

Term Information

Effective Term Autumn 2020
Previous Value Summer 2014

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

We are adding an online section of the course.

What is the rationale for the proposed change(s)?

To provide students with an option to study the same content online.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None.

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area Linguistics
Fiscal Unit/Academic Org Linguistics - D0566
College/Academic Group Arts and Sciences
Level/Career Undergraduate
Course Number/Catalog 2051
Course Title Analyzing the Sounds of Language
Transcript Abbreviation Analyzing Sounds
Course Description The sounds that languages use are examined. Quantitative analytical tools used in phonetic science are introduced. Small experiments are conducted to introduce students to research.
Semester Credit Hours/Units Fixed: 3

Offering Information

Length Of Course 14 Week, 12 Week, 8 Week, 7 Week, 6 Week, 4 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? Yes
Is any section of the course offered 100% at a distance
Previous Value No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: Math 1075 or 1148, or an ACT math subscore of 22 or higher that is less than two years old; or Math Placement Level R.
Exclusions	Not open to students with credit for 2051H or SphHrng 2051
<i>Previous Value</i>	Not open to students with credit for 2051H (Linguist 286H) or 286, SphHrng 2051 (286), or 286H.
Electronically Enforced	No

Cross-Listings

Cross-Listings	Cross-listed in SphHrng.
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Subject/CIP Code

Subject/CIP Code	16.0102
Subsidy Level	Baccalaureate Course
Intended Rank	Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

General Education course:
Data Analysis
The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes	<ul style="list-style-type: none">• Students will understand basic concepts in probability theory and statistics.• Students will understand probability theory and statistics as it is applied to characteristics of speech sounds.• Students will be able to apply statistical tools to investigate how speech is produced and perceived by humans.• <i>Understand some basic concepts in probability theory and statistics.</i>• <i>Probability theory and statistics can be applied to understanding speech sounds.</i>
<i>Previous Value</i>	
Content Topic List	<ul style="list-style-type: none">• Probability• Central tendency• Hypothesis testing• Inferential statistics• Graphical data representation• Speech acoustics
Sought Concurrence	No

COURSE CHANGE REQUEST
2051 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
06/03/2020

Attachments

- 2051-In-Person-Syllabus.pdf: In-Person Syllabus
(Syllabus. Owner: McGory, Julia Tevis)
- 2051-Syllabus-Online-Syllabus.pdf: On-Line Syllabus
(Syllabus. Owner: McGory, Julia Tevis)
- Linguistics_2051_Tech_Assurance.docx: Technology Assurance
(Other Supporting Documentation. Owner: McGory, Julia Tevis)
- 2051-Online-Inperson-Assessment-Plan.pdf: GE Assessment Plan
(Other Supporting Documentation. Owner: McGory, Julia Tevis)
- 2051-GE_Assessment-Rubric.docx: GE Assessment Rubric
(Other Supporting Documentation. Owner: McGory, Julia Tevis)

Comments

- Please contact Julia McGory, mcgory.1@osu.edu, with any questions or concerns. *(by McGory, Julia Tevis on 06/01/2020 03:11 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	McGory, Julia Tevis	06/01/2020 03:16 PM	Submitted for Approval
Approved	McGory, Julia Tevis	06/01/2020 03:16 PM	Unit Approval
Approved	HeyseI, Garrett Robert	06/01/2020 10:54 PM	College Approval
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Oldroyd, Shelby Quinn Vankeerbergen, Bernadette Chantal	06/01/2020 10:54 PM	ASCCAO Approval

- **In-class quizzes**

Brief closed-book quizzes will be given frequently to check that you fully understand the linguistic and numerical concepts that we build upon during the semester. In-class quizzes **cannot** be made up during office hours or any other time.

- **Lab assignments**

Lab assignments will be given throughout the semester to assess your skill in the data analysis techniques we have learned. You may work in groups to complete the labs, but each student must turn in a separate lab assignment, and each student must respond to the lab assignment questions in his or her own words. Identical responses will be treated as cases of suspected academic misconduct. Assignments are due at the **beginning** of class on the date they are listed on the schedule. Late assignments will **not** be accepted.

- **Final exam**

A cumulative, closed-book final exam will be given on Friday, Apr 29, 4:00-5:45pm. Its location has not yet been assigned, though it is likely to be in our normal classroom. You should be preparing for the exam by revisiting the textbook and the previous in-class exercises and quizzes, and lab assignments.

- **Linguistics Outside the Classroom (LOC)**

During the semester, you must earn 2 credits in Linguistics Outside the Classroom (LOC) activities. To earn each credit, you must either attend an LOC talk or complete an LOC experiment, and then complete a short questionnaire to demonstrate your participation. You may attend two talks, complete two experiments, or attend one talk and complete one experiment to earn your 2 credits.

Grading scale

A 100-93	A- 92.99-90	
B+ 89.99-87	B 86.99-83	B- 82.99-80
C+ 79.99-77	C 76.99-73	C- 72.99-70
D+ 69.99-67	D 66.99-60	E 59.99 and below

General policies

- **Computers**

The lab assignments will require access to a computer outside of class. In addition, many class meetings will include a hands-on tutorial, and many of the tutorials will require use of the computer. For this reason, our classroom is a computer classroom. To reduce distractions during class time, please use the computers only for class-related activities.

- **Submission of written work**

Lab assignments may be submitted in hard copy or electronically via the Carmen dropbox. Do not email your homework. **Electronic submissions of lab assignments must be in PDF format. Submissions in any other format (including Microsoft Word) will not be accepted.** All pages of hard copy submissions must be stapled together. **No** late assignments will be accepted. Carmen allows you to turn things in from off campus. If for some reason you cannot attend class, I expect you to put your assignment in the Carmen dropbox.

- **Working in groups**

As stated above, you are encouraged to discuss course content and course assignments with other students in the class. However, each student must turn in a separate assignment, and each student must respond to questions in his or her own words. Identical responses will be treated as cases of suspected academic misconduct.

- **Missed classes**

If you have to miss a class, it is your responsibility to find reliable notes from a classmate, and make sure you obtain any relevant materials from Carmen. I will not repeat missed lectures during office hours or at any other time.

- **Academic misconduct**

The Ohio State University takes academic misconduct very seriously. As with any class at this university, students are expected to follow University's Code of Student Conduct. While you are encouraged to discuss assignments with one another (unless explicitly stated otherwise), the final write-up must be done individually. Using somebody else's work without acknowledging that you are doing so, copying another student's work, cheating during an examination — these are all examples of academic misconduct. I am required by the university to report any suspected case of academic misconduct to the Committee on Academic Misconduct. Should you have any questions about this issue or are unsure as to whether a certain action constitutes a violation of this code, please consult me.

Students with Disabilities

Students who need an accommodation based on the impact of a disability should contact the instructor to arrange an appointment as soon as possible to discuss the course format, to anticipate needs, and to explore potential accommodations. The instructor relies on the Office of Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. Students who have not previously contacted the Office for Disability Services are encouraged to do so (614-292-3307; www.ods.ohio-state.edu).

Disclaimer

This syllabus, particularly the schedule, is subject to change. You will receive advance notification of any major changes. Any updates will be posted on Carmen.

Schedule

Week	Date	Topics	Readings	Other
Week 1	1/11 (M)	Introduction		
	1/13 (W)	Categorical variables	Ch 0, Ch 1	
	1/15 (F)			
Week 2	1/18 (M)	NO CLASS—MARTIN LUTHER KING JR. DAY		
	1/20 (W)			
	1/22 (F)	Discrete numerical variables	Ch 2	
Week 3	1/25 (M)			
	1/27 (W)	Continuous variables	Ch 3	Quiz 1
	1/29 (F)			
Week 4	2/1 (M)			
	2/3 (W)			Lab1
	2/5 (F)			
Week 5	2/8 (M)	Central tendency	Ch 8	Quiz 2
	2/10 (W)			
	2/12 (F)			
Week 6	2/15 (M)	Measures of dispersion	Ch 9	Lab 2
	2/17 (W)			
	2/19 (F)			
Week 7	2/22 (M)			
	2/24 (W)			Quiz3
	2/26 (F)			
Week 8	2/29 (M)	Scatterplots	Ch 10	Lab3
	3/2 (W)	Regression & Correlation	Ch 11	
	3/4 (F)			1 st LOC
Week 9	3/7 (M)			
	3/9 (W)			
	3/11 (F)			Quiz 4

SPRING BREAK: MON. 3/14–FRI. 3/18				
Week 10	3/21 (M)			
	3/23 (W)	Probability theory	Ch 4	Lab 4
	3/25 (F)		Ch 5	
Week 11	3/28 (M)			
	3/30 (W)			
	4/1 (F)			
Week 12	4/4 (M)	Binomial distribution	Ch 6	Lab 5
	4/6 (W)			
	4/8 (F)	Hypothesis testing		
Week 13	4/11 (M)			
	4/13 (W)			
	4/15 (F)	T-tests	Ch 13	Lab 6
Week 14	4/18 (M)			
	4/20 (W)			Quiz 5
	4/22 (F)			
Week 15	4/25 (M)	Review		Lab 7, 2 nd LOC
Finals: Friday, Apr 29, 4:00-5:45pm				

Linguistics 2051
Analyzing the Sounds of Language
M, W, F 3:00-3:55pm ET, ONLINE

Instructor: Cynthia Clopper
Email: clopper.@osu.edu
Office: Oxley Hall 101A
Office Phone: 614-292-8235
Office Hours: Mondays 1:00-2:30pm ET via CarmenZoom and by appointment
Course website: www.carmen.osu.edu

Additional questions, comments and concerns can be addressed to:

TA Coordinator: Dr. Hope Dawson Email: dawson.165@osu.edu
Office: 114 Oxley Hall Office Phone: (614) 292-5420

Required textbook

Analyzing the Sounds of Languages. Beckman, Foltz, & Smith (2012) (unpublished manuscript available on Carmen only).

Course overview

This course provides an introduction to the quantitative analytical methods that are used in phonetics, the study of the sounds of human speech. We will discuss a number of phonetic properties of language sounds. Additionally, we will learn about and apply statistical tools that are used in phonetics, sampling some of the diverse research methods that scientists have developed to investigate how speech is produced and perceived by humans.

GE information

This course is a GE course in Data Analysis. The expected learning outcomes of this GE are that (1) students understand basic concepts of statistics and probability, (2) comprehend methods needed to analyze and critically evaluate statistical arguments, and (3) recognize the importance of statistical ideas. The in-class exercises, in-class quizzes and lab assignments required in this course will give you practice working with statistical analyses to achieve these learning outcomes.

Mode of delivery

This course is 100% online, but is structured like an in-person course. Class meetings will be conducted via CarmenZoom. You are expected to be logged in to CarmenZoom and actively participating in class, including lectures and in-class activities, during all scheduled class meeting times.

Course technology

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- Self-Service and Chat support: ocio.osu.edu/help
- Phone: 614-688-4357(HELP)

- Email: service@osu.edu
- TDD: 614-688-8743

- **Baseline technical skills for online courses**
 - Basic computer and web-browsing skills
 - Navigating Carmen: for questions about specific functionality, see the [Canvas Student Guide](#).

- **Required technology skills specific to this course**
 - [CarmenZoom virtual meetings](#)

- **Required equipment**
 - Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
 - Webcam: built-in or external webcam, fully installed and tested
 - Microphone: built-in laptop mic or external microphone
 - Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

- **Required software**
 - [Microsoft Office 365](#): All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found at go.osu.edu/office365help.

Carmen access

You will need to use [BuckeyePass](#) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](#) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click Enter a Passcode and then click the Text me new codes button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](#) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

Course components

In-class exercises	30%	12 x 2.5%
Quizzes	15%	5 x 3%
Lab assignments	42%	7 x 6%
Final exam	8%	Friday, Apr 29, 4:00-5:45pm

LOC (talks and experiments)	5%	2 x 2.5%
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- **In-class exercises**

Many class meetings will include in-class exercises to give you hands-on practice with data analysis. You are expected to participate actively in all in-class exercises. All materials for in-class activities will be available in Carmen and completed activities must be submitted electronically in PDF format on Carmen. In-class exercises **cannot** be made up during office hours or any other time.

- **Quizzes**

Brief quizzes will be given frequently to check that you fully understand the linguistic and numerical concepts that we build upon during the semester. Quizzes will be conducted as Carmen quizzes and will be available for 24 hours prior to the date they are listed on the syllabus. Quizzes **cannot** be made up during office hours or any other time.

- **Lab assignments**

Lab assignments will be given throughout the semester to assess your skill in the data analysis techniques we have learned. You may work in groups to complete the labs, but each student must turn in a separate lab assignment, and each student must respond to the lab assignment questions in his or her own words. Identical responses will be treated as cases of suspected academic misconduct. All materials for the lab assignments will be available in Carmen and completed lab assignments must be submitted electronically in PDF format on Carmen. Assignments are due at the **beginning** of class on the date they are listed on the schedule. Late assignments will **not** be accepted.

- **Final exam**

A cumulative final exam will be given on Friday, Apr 29, 4:00-5:45pm. The final exam will be conducted as a Carmen quiz and will only be available during the final exam time. You should be preparing for the exam by revisiting the textbook and the previous in-class exercises, quizzes, and lab assignments.

- **Linguistics Outside the Classroom (LOC)**

During the semester, you must earn 2 credits in Linguistics Outside the Classroom (LOC) activities. To earn each credit, you must either attend an online LOC talk or complete an online LOC experiment, and then complete a short questionnaire to demonstrate your participation. Completed questionnaires must be submitted electronically in PDF format on Carmen. You may attend two talks, complete two experiments, or attend one talk and complete one experiment to earn your 2 credits.

Grading scale

A 100-93	A- 92.99-90	
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C+ 79.99-77	C 76.99-73	C- 72.99-70
D+ 69.99-67	D 66.99-60	E 59.99 and below

General policies

- **Submission of written work**

In-class activities and lab assignments must be submitted electronically on Carmen. Do not email your assignments. **Electronic submissions of in-class activities and lab assignments must be in PDF format. Submissions in any other format (including Microsoft Word) will not be accepted. No late assignments will be accepted.**

- **Working in groups**

As stated above, you are encouraged to discuss course content and course assignments with other students in the class. However, each student must turn in a separate assignment, and each student must respond to questions in his or her own words. Identical responses will be treated as cases of suspected academic misconduct.

- **Missed classes**

If you have to miss a class, it is your responsibility to find reliable notes from a classmate, and make sure you obtain any relevant materials from Carmen. I will not repeat missed lectures during office hours or at any other time.

- **Quizzes and exams**

The quizzes and final exam will be conducted as Carmen quizzes. You must complete the quizzes and final exam yourself, without any external help or communication.

- **Student academic services**

Student academic services offered on the OSU main campus
<http://advising.osu.edu/welcome.shtml>.

- **Student support services**

Student support services offered on the OSU main campus <http://ssc.osu.edu>.

- **Academic misconduct**

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Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily

activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: ccs.osu.edu. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [CarmenCanvas accessibility](#)
- Streaming audio and video
- [CarmenZoom accessibility](#)
- Collaborative course tools

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Schedule

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Week 1	1/11 (M)	Introduction		
	1/13 (W)	Categorical variables	Ch 0, Ch 1	
	1/15 (F)			
Week 2	1/18 (M)	NO CLASS – MARTIN LUTHER KING DAY		
	1/20 (W)			
	1/22 (F)	Discrete numerical variables	Ch 2	
Week 3	1/25 (M)			

	1/27 (W)	Continuous variables	Ch 3	Quiz 1
	1/29 (F)			
Week 4	2/1 (M)			
	2/3 (W)			Lab 1
	2/5 (F)			
Week 5	2/8 (M)	Central tendency	Ch 8	Quiz 2
	2/10 (W)			
	2/12 (F)			
Week 6	2/15 (M)	Measures of dispersion	Ch 9	Lab 2
	2/17 (W)			
	2/19 (F)			
Week 7	2/22 (M)			
	2/24 (W)			
	2/26 (F)			
Week 8	2/29 (M)	Scatterplots	Ch 10	Lab 3
	3/2 (W)	Regression & Correlation	Ch 11	
	3/4 (F)			1 st LOC
Week 9	3/7 (M)			
	3/9 (W)			
	3/11 (F)			Quiz 4
SPRING BREAK: MON. 3/14-FRI. 3/18				
Week 10	3/21 (M)			
	3/23 (W)	Probability theory	Ch 4	Lab 4
	3/25 (F)		Ch 5	
Week 11	3/28 (M)			
	3/30 (W)			
	4/1 (F)			
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	4/6 (W)			
	4/8 (F)	Hypothesis testing		
Week 13	4/11 (M)			
	4/13 (W)			
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Week 14	4/18 (M)			
	4/20 (W)			Quiz 5
	4/22 (F)			
Week 15	4/25 (M)	Review		Lab 7, 2 nd LOC
Finals: Friday, Apr 29, 4:00-5:45pm				

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: LING 2051

Instructor: Cynthia Clopper

Summary: Analyzing Sounds of Language

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			<ul style="list-style-type: none"> • Carmen • Office 365 • Adobe Acrobat Pro
6.2 Course tools promote learner engagement and active learning.	X			<ul style="list-style-type: none"> • Zoom lectures • Group lab assignments • Carmen discussion boards
6.3 Technologies required in the course are readily obtainable.	X			.All are available free of charge via OSU
6.4 The course technologies are current.	X			All are updated regularly
6.5 Links are provided to privacy policies for all external tools required in the course.	X			No external tools are used.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			Instructions are provided
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			Instructions are provided
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

Reviewer Information

- Date reviewed: 6/1/20
- Reviewed by: Ian

Notes: This one is ready to move on!

^aThe following statement about disability services (recommended 16 point font):
Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

^bAdd to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus.
<http://advising.osu.edu/welcome.shtml>

^cAdd to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. <http://ssc.osu.edu>. Also, consider including this link in the “Other Course Policies” section of the syllabus.

GE Assessment

Data Analysis: LING 2051 Analyzing the Sounds of Language

Created by the Linguistics Undergraduate Curriculum Committee

Contact: Dr. Julia McGory mcgory.1@osu.edu; 614-688-3109

September, 2018

Expected Learning Outcomes (ELOs).

1. Students understand basic concepts of statistics and probability.
2. Students comprehend methods needed to analyze and critically evaluate statistical arguments.
3. Students recognize the importance of statistical ideas.

Methods of Assessment for each of the Three Expected Learning Outcomes (ELOs).

The Undergraduate Curriculum Committee has selected a set of four questions from existing homework assignments, quizzes, and exams to assess basic achievement of the ELOs. Students in all sections of LING2051 during the AU, SP and SU semesters will be required to answer these questions as part of regular, graded homework assignments, quizzes, and/or exams. *For online sections of LING2051, students will be required to answer these questions as part of regular, online, graded homework assignments, quizzes, and/or exams (e.g., as part of a Carmen quiz).* The Undergraduate Curriculum Committee has also selected one data analysis assignment to assess more advanced levels of achievement of the ELOs. Students in all sections of LING2051 during the AU, SP and SU semesters will be required to complete this assignment as part of the regular, graded requirements for the course. *For online sections of LING2051, students will be required to complete this assignment as part of the regular, online, graded requirements for the course.*

Level of Achievement; Criteria.

There are four questions included in the basic assessment observing attainment of the three ELOs for this GE category. Criteria for the basic level of attainment is set to the following: 80% of students correctly answer each of the four items. There are 13 questions included in the more advanced assessment observing attainment of the three ELOs for this GE category. Criteria for the more advanced level of attainment is set to the following: 70% of students correctly answer each of the 13 items.

Process for Review and Feedback. The assessment coordinator will be provided with access to the results of both assessments and will create an overall analysis and summary of results for the entire year. This summary will be (1) shared with Linguistics faculty and staff as part of the annual Undergraduate Programs Assessment during a department meeting in the autumn of subsequent years, and (2) provided to the Curriculum and Assessment Office in the College of Arts and Sciences upon request.

The Basic-Level Assessment.

The basic-level assessment is provided below. For each question, the ELO and the specific concept being assessed is listed in square brackets. The correct answer is shown in bold.

1. [ELO1: basic concepts in probability = conditional probability]

Imagine we have two bags of marbles, each containing 1 yellow marble and 2 blue marbles. If we draw one marble from each bag, what is the probability of getting a yellow marble out of the first bag AND a yellow marble out of the second bag?

- a. 1/3
- b. 1/6
- c. 1/9**
- d. 2/3

2. [ELO1: basic concepts in statistics = central tendency of distributions]
In a skewed distribution, what does the peak of the distribution represent?

- a. mean
- b. median
- c. mode**
- d. standard deviation

3. [ELO2: methods to analyze and evaluate statistical arguments = hypothesis testing]
When you reject the null hypothesis, what conclusion can you draw?

- a. The null hypothesis is definitely false.
- b. The null hypothesis is probably true.
- c. The alternative hypothesis is definitely true.
- d. The alternative hypothesis is probably true.**

4. [ELO3: importance of statistical ideas = sampling]
Which of the following is **not** a true statement about sampling from a population?

- a. Samples should be random, so that each member of the population has an equal opportunity to be included in the sample.
- b. Samples should be robust, so that the null hypothesis is always rejected.**
- c. Samples should be representative, so that the patterns in the sample reflect the patterns in the population.
- d. Samples should be reliable, so that a different sample from the same population would produce similar results.

The Advanced Assessment.

The more advanced assessment is provided below. The correspondence between the ELOs and the individual questions on the assignment is provided in the following table.

GE ELO	Advanced Assessment Questions
1. Students understand basic concepts of statistics and probability.	1, 2, 7, 8
2. Students comprehend methods needed to analyze and critically evaluate statistical arguments.	3, 4, 9, 10

3. Students recognize the importance of statistical ideas.	5, 6, 11, 12, 13
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I. Data

The data for this assignment are from a study by Daniel Nettle on the relationship between sound inventory size (i.e., the number of consonants and vowels in a language) and the average length of words (measured in consonants and vowels). In his study, Nettle chose ten languages representing a wide variety of sound inventory sizes as well as a reasonably varied selection of language families. The data file Nettle1995.txt contains the total number of consonant and vowel sounds (NumSounds) and mean word length in sounds (MeanWordLen) for each of the 10 languages.

Recall that some languages use tone to distinguish words with the same segments but different meanings. For instance, Mandarin has four words that are transcribed as **ma**. When pronounced with high tone, **ma** means ‘mother’; with rising tone, **ma** means ‘hemp’; with falling-rising tone, **ma** means ‘horse’, and with falling tone, **ma** means ‘scold.’ For these languages, there are multiple ways of counting the number of segments. If we include tone information, then there is a vowel /a/ with a high tone, a vowel /a/ with a rising tone, a vowel /a/ with a falling-rising tone, and so on for all the vowel-tone combinations. If we ignore tone, however, then there are far fewer vowels. Including vowels with different tones will always increase the size of the segment inventory.

The final column in the Nettle1995.txt data file, called withTone, is the number of segments in the language if tone is included. This is different from NoSegs only for Mandarin and Thai, the only tone languages in Nettle's analysis. For instance, Mandarin /a/ counts as a single segment in the NoSegs column, but as four segments in the withTone column.

II. Analyses without tone

1. Turn in a scatterplot showing the relationship between mean word length in sounds (on the y-axis) and sound inventory size (on the x-axis). Be sure to clearly label the x- and y-axes of your scatterplot, including units of measurement where applicable. Plot the best-fit regression line using sound inventory size as the independent predictor variable and mean word length as the dependent predicted variable. Provide a caption for your scatterplot that describes what the scatterplot shows.

2. Consider the linear regression model that you used to plot the best-fit regression line in question 1.

- What is the slope of the best-fit regression line?
- What is the intercept of the best-fit regression line?
- What is the r^2 value of the regression model?
- What is the p-value of the regression model?

3. Is the relationship between mean word length in sounds and sound inventory size positive or negative? Use some number(s) from the model you described in question 2 to support your answer.

4. How strong is the relationship between mean word length in sounds and sound inventory size? Use some number(s) from the model you described in question 2 to support your answer.
5. What are the null and alternative hypotheses that the model you described in question 2 addresses? Can we reject the null hypothesis (assume $\alpha = .05$) based on this analysis? Use some number(s) from the model to support your answer.
6. In 1-2 sentences, describe what your analysis suggests about the relationship across languages between mean word length in sounds and sound inventory size.

III. Analyses with tone

7. Turn in a scatterplot showing the relationship between mean word length in sounds (on the y-axis) and sound inventory size when tone is included in the sound inventory count (on the x-axis). Be sure to clearly label the x- and y-axes of your scatterplot, including units of measurement where applicable. Plot the best-fit regression line using inventory size including tone as the predictor variable and mean word length as the dependent variable. Provide a caption for your scatterplot that describes what the scatterplot shows.

8. Consider the linear regression model that you used to plot the best-fit regression line in question 7.

- a. What is the slope of the best-fit regression line?
- b. What is the intercept of the best-fit regression line?
- c. What is the r^2 value of the regression model?
- d. What is the p-value of the regression model?

9. Is the relationship between mean word length in sounds and sound inventory size when tone is included positive or negative? Use some number(s) from the model you described in question 8 to support your answer.

10. How strong is the relationship between mean word length and sound inventory size when tone is included? Use some number(s) from the model you described in question 8 to support your answer.

11. What are the null and alternative hypotheses that the model you described in question 8 addresses? Can we reject the null hypothesis (assume $\alpha = .05$) based on this analysis? Use some number(s) from the model to support your answer.

12. In 1-2 sentences, describe what your analysis suggests about the relationship across languages between mean word length in sounds and sound inventory size when tone is included.

IV. Comparing the analyses

The motivating idea for these analyses is related to Ladefoged and Disner's (2012, p. 4) claim that: "If a language had only one or two vowels and a couple of consonants it could still allow words of half a dozen syllables, and make a vast number of words by combining these syllables in different orders. But many of the words would be very long and difficult to remember. If

words are to be kept short and distinct so that they can be easily distinguished and remembered, then the language must have a sufficient number of vowels and consonants to make more than a handful of syllables.”

13. Consider your responses to questions 6 and 12 in light of Ladefoged and Disner’s (2012) claim. If Ladefoged and Disner (2012) are right that a small sound inventory should correspond to relatively long words, should we count Thai and Mandarin vowels that have different lexical tones as different vowels (as in Part III)? Why or why not? Use some number(s) from the models you described in questions 2 and 8 to support your answer.

Linguistics 2051 Spring 2019 Grading Rubric
GE Assessment, SP2019
LING 2051 Analyzing the Sounds of Language
GE Category: Data Analysis

1. Scatterplot (without tone)	0.0	0.5	1.0	1.5	2.0	2.5	3.0
___ appropriate data							
___ appropriate format							
___ title							
___ x axis label							
___ y axis label							
___ regression line							
2. Model (without tone)	0.0	0.5	1.0	1.5	2.0		
___ slope (-0.33)							
___ intercept (7.55)							
___ r^2 (0.37)							
___ p -value (0.06)							
3. Analysis interpretation (without tone)	0.0	0.5	1.0	1.5	2.0		
___ relationship is negative							
___ slope							
___ relationship is weak							
___ r^2							
4. Hypothesis testing (without tone)	0.0	0.5	1.0	1.5	2.0		
___ accurate formulation of null							
___ accurate formulation of alternative							
___ cannot reject H_0							
___ $p > 0.05$							
5. Conclusion (without tone)	0.0	0.5	1.0				
___ no relationship							
___ use of evidence from data and analysis							
6. Scatterplot (with tone)	0.0	0.5	1.0	1.5	2.0	2.5	3.0
___ appropriate data							
___ appropriate format							
___ title							
___ x axis label							
___ y axis label							
___ regression line							
7. Model (with tone)	0.0	0.5	1.0	1.5	2.0		
___ slope (-0.04)							

intercept (8.17)
 r^2 (0.76)
 p -value (0.001)

<p>8. Analysis interpretation (with tone)</p> <p><input type="checkbox"/> relationship is negative</p> <p><input type="checkbox"/> slope</p> <p><input type="checkbox"/> relationship is strong</p> <p><input type="checkbox"/> r^2</p>	<p>0.0 0.5 1.0 1.5 2.0</p>
<p>9. Hypothesis testing (with tone)</p> <p><input type="checkbox"/> accurate formulation of null</p> <p><input type="checkbox"/> accurate formulation of alternative</p> <p><input type="checkbox"/> can reject H_0</p> <p><input type="checkbox"/> $p < 0.05$</p>	<p>0.0 0.5 1.0 1.5 2.0</p>
<p>10. Conclusion (with tone)</p> <p><input type="checkbox"/> relationship</p> <p><input type="checkbox"/> use of evidence from data and analysis</p>	<p>0.0 0.5 1.0</p>
<p>11. Comparison of results</p> <p><input type="checkbox"/> position taken</p> <p><input type="checkbox"/> description of evidence</p> <p><input type="checkbox"/> accurate reference to stats in analyses</p>	<p>0.0 0.5 1.0 1.5</p>