

Program Outcomes and Assessment

Degree Program: B.S. Mathematics

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Program Mission Statement:

The department is committed to providing meaningful experiences in which students can develop an appreciation for the importance of mathematics in today's society. Faculty provide mathematics majors with a solid mathematical foundation that prepares them for a variety of career opportunities and for additional graduate study.

Mathematics Learning Outcomes

Outcome 1: Mathematics majors at CSU will be able to apply critical thinking skills to solve problems that can be modeled mathematically.

Outcome 2: Mathematics majors at CSU will be able to critically interpret numerical and graphical data.

Outcome 3: Mathematics majors at CSU will be able to read and construct mathematical arguments and proofs.

Outcome 4: Mathematics majors at CSU will be able to use computer technology appropriately to solve problems and to promote understanding.

Outcome 5: Mathematics majors at CSU will be able to communicate a depth and breadth of mathematical knowledge, both orally and in writing.

Outcome 6: Mathematics majors at CSU will be able to apply mathematical knowledge to a career related to mathematical sciences or in post-baccalaureate studies.

Assessment Methods/Type of Evidence

While program outcomes will be addressed to some extent in all mathematics courses that contribute to the degree (see matrix), assessment of the program as a whole will be accomplished by collecting data from courses required by every student majoring in mathematics at CSU (for example, MATH 3005—Transition to Higher Mathematics). Target courses in which the first five program outcomes will be assessed have been identified; while the final outcome will be evaluated after graduation. The faculty members who teach each of the courses are directly involved in developing the means of assessment. The Assessment Committee will approve of the instruments used to ensure that appropriate criteria are being used in evaluating student performance. As program assessment data is collected, it will be kept in a departmental file folder for each student. The six program outcomes are primarily assessed by collecting data from target courses. The means of assessment and the assessment criteria follow:

Data Collection Outcome 1:

Target Course: MATH 3303 – Ordinary Differential Equations

Means of Assessment: 1) Specific examination questions; 2) Group projects

Assessment Criteria: Quiz and test problems are used to assess critical thinking skills and students' ability to apply those skills to model problems mathematically. Students are expected to demonstrate a logical course of thought, using tools from physics, mathematics and engineering, to develop models for physical problems. Examples may include explaining whether or not solutions to given non-homogeneous differential equations go unbounded and why that is the case; using a differential equation to model a tank with a brine mixture with given inflow and outflow conditions; or making a case for modeling the water level in an ice cube tray as a particular system of equations.

Rubrics are used to grade the group projects. Once the model is successfully determined, the student must use the mathematical tools from the course to solve the problem, such as finding the equation of motion for the system, or determining current in a circuit as a function of time. Projects typically involve taking the information presented in the classroom and putting multiple topics together to go "one step beyond" what is taught in the class. Examples of group projects include:

- Cleaning up the Great Lakes: Develop a simple mathematical model to determine the time it would take to clean up the Great Lakes using a multiple compartmental analysis approach. View each lake as a tank containing a particular pollutant, with the tanks connected as the Great Lakes actually are. Students begin with a very simple model, and build onto that model to develop one that is fairly realistic.

- Periodic Solutions to Volterra-Lotka Systems: Use software, direction fields, and phase plane analysis to examine the Volterra-Lotka predator-prey model.
- Curve of Pursuit: Determine the path of a pursuer chasing its prey, and determine if the pursuer will ever catch the prey.

Data Collection Outcome 2:

Target Course: MATH 4320 – Numerical Methods

Means of Assessment: Specific Problems on Examinations

Assessment Criteria: Appropriate exam questions will be used and assessed using a rubric. Examples of problems assessing a student's understanding of numerical methods and their error analysis would be the following:

- Explain how the Gaussian elimination method is susceptible to rounding errors.
- For the function $f(x) = \ln(x + 1)$ find the interpolating polynomial passing through the points 0, 1, 2, 3. Find an upper bound for the error in the approximation.
- Use one or more free cubic splines to reproduce the upper curve of Snoopy minus the tail, eyelash, and nose. Be sure to select more sample points along the steep portions of the curve as compared to the flat portions of the curve.



Data Collection Outcome 3:

Target Course: MATH 3005 – Transition to Higher Mathematics

Means of Assessment: 1) Specific Examination Questions; 2) Assignments (including at least one collaborative learning experience)

Assessment Criteria: There are two types of material in this course. One is routine material on logic, sets, relations, functions, etc. that every math major must know. A traditional and routine exam will suffice to test the student's mastery of this type of material. The second is the ability to write proofs using correct mathematical grammar and language. This is assessed by assignments.

Examples of traditional assignment problems include:

- Prove that $\sqrt{3}$ is irrational.
- Prove by induction that n lines in general position divide the plane into $\frac{n^2 + n + 2}{2}$ regions.

Examples of collaborative learning assignment problems include:

- Use the well-ordering principle to prove the Fundamental Theorem of Arithmetic (students need to have a thorough understanding of the well-ordering principle to do this problem and discussion with peers helps)
- Prove that every equivalence relation on a set partitions the set and vice-versa (a two page proof with many parts)

Traditional assignments and exams have standard grading schemes. Collaborative learning assignments have a different grading scheme. Typically, students are evaluated by the instructor on the accuracy of their work and by their peers on their ability to cooperate and work in a group. Each member of the group fills out a peer evaluation form for his/her group members.

Data Collection Outcome 4:

Target Course: This outcome will be assessed across a variety of mathematics courses required for the major. Since the implementation of ITP in 1998, Clayton State students have been required to have access to laptop computers. Mathematics courses incorporate technology, both in and out of the classroom, throughout each semester. Course-appropriate software is used in each of the target courses.

Means of Assessment: Specific Assessments will vary from course to course and may include, but not be limited to, use of technology to solve problems on tests and incorporation of technology in course projects.

Assessment Criteria: Criteria will vary across courses and will be developed along with course assessment criteria.

Data Collection Outcome 5:

Target Course: MATH 4990 – Senior Seminar: Project or Internship

Means of Assessment: 1) Project consisting of oral presentation and written paper; 2) Major Field Assessment Test

Assessment Criteria: The students will prepare a presentation and written paper on a topic chosen in consultation with a faculty mentor or on their internship experiences. They will be expected to give the presentation in front of faculty and their peers as part of the departmental colloquium. The presentations will be evaluated using the CSU Speaking Criteria (see appendix below). The written report will be graded on clarity of style, grammar, and spelling and will be evaluated using a rubric. Papers should be typed and of 6 – 8 pages in length. The text should be double spaced using a 12pt font. The bibliography must include at least 2 books, 2 journal articles (not e-journals) and 2 Web addresses references. The style of the bibliography should use the AMS style.

To assess the breadth of mathematical knowledge, the Major Field Assessment Test in Mathematics offered through the Educational Testing Service will be used. This will be a requirement of all students enrolled in the senior seminar capstone course. We believe that this instrument provides a valid assessment of our students’ mastery of critical mathematical concepts and knowledge. The total score and assessment indicator reports will help us determine strengths of our program and provide insight for changes that may be needed to better prepare our majors.

Data Collection Outcome 6:

Means of Assessment: Post-graduation surveys

Assessment Criteria: One year after graduation, the majority of graduates will have career-based employment or will be enrolled in graduate school. During 2006, this instrument will be developed in cooperation with the Institutional Research Board at CSU for use in spring 2007.

Conclusion

Although we are still a “work in progress”, we have made significant strides in the development of CSU’s mathematics program assessment plan. Our team will continue to work with other faculty in the mathematics department to refine our methods of program assessment. We will also continue to work with our colleagues from other institutions who are doing similar work, especially through the SAUM project. Having had the opportunity to participate in this project has helped us tremendously in our efforts to develop a plan of appropriate and effective program assessment. As we progress through the assessment cycle, we will use the results to help prescribe or recommend necessary program changes to our program that will provide our students with the quality educative experiences we want for our mathematics majors.

Course Mapping Matrix

B.S. Mathematics - Program Outcomes Mapping Matrix

| | 1) Apply critical thinking skills to solve problems that can be solved mathematically. | 2) Critically interpret numerical/graphical data. | 3) Read/construct mathematical arguments and proofs. | 4) Use computer technology to solve problems and promote understanding. | 5) Communicate depth and breadth of mathematical knowledge (written and oral). | 6) Apply mathematical knowledge to career/graduate studies. |
|--|--|---|--|---|--|---|
| MATH 1111 - College Algebra (3-0-3) | x | x | | x | x (?) | |
| MATH 1112A - Trigonometry & Analytic Geometry (3-0-3) | x | x | x | x | | |
| MATH 1113 - Pre-Calculus (3-0-3) | x | x | x | x | | |
| MATH 1231 - Introductory Statistics (3-0-3) | x | x | | x | | |
| MATH 1501 - Calculus I (4-0-4) | x | x | | x | x | |
| MATH 2020 - Introductory Discrete Mathematics (3-0-3) | x | x | x | x | x | |
| MATH 2140 - Introductory Linear Algebra (3-0-3) | x | x | x | x | x | |
| MATH 2502 - Calculus II (4-0-4) | x | x | x | | | |
| MATH 2503 - Calculus III (4-0-4) | x | x | | x | x | |
| MATH 3003 - Applied Mathematical Modeling (3-0-3) | x | x | | x | | |
| MATH 3005 - A Transition to Advanced Mathematics (3-0-3) | x | | x | | x | |
| MATH 3110 - Survey of Algebra (3-0-3) | x | | x | | x | |
| MATH 3220 - Applied Statistics (3-0-3) | x | x | x | x | x | x |
| MATH 3303 - Ordinary Differential Equations (3-0-3) | x | x | | x | x | x |
| MATH 3520 – Introduction to Analysis (3-0-3) | x | | x | | x | |
| MATH 4130 - Applied Algebra (3-0-3) | x | | x | x | x | x |
| MATH 4231 - Modern Geometry (3-0-3) | x | | x | x | x | |
| MATH 4303 - Partial Differential Equations (3-0-3) | x | x | | x | x | x |
| MATH 4320 - Numerical Methods (3-0-3) | x | x | x | x | x | |
| MATH 4350 - Graph Theory (3-0-3) | x | | x | | x | |
| MATH 4360 - Combinatorics (3-0-3) | x | | x | x | x | x |
| MATH 4800 - Selected Topics in Mathematics (3-0-3) | x | | | | | |
| MATH 4988 – Directed Undergraduate Research (0-1-1) | x | x | x | x | x | x |
| MATH 4989 – Senior Capstone Project (1-0-1) | x | | x | x | x | x |
| Exit Interviews | | | | | | x |
| Alumni Surveys | | | | | | x |

Discussion of Results and Changes - Mathematics

Assessment Plan

While Mathematics program outcomes will be addressed to some extent in all mathematics courses that contribute to the degree (see BSMath Matrix), assessment of the program as a whole will be accomplished by collecting data from courses required by every student majoring in mathematics at CSU (for example, MATH 3005—Transition to Higher Mathematics). Target courses in which the first five program outcomes will be assessed have been identified; while the final outcome will be evaluated after graduation.

Responsibility

Mathematics faculty members who teach each of the courses are directly involved in developing the means of assessment. The Assessment Committee will approve of the instruments used to ensure that appropriate criteria are being used in evaluating student performance. As program assessment data is collected, it will be kept in a departmental file folder for each student. The six program outcomes are primarily assessed by collecting data from target courses.

To implement continuous program improvement, analysis of data must lead to planned curriculum revision. CIMS has developed clearly defined levels of responsibility for change management.

Work at the College Level:

- Develop college outcomes in line with university outcomes.

- Establish goals, objectives and guidelines – an overall plan for achieving college outcomes.

- Develop a feedback loop that takes into account departmental performance, faculty feedback, and departmental evaluation of program effectiveness. Revise college outcomes, goals, objectives, and guidelines as necessary. Document changes so that the college can verify continuous improvement.

Work at the Program Level:

Develop program outcomes in line with college outcomes.

Map program outcomes to courses. Establish acceptable performance criteria.

For each course, develop core course objectives that support each program outcome mapped to the course. This is a departmental level, top down design, exercise because courses and their prerequisites flow together to create the curriculum as a whole. Courses do not exist in isolation.

Develop a feedback loop that takes into account course performance data, student feedback, and faculty evaluations of courses. Revise program outcomes, course outcomes, and acceptable performance criteria as necessary. Document changes so that the program can verify continuous improvement.

Work at the Faculty Level:

Develop additional course objectives. This secondary set of course objectives encourages bottom-up evolution of the curriculum. For both core course objectives and secondary course objectives, develop instructional components designed to teach course objectives.

Develop assessments and corresponding rubrics for each course objective.

Create a spreadsheet for recording student scores based on assessments and rubrics. Note: be as discrete as possible. For example, if a test covers two or more objectives, the spreadsheet elements for recording the test should have a column for each objective.

A separate page of the grading spreadsheet should contain 'roll-up' formulas that summarize overall student performance that can be compared to established performance criteria. While each faculty member may have individual and creative instructional components, assessments, and rubrics, the 'roll-up' should be standardized so that program level summaries of course objectives and program outcomes are easy to achieve.

Develop a feedback loop that takes into account student performance, student feedback, and peer evaluations of teaching effectiveness. Revise instructional components, assessments, and rubrics as necessary. Changes should be documented so

that faculty can verify continuous course improvement. Proposed changes to program outcomes and/or core course objectives should be submitted to the program curriculum committee for consideration by the faculty as a whole.

Chronology of Results and Changes

2006

Math 3303 is the target course for assessing Math Learning Outcome 1: Mathematics majors at CSU will be able to apply critical thinking skills to solve problems that can be modeled mathematically.

The prerequisites for MATH 3303 have been changed to include a course in Linear Algebra to help ensure more mathematical maturity of the students that take the course. Maple has been incorporated into the course as a standard computer algebra system.

Math 4320 is the target course for assessing Math Learning Outcome 2: Mathematics majors at CSU will be able to critically interpret numerical and graphical data.

Because of the structure of the program, not all majors need or have taken MATH 4320. We recommend that the assessment of this be measured in MATH 3303 which all math majors are required to take. Supplemental information can still be collected from the majors who take MATH 4320 and/or other advanced courses that are applied.

2007

Math 3005 is the target course for assessing Math Learning Outcome 3: Mathematics majors at CSU will be able to read and construct mathematical arguments and proofs.

It had been noted in several subsequent courses and the Major Fields test that several of our majors did not come out with a strong enough background in set theory and proofs involving sets. The committee on upper division courses recommended in 2007 that the outcomes for the MATH 3005 course be revised to include more naïve set theory.

2009

Since all Clayton State students are required to have access to laptop computers, several mathematics courses serve as target courses to assess Math Learning Outcome 4: Mathematics majors at CSU will be able to use computer technology appropriately to solve problems and to promote understanding.

In order to have a consistent base of data, the department in the spring of 2009 voted that all majors will use Maple in the Calculus sequence and MATH 3303. All of the seniors in the capstone course have used TEX and other word processing software not only to produce their papers, but also to prepare their presentations.

Math 4990 is the target course for assessing Math Learning Outcome 5: Mathematics majors at CSU will be able to communicate a depth and breadth of mathematical knowledge, both orally and in writing.

Of the seventeen students that have signed up for MATH 4990, 8 were given incompletes. In each case, the student and the faculty mentor agreed that the paper was not developed enough to warrant a satisfactory grade. The department revised the curriculum in the spring of 2009 to break up the 3 credit senior project into two courses, MATH 4988 – Directed Undergraduate Research (1 credit repeatable for up to 2 credits) and MATH 4989 – Senior Capstone Project (1 credit). This revision of our degree program allows greater flexibility for both students and faculty, but ultimately provides the same set of learning experiences on a longer timescale. It will also allow our new track in Secondary Education Mathematics Certification to participate in a common capstone experience while not adding extra credit hours.

Post graduation surveys are used to assess Math Learning Outcome 6: Mathematics majors at CSU will be able to apply mathematical knowledge to a career related to mathematical sciences or in post-baccalaureate studies.

Since 2006, two of our graduates are in doctoral programs (one in statistics at UGA and one in computer science at GSU), two of our graduates are pursuing MAT degrees in Mathematics at CSU, and one has a fellowship at Kennesaw State University for an MAT in Mathematics. The post graduate survey has not been approved as of this date. With the advent of the newly approved track that will lead to certification to teach at the secondary education level, a new survey will be developed that will specifically follow these graduates. Also with our 3 plus 2 agreement with GA Tech, we will be able to follow our graduates to see if they are successful in pursuing their engineering degree.

Appendix – Speaking Criteria

Criterion One: Content

Information Base Appropriate for the Presentation

This criterion assesses the quality and extensiveness of the speaker's information base from which she or he selects the specific content of the presentation. It is used when the assessor wishes to rate the information base in its own right; that is, the assessor considers the speaker's understanding of that information which extends beyond the central idea of the presentation to be an essential component of the assignment context. To determine this information base, the assessor uses one or more of the following: inferences drawn by the assessor, responses during a question-answer period following the presentation, accompanying written material such as an outline, a bibliography, research notes, or handouts of additional information.

Excellent:

The speaker demonstrates a thoroughly comprehensive and sophisticated information base.

Good:

The speaker demonstrates a somewhat comprehensive and sophisticated information base.

Marginal:

The speaker demonstrates an information base barely sufficient for accomplishing the assigned task.

Unsatisfactory:

The speaker is unable to demonstrate an acceptable information base for accomplishing the assigned task.

Content Appropriate to Purpose, Listener and Occasion

This criterion evaluates how well the speaker limits the topic and selects, adapts and develops the content of the presentation to achieve the speaker's purpose for the specific listener(s) involved.

The speaker selects supporting information that is clearly understood, interesting, relevant, reliable, and sufficient given the listener(s)' frame of reference, i.e. background, level of knowledge, and attitude toward the speaker and topic.

Note: The specific listener(s) should be clarified for each assignment. The expert assessor is NOT considered to be a listener in the context of the Speaking Criteria unless specifically designated as such.

Excellent:

- *Development of Content:* The speaker effectively limits and focuses the topic, selects, adapts and develops the content, i.e., supporting material, to cover the topic in the allotted time. The content is exceptionally appropriate for achieving the speaker's specific purpose. The content is interesting, clear and selectively appropriate to the frame of reference of the listener. The content is relevant, reliable, and sufficient to provide the listener with a significantly enhanced understanding of the central idea and to establish significant credibility with the listener.
- *Use of Visual Aids:* Appropriate visual aids contribute to the listener's understanding of the content.

Good:

- *Development of Content:* The speaker sufficiently limits and focuses the topic and selects, adapts and develops the content, i.e., supporting material to adequately cover the topic in the allotted time. The content is interesting, clear and selectively appropriate to the frame of reference of the listener. The content is generally relevant, reliable and sufficient to provide the listener with a clear understanding of the central idea and to establish credibility with the listener.
- *Use of Visual Aids:* Appropriate visual aids contribute to the listener's understanding of the content.

Marginal:

- *Development of Content:* The student has not appropriately limited and focused the topic, resulting in inadequate development as it relates to the speaker's purpose. Too few or too many major supporting ideas or details may interfere with the listener's comprehension. The speaker attempts to provide supporting material appropriate to the specific purpose, occasion and listener, but the material is lacking in either quality, variety, accuracy or relevance.
- *Use of Visual Aids:* Visual aids are either inappropriate or ineffectively used.

Unsatisfactory:

- *Development of Content:* The speaker has inappropriately limited the topic. The content does not help the speaker achieve the specific purpose. The supporting ideas and details are either unclear, irrelevant, unreliable, inadequate, insufficient or clearly inaccurate.

Criterion Two: Organization Appropriate to Purpose, Listener, and Occasion

This criterion evaluates how well the speaker develops an orderly sequence and arrangement of ideas enabling the listener to follow, understand and remember the message. The Framework of a presentation normally includes three distinct parts: an introduction, a body and a conclusion.

The Framework is further demonstrated by a clear main/central idea and logical divisions of material within the introduction, body and conclusion.

Order refers to how the speaker sequences the information within the introduction, within the body, and within the conclusion. *Transition* refers to the way the speaker provides connections throughout the presentation.

Excellent:

- *Framework:* In the introduction the speaker comfortably gains favorable attention and establishes a motivation for listening. The speaker also has a clear, effectively placed central idea to focus the material. A strategy of direction for the ideas to be presented is clearly established and highly appropriate for achieving the speaker's purpose. The body, or the bulk of the presentation, is a clear unit of distinct major supporting ideas with specific details. The conclusion is effectively suited to the speaker's purpose and to other elements of the presentation.
- *Order/Sequence:* The ordering of the introductory comments and concluding comments is exceptional for the speaker's purpose. In the body, the order of the major supporting ideas and their developing details is exceptionally effective for achieving the speaker's purpose.
- *Transition:* The speaker has clear, smooth transitions or movement between elements of the presentation providing the listener with a sense of continuity for the entire presentation.

Good:

- *Framework:* The opening comments reveal a strategy designed to gain favorable attention and establish a motivation for listening. The speaker has a central idea which focuses the material and is appropriately located so as to best accomplish the speaker's purpose - - the desired response from the audience. A strategy of direction for the ideas to be presented is established and is appropriate for achieving the speaker's purpose. The body is a distinct unit of major supporting ideas with specific details. The speaker's concluding comments are appropriately related to the purpose and major ideas discussed, but they are not emphatic.

- *Order/Sequence:* The order of the introductory or concluding comments and the order of the major supporting ideas and their developing details are effective for achieving the speaker's purpose.
- *Transition:* The speaker provides clear, but sometimes stilted, transitions between elements of the presentation.

Marginal:

- *Framework:* The speaker has difficulty introducing the subject, for the first few comments are somewhat unrelated, weak or unimaginative. The central idea is flawed: either the speaker's attempt to focus the information reveals the topic but not the central idea, or the central idea should have been better placed so as to more effectively accomplish the speaker's purpose. The direction for the ideas to be presented is not readily apparent. The listener has difficulty recognizing in the body of the presentation any units of major supporting ideas and specific details. The speaker has difficulty ending the communication, for the concluding comments are inappropriate or inadequate for the listener or the purpose.
- *Order/Sequence:* The order of the introductory or concluding comments is somewhat inappropriate. The order of the major supporting ideas or their developing details is somewhat unclear, inappropriate or difficult to follow.
- *Transition:* As the speaker moves between elements of the presentation, the transitions are either awkward or weak providing little continuity for the listener.

Unsatisfactory:

- *Framework:* The speaker's opening remarks are either inappropriate to the presentation, or they are unlikely to motivate listening. The speaker either does not have a focusing central idea, or its placement is clearly inappropriate for the purpose of the speech. The body of the presentation lacks major supporting ideas. The speaker fails to provide a closing statement.
- *Order/Sequence:* The introductory or concluding comments and the major supporting ideas and their developing details are ordered in a way that frustrates or confuses the listener.
- *Transition:* The speaker has no clear transitions between elements of the presentation to provide continuity for the listener.

Criterion Three: Physical Expression Appropriate for the Listener and Occasion

This criterion evaluates all aspects of what is commonly known as body language - - facial expression, physical presentation, and eye contact - - and its effectiveness in enhancing the speaker's communication with the listener.

Excellent:

- *Facial Expression:* The speaker looks genuinely interested in communicating; facial expressions enhance the verbal message and give appropriate emphasis to the content.
- *Physical Presentation:* Body movements, posture and gestures are natural and relaxed to reinforce the message and give emphasis to the content. The speaker's appearance is tailored to the occasion and the expectations of the listener.
- *Eye Contact:* Eye contact appears to be varied, purposeful, and comfortable.

Good:

- *Facial Expression:* The speaker shows interest; facial expressions are consistent with the speaker's voice, language, and content of the message.
- *Physical Presentation:* Distracting behaviors or the absence of appropriate behaviors does not interfere with the communication. The speaker's appearance is appropriate for the occasion and the listener.
- *Eye Contact:* Eye contact with the listener is consistently maintained.

Marginal:

- *Facial Expression:* The speaker has limited facial expressions.
- *Physical Presentation:* Distracting behaviors or the absence of appropriate behaviors is noticeable and occasionally interferes with the communication. The speaker's appearance does not distract from the message.
- *Eye Contact:* Eye contact with the listener is inconsistent.

Unsatisfactory:

- *Facial Expressions:* The speaker lacks facial expressions.
- *Physical Presentation:* Distracting behaviors or the absence of appropriate behaviors obstructs communication. The speaker's appearance distracts from the message.
- *Eye Contact:* Lack of eye contact is obstructing to the information exchange.

Criterion Four: Vocal Delivery Appropriate for the Listener and Occasion

This criterion concerns those aspects of the speaker's voice that either encourage or discourage listening: pitch, rate, volume, articulation, pronunciation, pausing, and general variations of the voice.

Excellent:

- *Vocal Clarity:* Volume is appropriate for the listener and the occasion. Articulation is consistently distinct and clear. Presentation is free of any mispronunciations.
- *Vocal Energy:* The speaker sounds genuinely interested in the topic by using effective vocal variety - - varying the pitch, rate, and volume - - throughout the presentation. Pauses are used to accent and enhance the impact of the message. Notes, if used, are used effectively.
- *Vocal Fillers:* An occasional vocalized pause may occur but is not distracting.

Good:

- *Vocal Clarity:* Volume is generally appropriate for the listener and the occasion. Articulation is distinct and clear, and pronunciation for the most part is correct, but an occasional lapse in one of these characteristics is noticeable.
- *Vocal Energy:* The speaker sounds interested in the topic and shows some vocal variety. Notes may assist but do not interfere with delivery.
- *Vocal Fillers:* Vocalized pauses cause occasional minor distractions.

Marginal:

- *Vocal Clarity:* Volume is generally too loud or too soft for the listener and the occasion. Articulation is hampered by occasional lazy, slurred or chopped enunciation. Mispronunciations interfere with the listener's understanding of the message.
- *Vocal Energy:* The speaker lacks vocal variety thus having a somewhat monotonous delivery that hampers the listener's reception of the message. Moments of apparent reciting, reading or referring to notes occasionally interferes with delivery.
- *Vocal Fillers:* Vocalized pauses are distracting.

Unsatisfactory:

- *Vocal Clarity:* Volume is either too loud or too soft for the listener or the occasion. Poor articulation or mispronunciation obstructs communication with the listener.
- *Vocal Energy:* Reciting, reading or constant referral to notes adversely affects the vocal delivery. The speaker sounds uninterested or bored with the message of in communicating successfully with the listener.
- *Vocal Fillers:* Vocalized pauses obstruct communication with the listener.

Criterion Five: Language Appropriate for the Listener and the Occasion

This criterion focuses on two aspects of language: (1) the speaker's ability to use standard American English, when appropriate and (2) the speaker's choice of words, phrases, and sentence structure to create an Oral Style that is appropriate for the listener and the occasion.

Excellent:

- *Use of Standard English:* The speaker makes no noticeable grammatical errors that interfere with perceived credibility or with the listener's understanding of the message. Any deviation from standard spoken English seems to be chosen for an appropriate reason. The speaker's dialect should not interfere with the communication process.
- *Oral Style:* The speaker chooses language that is clear, direct, concrete, vivid and appropriate. Figurative language and imagery indicate a measure of originality and sophistication in the speaker's control of language. If used, jargon is appropriate for the listener (defining terms if necessary). The sentence structure is varied creating emphasis and stylistic impact that is appropriate for both the listener and occasion.

Good:

- *Use of Standard English:* The speaker either makes no noticeable grammatical errors or makes only an occasional grammatical error. Occasional errors do not significantly lessen credibility because the speaker demonstrates a general mastery of language standards throughout the communication situation. Deviation from standard spoken English seems to be chosen for an appropriate reason.
- *Oral Style:* The speaker chooses language that is generally clear, direct, concrete and appropriate. The expressions are free of slang, colloquialisms or idioms that are inappropriate for the listener. If used, jargon is appropriate for the listener (defining terms if necessary).

Marginal:

- *Use of Standard English:* The speaker's grammatical errors are noticeable, sometimes distracting, and at times inappropriate for the language background of the listener.
- *Oral Style:* The speaker's style sometimes interferes with the listening process: either the speaker uses language that is generally vague, ambiguous or empty or that has awkward syntax, or the speaker uses language that contains expressions and syntax that is more appropriate for written style.

Unsatisfactory:

- *Use of Standard English:* Frequent errors in standard spoken English are noticeably objectionable and make it difficult for the listener to focus on the message. The level of standard English used is consistently inappropriate for the listener.
- *Oral Style:* The speaker's style interferes with the listening process: either the speaker uses language that is vague, ambiguous or empty or has awkward syntax, or the speaker relies wholly on written style for the presentation of the message.