Instructor: William Culbertson, Ph. D.

Phone: 523-7440
Office Hours: M-W-F 09:00 – 10:00 or By Appointment
Email: bill.culbertson@nau.edu
Time/Place: Tu-Th, 12:45-2:00 p.m. CHP 101

Course prerequisites: SST 202 and SST 251, or their equivalent, or instructor consent

Course catalog description: Addresses the fundamentals of the sciences pertaining to articulation, voice, and language.

This course addresses the fundamentals of the speech and languages sciences. The content will be general, and will lead students to explore, scientific research methods, physics, acoustics, respiratory science, voice production, acoustic phonetics, and sound spectrography. Language representation, motor programming fundamentals of speech perception and instrumentation as they pertain to the dynamic process of speech communication will be explored as well.

Learner (Course) Objectives:

GOAL: SST 375 is intended to provide the undergraduate students with knowledge of speech and language sciences as they pertain to speech production and speech perception. The successful student of SST 375 will:

1. Describe the scientific method and various types of research used to study the normal aspects of human speech and hearing.
2. Interpret the basics of physics as they pertain to energy, motion, displacement, force, and pressure and their relationship to speech production.
3. Describe the process of respiration as it pertains to gas compression, speech valving, driving pressure, impedance and flow.
4. Describe voice onset, modes of vocal vibration, pitch adjustment, volume and quality.
5. Describe the process of dynamic interaction representation at the cortical and subcortical levels of the five basic speech processes: respiration, phonation, articulation, resonance, and prosody.
Outcome Measures:

**EXAMINATIONS- 50%**: The average of four examinations will count as 50% of the final grade (100 Points). Test dates will be arranged and announced in class as we progress through the applicable material.

**SPEECH SCIENCE PORTFOLIO- 50%**: A speech science portfolio will count as 50% of the final grade (100 Points).

Portfolios are due on the date of the final examination. The SPEECH ANALYSIS PAPER is due in class on the Tuesday before final examinations week.

*Portfolio Honesty: Copying another student’s portfolio, past or present, in whole or part is plagiarism.*

**PORTFOLIO GRADING CRITERIA:**

- **COVERS ALL ASPECTS (Sections) OF COURSE**: 10%
- **ENTIRE PORTFOLIO IS WELL-ORGANIZED AND NEAT**: 5%
- **ACTIVE LEARNING**: Students adds relevant material not provided by instructor 45%
- **ARTICLE REVIEWS**: Review of five current speech-language science research articles from peer-reviewed journals: 10%

Students must review five current (within the past three years) scholarly research articles related to human communication and include them in the portfolio for credit in this item. Reviews must be prepared according to the following format:

- Article citation in *APA style*
  
  See: [http://owl.english.purdue.edu/owl/resource/560/01/](http://owl.english.purdue.edu/owl/resource/560/01/)

- Type of research design

- Abstract (verbatim)

**SPEECH ANALYSIS PAPER**: 30% Due on the Tuesday of the week before final examinations week.

"Describe the production and reception of a multisyllabic word, from the psychological processes of the speaker to those of the listener. The word must include a nasal consonant and must be approved by the instructor."
Include psycholinguistic, neurological and physical aspects of the process in both speaker and listener.”

Speech Analysis Paper Scoring Guide

A (Superior) 100%
An “A” paper demonstrates probing critical reading and/or analysis. It thoroughly evaluates various elements of its subject matter with creative, detailed reasoning and use of evidence. It demonstrates the student's strength in understanding the topic. Its organization shows a logical arrangement of parts, and all parts are relevant to the thesis. The thesis statement expresses a clear, confident stance and provides an accurate, concise forecast of topics to be developed. Paragraphs have a sharp focus and include carefully selected evidence. Sentences within paragraphs are linked by tight logical connections and effective transitions. Documentation, when needed, conforms to all appropriate conventions. Sentences are varied in style and imaginative in style; wording is concise; style and tone create a distinctive voice. The final, revised paper is free of all serious errors in grammar and punctuation. There are no misspellings.

B (Strong) 85%
A “B” paper shows good critical reading skills and offers convincing reading and evidence; the parts of the essay are logically arranged and relevant to the topic. The paper demonstrates the student's understanding of the topic, but may not be sufficient to be rated as “strong.” Paragraphs are unified, and supporting details are sufficient and relevant. Documentation, when needed, conforms to most appropriate conventions. Sentences are linked by logical connections and adequate transitions. Sentences show variety. Wording is, for the most part, concise and appropriate. The paper contains very infrequent errors in grammar, punctuation, and spelling.

C (Competent) 75%
A “C” paper demonstrates an understanding of texts and materials, and treats the topic sufficiently. The paper conveys the student's general understanding of basic processes involved. Paragraphs and supporting details relate to the topic, but may do so only generally. The sentences within the paragraphs are, for the most part, related and contain adequate transitions. (Transitions between paragraphs, however, may be unclear or missing at times.) Sentence style may consist of relatively simple sentence patterns. Word choice is largely appropriate, but may sometimes be problematic—simplistic or repetitive, perhaps. Mistakes in grammar, punctuation, documentation, and spelling may occur with some frequency, but most of these elements of the paper should be correct on the final, revised copy.

D (Below Average) 65%
The below average paper suggests the student has an incomplete understanding of the topic. The paper also fails to practice one or more of the principles of critical reading or writing. For instance, it may show an inability to correctly identify the main idea of a text. It may attempt to defend its thesis in illogical or unconvincing ways. The paper may resort excessively to summary. The paper may lack content and repeat ideas or “pad” simply to fill space. The paragraphs may lack topic sentences. Some paragraphs may lack adequate supporting detail or may wander from the main idea. Documentation may be faulty. Sentences within paragraphs are only loosely related, and transitions are missing. Sentences may be excessively wordy or vague. Style and word choice are flat, inconsistent, or inappropriate to the audience. The paper displays major or repeated errors in grammar, punctuation, and spelling, even in the final revised copy.

F (Failure) 50%
An “F” paper demonstrates that the student does not grasp the principles of the topic. Like a D paper, it also shows a failure to practice one or more of the principles of critical reading or writing, but an F paper reveals persistent problems, such as the following: the paragraphs lack focus; sentences within the paragraphs are unrelated to the main idea, and transitions are missing;
sentences are faulty in structure, or vague, wordy, and irrelevant; word choice is inappropriate, incorrect, or inconsistent; frequent major errors in grammar, punctuation, documentation, and spelling indicate an inability to handle the conventions of written discourse; there are excessive misspellings. A paper that fails entirely to address the assignment topic also merits an “F.”

Based on: Belmont University Department of English as transmitted through NAU Office of Academic Assessment

Grade Computation: 200 pts. Possible

A = 90-100%  C = 70-79%  Below 60% = Failure
B = 80-89%  D = 60-69%

Course Structure/Approach: SST 375 consists of lectures and demonstrations to accompany assigned readings. In addition to the required readings, the student is encouraged to pursue other material related to the subject. Additional study aids will include models, videotapes, and instructor-prepared materials, available through the Cline Library and the course website.

Attendance: Students are expected to attend class and to have completed any assigned discussion questions and readings. No assignments will be accepted late without an acceptable, documented institutional excuse.

TEXT:

Supportive reading material for SST 375 is posted online. Additional materials should be sought by students independently, as they create their portfolios during the course of the term. The material written by Dr. Culbertson in the lecture notes is sufficient to prepare students for tests.

LECTURE NOTES and POWER POINT SHOWS ARE POSTED ON THE BBLearn SHELL

THERE IS NO REQUIRED TEXT BOOK. The lack of a required text is in support of ASNAU’s request to keep student costs low.

However, the following suggested text can be purchased online if desired:

Suggested Text:


COURSE OUTLINE

The Scientific Method and Research Techniques

Basic Physics

Basic Acoustics

  Simple Harmonic Motion

    Frequency

    Amplitude

  Complex Waves

Amplitude, Pressure and Intensity

Resonance and Spectrography

  Spectrum

  Speech Spectrography

Test: Basic Physics and Acoustics

Acoustic Phonetics

  Introduction to Acoustic Phonetics

  Speech Sound Classification

  The Vocal Tract

  Sound Sources

Resonance Processes

  Vowel Articulation

  Approximants

  Nasal Resonance
Obstruent Processes

Plosives
Fricatives
Affricates

MID TERM EXAM (Inclusive of all previous material)

Speech Production and Perception

Linguistic and Psychological
Physiological
Physical

Neurolinguistics

General Brain Structure
Cortical Centers for Language Production and Perception

Cortical Lobes and Their Special Functions
Cerebral Dominance
Subcortical centers

Expression: Neurological Elements of Speech Motor Control

Motor Hierarchy
Muscles of Speech

Reception: Neurology of Speech Perception

Test: Neurological Elements of Speech Production and Perception

Speech Processes
Respiratory Processes

Capacities
Speech Breathing

Phonatory Processes

Phonatory Wave Form

Frequency

Amplitude

Quality

Articulatory Processes

Sound Sources for Speech

Voice Onset Time

Syllables

*Final Test: Speech Processes*

**PORTFOLIOS DUE ON MONDAY OF THE WEEK BEFORE FINAL EXAMS**
Important University Links:
Please check out the following link for information on the University’s policies regarding a Safe Working and Learning Environment, Disability Support Services, Academic Integrity and the Institutional Review Board. http://www2.nau.edu/academicadmin/policy1.html
At the end of this course, please complete an anonymous online course evaluation by going to: http://www.nau.edu/course_evals

Academic Contact Hour Policy
The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states: “an hour of work is the equivalent of 50 minutes of class time...at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit.”

The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.

SENSITIVE COURSE MATERIALS
If an instructor believes it is appropriate, the syllabus should communicate to students that some course content may be considered sensitive by some students.

“University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In the course of college studies, students can expect to encounter—and critically appraise—materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty.”

Resources for Student Success
Successful university students take advantage of services and resources designed to boost learning and achievement. NAU recommends that you begin with:
- MyFoundations- use this online tool to assess and develop required university skills at your own pace (free for first-time freshmen at NAU Flagstaff)
- Supplemental Instruction- attend these course-specific review sessions whenever offered; proven to reduce D’s and F’s
- Student Learning Centers- free drop-in, online, and individual tutoring appointments for math, writing, and over 100 courses; available Monday through Friday
ResourceConnect- your online central navigation point for all NAU student resources
For a full-listing of University College services visit: http://nau.edu/University-College/
MyFoundations one page fact sheet

Need to fill a gap? Brush up on your skills? Whether you need to get up to speed for your calculus class or brush up on your essay writing skills, the MyFoundations Self-Assessment and Development tool gets you on track for university-level academics.

Free to all incoming first-year NAU Flagstaff students- topics include:

- Math
- Reading
- Writing
- Study Skills

How it works
1. Self-Assess: Complete a path builder assessment in the topic area of your choice, which creates specific modules for your personalized learning path based on your demonstrated needs for improvement or development
2. Self-Develop: Complete the learning paths for mastery

- Instant feedback
- Choose activities that fit your learning style
- Work at your own pace

Where to find it- MyFoundations is in your course list in BbLearn
## ASHA Standard III: Outcomes for SST 375

<table>
<thead>
<tr>
<th>Learner Outcomes</th>
<th>Assessment Method</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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<tbody>
<tr>
<td>Develop a general understanding of speech and language sciences including</td>
<td>Examination</td>
<td>X</td>
<td>X</td>
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<td>specialties.</td>
<td>Portfolio</td>
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<td>Learn types of research conducted in SST and the scientific method</td>
<td>Examination</td>
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<td>Learn concept of sine waves and spring-mass oscillator with fixed point of</td>
<td>Examination</td>
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<td>attachment.</td>
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<td>Learn the concept of resonance and sympathetic vibration.</td>
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<td>Learn the acoustics of the speech mechanism double Helmholtz resonator.</td>
<td>Examination / Paper</td>
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<td>Learn and be able to identify and describe a sound spectrogram and other visual</td>
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<td>representations of speech.</td>
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<td>Learn the scientific basis to respiration, phonation, articulation, resonance,</td>
<td>Examination / Paper</td>
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<td>and prosody for speech purposes.</td>
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<td>Learn current psycholinguist theories of communication and summarize models.</td>
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<td>Apply speech–language sciences to the evaluation and</td>
<td>Term Paper</td>
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<td>treatment of communication disorders.</td>
<td>Examination / Portfolio</td>
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