intellectual Depth, Breadth and Adaptiveness 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Learning new approaches to work or to advanced studies	☐	☐	☐	☐
Having an in-depth understanding of your major field of study	☐	☐	☐	☐
Having a general understanding of subjects other than the one in which you majored	☐	☐	☐	☐
Being able to modify how you approach a problem based on the requirements of the situation	☐	☐	☐	☐

5 - Understanding Society and Culture 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Learning new approaches to work or to advanced studies	☐	☐	☐	☐

	3	2	1	0
Having an in-depth understanding of your major field of study				
Having a general understanding of subjects other than the one in which you majored				
Being able to modify how you approach a problem based on the requirements of the situation				

6 - Values and Ethics 3 = Very Effective, 2 = Effective, 1 = Somewhat Effective, 0 = Not Effective

	3	2	1	0
Exercising my responsibilities as a citizen (voting, staying current with community and political issues, etc.)				
Making informed judgments when faced with ethical dilemmas				
Recognizing the consequences of my actions when facing a conflict				
Understanding and appreciating the arts				

Submit