

## Unit Outline

### SPPA2005 Speech Science and Data Analysis Semester 2, 2016

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<b>Unit study package code:</b>	SPPA2005
<b>Mode of study:</b>	Internal
<b>Tuition pattern summary:</b>	Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section.  Lecture: 1 x 2 Hours Weekly Computer Laboratory: 1 x 2 Hours Weekly  This unit does not have a fieldwork component.
<b>Credit Value:</b>	25.0
<b>Pre-requisite units:</b>	2498 (v.0) Research and Data Analysis 271 or any previous version OR 311586 (v.0) Psychological Science 210 or any previous version OR BEHV2000 (v.0) Psychological Science Experimental Methods or any previous version  AND  311261 (v.0) Human Communication Science - Language Development 172 or any previous version OR SPPA1000 (v.0) Studies in Language Development or any previous version
<b>Co-requisite units:</b>	Nil
<b>Anti-requisite units:</b>	Nil
<b>Result type:</b>	Grade/Mark
<b>Approved incidental fees:</b>	Information about approved incidental fees can be obtained from our website. Visit <a href="https://fees.curtin.edu.au/incidental_fees.cfm">fees.curtin.edu.au/incidental_fees.cfm</a> for details.
<b>Unit coordinator:</b>	<b>Title:</b> Dr <b>Name:</b> Neville Hennessey <b>Phone:</b> +618 9266 2553 <b>Email:</b> N.Hennessey@curtin.edu.au <b>Location:</b> Building: 401 - Room: 212
<b>Teaching Staff:</b>	

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<b>Administrative contact:</b>	<b>Name:</b> School Student Services Officer
	<b>Phone:</b> 9266 7279

**Email:** hpsychologystudents@curtin.edu.au  
**Location:** Building: 401 - Room: 220

## Acknowledgement of Country

We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present.

## Syllabus

This unit develops students' skills in objective assessment focusing on applied issues using speech science instrumentation. Data organisation and analysis using nonparametric and parametric statistics are a key focus of the unit. Students will develop professional skills for Interpretation and reporting of results from single case and multi-variate research designs

## Introduction

Welcome to Speech Science and Data Analysis. This unit builds on Psychological Science Experimental Methods and will extend your knowledge of research methods in speech pathology and help equip you with the skills to become an effective scientific clinician. The speech science component of this unit focuses on subjective and objective measurement and evaluation of speech and voice, and is taught in an integrated way with data analysis techniques. The data analysis techniques include parametric and nonparametric statistics for group and single case designs as well as more advanced statistical analyses that feature in the speech pathology research literature. In the laboratory sessions you will apply measurement and data analysis techniques discussed in lectures to a variety of speech science data. The written assessment will help you to develop further your scientific report writing skills.

## Unit Learning Outcomes

All graduates of Curtin University achieve a set of nine graduate attributes during their course of study. These tell an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and attributes which employers say would be useful in a professional setting. Each unit in your course addresses the graduate attributes through a clearly identified set of learning outcomes. They form a vital part in the process referred to as assurance of learning. The learning outcomes tell you what you are expected to know, understand or be able to do in order to be successful in this unit. Each assessment for this unit is carefully designed to test your achievement of one or more of the unit learning outcomes. On successfully completing all of the assessments you will have achieved all of these learning outcomes.

Your course has been designed so that on graduating we can say you will have achieved all of Curtin's Graduate Attributes through the assurance of learning process in each unit.

On successful completion of this unit students can:		Graduate Attributes addressed
1	Evaluate research designs suitable for testing research hypotheses and assessing treatment efficacy	  
2	Justify the selection of objective measures to evaluate speech, language and voice disorders	  
3	Apply speech science technologies and methods for clinically and theoretically relevant measurement of speech, language and voice, and analyse and interpret outcomes	  
4	Synthesise evaluations from single-case and group research	  

### Curtin's Graduate Attributes

	Apply discipline knowledge		Thinking skills (use analytical skills to solve problems)		Information skills (confidence to investigate new ideas)
	Communication skills		Technology skills		Learning how to learn (apply principles learnt to new situations) (confidence to tackle unfamiliar problems)
	International perspective (value the perspectives of others)		Cultural understanding (value the perspectives of others)		Professional Skills (work independently and as a team) (plan own work)
Find out more about Curtin's Graduate attributes at the Office of Teaching & Learning website: <a href="http://ctl.curtin.edu.au">ctl.curtin.edu.au</a>					

### Learning Activities

**Lectures** in this unit highlight the important content on each scheduled topic. Lectures are supplemented by the assigned reading. Within the lectures the key concepts and analysis techniques are explained and illustrated using current research and clinically relevant examples. You will be encouraged to consider particular questions and problems in class, and there will be opportunity to ask questions and receive feedback to help your understanding and achieve the learning outcomes. The PowerPoint slides will be available to download prior to each lecture. To maximise your learning in this unit, it is highly recommended that you come to the lecture and use the iLectures just for revision purposes. First, technical glitches may prevent an iLecture from being available, which means you might miss the lecture completely. Second, you learn the lecture content more effectively by being an active member of the lecture class. Third, it is very important that you have covered the content of the lecture before you attend the corresponding laboratory and attending the lecture is the best way of doing this.

**Laboratories** are computer-based and designed to be hands on and integrated with the lecture content. By following the laboratory worksheets you will extend your knowledge and skills in acoustic analysis using Praat through making acoustic measurements of speech. You will analyze clinically and theoretically relevant data using the statistical techniques described in the lectures with SPSS. There will be opportunity to ask questions and receive feedback on your learning. In particular, each laboratory activity has related questions that you will answer. These laboratory questions and discussion of the answers are designed to help you understand the concepts and methods that are important for that particular week. Please make sure you attempt all laboratory questions to maximise your learning in these classes. That is, your learning in these classes will be based on doing the activities and answering the questions. Finally, please come prepared to each laboratory session by attending (or viewing) the lecture beforehand and/or completing the assigned reading for that week. This will enable you to get the most out of the time you spend in class. Otherwise, you may be disadvantaged in your learning from not understanding the laboratory material and activities, which means you could fall behind in your understanding and progression through the unit.

### Learning Resources

#### Recommended texts

You do not have to purchase the following textbooks but you may like to refer to them.

- Pring, T. (2005). *Research methods in communication disorders*. London: Whurr.  
You might like to purchase this book anyway. It is easy to read and uses discipline specific examples, which is a bonus. It would be a useful resource for the future. Otherwise you will access the book through the Curtin Reserve section.  
(ISBN/ISSN: 1861560974)
- Coolican, H., (2014). *Research methods and statistics in psychology* (6th ed.). London, England: Psychology Press.  
This you may already have and you may be happy to continue to use it. It covers similar content, but uses psychology examples.  
(ISBN/ISSN: 978-1-4441-7011-5)

#### Other resources

For each lecture there is a set of detailed notes that cover the main lecture content, and the recommended reading

supplements those notes. The following references are cited in lectures and related notes and may be useful additional reading.

- Allen, P., Bennett, K., & Heritage, B. (2014). *SPSS Statistics version 22: A practical guide* (3rd ed.). Melbourne, Australia: Cengage Learning.
- Coolican, H., (2014). *Research methods and statistics in psychology* (6th ed.). London, England: Psychology Press
- Findlay, B. (2011). **How to write psychology research reports and essays** (Revised 5th ed.). Frenchs Forest, NSW, Australia: Pearson Prentice Hall.
- American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
- Silverman, F.H. (1998). *Research design and evaluation in speech-language pathology and audiology* (4th Ed.). Boston: Allyn & Bacon.
- Howell, D.C. (1999). *Fundamental statistics for the behavioral sciences* (4th Ed.). New York: Duxbury Press.
- Baken, R.J. & Orlikoff, R.F. (2000). *Clinical measurement of speech and voice* (2nd Ed.). San Diego: Singular Thomson Learning.
- Bassich, C., & Ludlow, C.L. (1986). The use of perceptual methods by new clinicians for assessing voice quality. *Journal of Speech and Hearing Disorders*, 51, 125-133.
- Raphael, L. J., Borden, G.J., & Harris, K.S. (2007). *Speech science primer: Physiology, acoustics, and perception of speech* (5th ed.). Baltimore: Williams & Wilkins.
- Ferrand, C. T. (2014). *Speech science: An integrated approach to theory and clinical practice* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Bunton, K., Kent, R. D., Duffy, J. R., Rosenbek, J. C., & Kent, J. F. (2007). Listener agreement for auditory-perceptual ratings of dysarthria. *Journal of Speech, Language, and Hearing Research*, 50, 1481-1495. DOI: 10.1044/1092-4388(2007/102)
- Darley, F. L., Aronson, A. E., & Brown, J. R. (1969). Differential diagnostic patterns of dysarthria. *Journal of Speech and Hearing Research*, 12, 246-269.
- Caramazza, A. (1986). On drawing inferences about the structure of normal cognitive systems from the analysis of patterns of impaired performance: The case for single-patient studies. *Brain and Cognition*, 5, 41-66.
- Decker, T.N. (1990). *Instrumentation: An introduction for students in the speech and hearing sciences*. New York: Longman.
- Ferguson, G.A. (1989). *Statistical analysis in psychology and education* (6th Ed.). Auckland: McGraw-Hill.
- Kent, R.D., & Read, C. (2002). *The acoustic analysis of speech* (2nd Edition). New York: Singular.
- Kreiman, J., Gerratt, B.R., Kempster, G.B., Erman, A., & Berke, G.S. (1993). Evaluation of voice quality: Review, tutorial, and a framework for future research. *Journal of Speech and Hearing Research*, 36, 21-40.
- McGuire, R.A. (1995). Computer-based instrumentation: Issues in clinical applications. *Language, Speech, and Hearing Services in Schools*, 26, 223-231.
- Pannbacker, M.H., & Middleton, G.F. (1994). *Introduction to clinical research in communication disorders*. San Diego, CA: Singular Publishing Group.
- Solomon, N. P., Helou, L. B., & Stojadinovic, A. (2011). Clinical versus laboratory ratings of voice using the CAPE-V. *Journal of Voice*, 25 (1), e7-e14. DOI: 10.1016/j.jvoice.2009.10.007
- Tryon, W.W. (1982). A simplified time-series analysis for evaluating treatment interventions. *Journal of Applied Behavior Analysis*, 15, 423-429.
- Robey, R.R., Schultz, M.C., Crawford, A.B., Sinner, C.A. (1999). Single-subject clinical-outcome research: designs, data, effect sizes, and analyses. *Aphasiology*, 13, 445-473.
- Zraick, R. I., Kempster, G. B., Connor, N. P., Thibeault, S., Klaben, B. K., Bursac, Z., Thrush, C. R., & Glaze, L. E. (2011). Establishing validity of the consensus auditory-perceptual evaluation of voice (CAPE-V). *American Journal of Speech-Language Pathology*, 20, 14- 22. DOI: 10.1044/1058-0360(2010/09-0105)
- Other references may be provided during the semester.

## Assessment

### Assessment schedule

	Task	Value %	Date Due	Unit Learning Outcome(s) Assessed
1	Acoustic analysis assignment	50 percent	<b>Week:</b> 10 <b>Day:</b> Friday 7th October <b>Time:</b> 4.30 pm	2,3
2	Examination	50 percent	<b>Week:</b> 16-17 <b>Day:</b> TBA <b>Time:</b> TBA	1,2,4

### Detailed information on assessment tasks

1. **The requirements for the Acoustic Analysis Assignment will be made available on Blackboard, and will be discussed in lectures and labs.**
2. **The Exam will be 2 hours long with a 10 minute reading period. The questions will be based on content from all lectures and associated reading. The study guides in the lecture notes highlight the main content you should cover for the exam. The exam paper consists of short answer type questions including some true/false and multiple-choice questions. Further information will be provided during the semester.**

### Pass requirements

In order to pass this unit students must:

1. Complete and submit ALL assessments,
2. Obtain an overall mark of at least 50% for the exam and an overall mark of at least 50% for the unit,
3. Attend at least 75% of laboratories and attempt corresponding questions, and
4. Participate in the lab group presentation in week 7.

### Fair assessment through moderation

Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that student work is evaluated consistently by assessors. Minimum standards for the moderation of assessment are described in the Assessment and Student Progression Manual, available from [policies.curtin.edu.au/policies/teachingandlearning.cfm](http://policies.curtin.edu.au/policies/teachingandlearning.cfm)

### Late assessment policy

This ensures that the requirements for submission of assignments and other work to be assessed are fair, transparent, equitable, and that penalties are consistently applied.

1. All assessments students are required to submit will have a due date and time specified on this Unit Outline.
2. Students will be penalised by a deduction of ten percent per calendar day for a late assessment submission (eg a mark equivalent to 10% of the total allocated for the assessment will be deducted from the marked value for every day that the assessment is late). This means that an assessment worth 20 marks will have two marks deducted per calendar day late. Hence if it was handed in three calendar days late and given a mark of 16/20, the student would receive 10/20. An assessment **more than seven calendar days overdue will not be marked and will receive a mark of 0.**

### **Assessment extension**

A student unable to complete an assessment task by/on the original published date/time (eg examinations, tests) or due date/time (eg assignments) must apply for an assessment extension using the Assessment Extension form (available from the Forms page at [students.curtin.edu.au/administration/](http://students.curtin.edu.au/administration/)) as prescribed by the Academic Registrar. It is the responsibility of the student to demonstrate and provide evidence for exceptional circumstances beyond the student's control that prevent them from completing/submitting the assessment task.

The student will be expected to lodge the form and supporting documentation with the unit coordinator before the assessment date/time or due date/time. An application may be accepted up to five working days after the date or due date of the assessment task where the student is able to provide an acceptable explanation as to why he or she was not able to submit the application prior to the assessment date. An application for an assessment extension will not be accepted after the date of the Board of Examiners' meeting.

Please note: Applications for assessment extensions for this unit should be submitted to the Student Support Officer at [HSPsychologyStudents@curtin.edu.au](mailto:HSPsychologyStudents@curtin.edu.au). Students will be notified of the outcome of extension requests via the OCC (Official Communications Channel) located within OASIS.

If the circumstances for your extension application are likely to impact on multiple units, please also make an appointment to see the Course Coordinator (Mary Claessen: [m.claessen@curtin.edu.au](mailto:m.claessen@curtin.edu.au))

### **Deferred assessments**

If your results show that you have been granted a deferred assessment you should immediately check OASIS for details.

Deferred examinations/tests will be held from 15/12/2016 to 16/12/2016 . Notification to students will be made after the Board of Examiners' meeting via the Official Communications Channel (OCC) in OASIS.

### **Supplementary assessments**

Supplementary assessments, if granted by the Board of Examiners, will have a due date or be held between 15/12/2016 and 16/12/2016 . Notification to students will be made after the Board of Examiners' meeting via the Official Communications Channel (OCC) in OASIS.

It is the responsibility of students to be available to complete the requirements of a supplementary assessment. If your results show that you have been granted a supplementary assessment you should immediately check OASIS for details.

### **Reasonable adjustments for students with disabilities/health circumstances likely to impact on studies**

A [Curtin Access Plan](#) (CAP) is a document that outlines the type and level of support required by a student with a disability or health condition to have equitable access to their studies at Curtin. This support can include alternative exam or test arrangements, study materials in accessible formats, access to Curtin's facilities and services or other support as discussed with an advisor from [Disability Services](http://disability.curtin.edu.au) (disability.curtin.edu.au). [Documentation](#) is required from your treating Health Professional to confirm your health circumstances.

If you think you may be eligible for a CAP, please contact [Disability Services](#). If you already have a CAP please provide it to the Unit Coordinator at the beginning of each semester.

### **Referencing style**

The referencing style for this unit is APA 6th Ed.

More information can be found on this style from the Library web site:  
<http://libguides.library.curtin.edu.au/referencing>.

## Copyright

© Curtin University. The course material for this unit is provided to you for your own research and study only. It is subject to copyright. It is a copyright infringement to make this material available on third party websites.

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## Academic Integrity (including plagiarism and cheating)

Any conduct by a student that is dishonest or unfair in connection with any academic work is considered to be academic misconduct. Plagiarism and cheating are serious offences that will be investigated and may result in penalties such as reduced or zero grades, annulled units or even termination from the course.

Plagiarism occurs when work or property of another person is presented as one's own, without appropriate acknowledgement or referencing. Submitting work which has been produced by someone else (e.g. allowing or contracting another person to do the work for which you claim authorship) is also plagiarism. Submitted work is subjected to a plagiarism detection process, which may include the use of text matching systems or interviews with students to determine authorship.

Cheating includes (but is not limited to) asking or paying someone to complete an assessment task for you or any use of unauthorised materials or assistance during an examination or test.

From Semester 1, 2016, all incoming coursework students are required to complete Curtin's Academic Integrity Program (AIP). If a student does not pass the program by the end of their first study period of enrolment at Curtin, their marks will be withheld until they pass. More information about the AIP can be found at:

<https://academicintegrity.curtin.edu.au/students/AIP.cfm>

Refer to the Academic Integrity tab in Blackboard or [academicintegrity.curtin.edu.au](https://academicintegrity.curtin.edu.au) for more information, including student guidelines for avoiding plagiarism.

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## Information and Communications Technology (ICT) Expectations

Curtin students are expected to have reliable internet access in order to connect to OASIS email and learning systems such as Blackboard and Library Services.

You may also require a computer or mobile device for preparing and submitting your work.

For general ICT assistance, in the first instance please contact OASIS Student Support:

[oasisapps.curtin.edu.au/help/general/support.cfm](https://oasisapps.curtin.edu.au/help/general/support.cfm)

For specific assistance with any of the items listed below, please contact The Learning Centre:

[life.curtin.edu.au/learning-support/learning\\_centre.htm](https://life.curtin.edu.au/learning-support/learning_centre.htm)

- Using Blackboard, the I Drive and Back-Up files
  - Introduction to PowerPoint, Word and Excel
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## Additional information

### Enrolment

It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

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## Student Rights and Responsibilities

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- the University's Guiding Ethical Principles
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University's policies on appropriate use of software and computer facilities

Information on all these things is available through the University's "Student Rights and Responsibilities" website at: [students.curtin.edu.au/rights](http://students.curtin.edu.au/rights).

## Student Equity

There are a number of factors that might disadvantage some students from participating in their studies or assessments to the best of their ability, under standard conditions. These factors may include a disability or medical condition (e.g. mental illness, chronic illness, physical or sensory disability, learning disability), significant family responsibilities, pregnancy, religious practices, living in a remote location or another reason. If you believe you may be unfairly disadvantaged on these or other grounds please contact Student Equity at [eesj@curtin.edu.au](mailto:eesj@curtin.edu.au) or go to [http://eesj.curtin.edu.au/student\\_equity/index.cfm](http://eesj.curtin.edu.au/student_equity/index.cfm) for more information

You can also contact Counselling and Disability services: <http://www.disability.curtin.edu.au> or the Multi-faith services: [http://life.curtin.edu.au/health-and-wellbeing/about\\_multifaith\\_services.htm](http://life.curtin.edu.au/health-and-wellbeing/about_multifaith_services.htm) for further information.

It is important to note that the staff of the university may not be able to meet your needs if they are not informed of your individual circumstances so please get in touch with the appropriate service if you require assistance. For general wellbeing concerns or advice please contact Curtin's Student Wellbeing Advisory Service at: [http://life.curtin.edu.au/health-and-wellbeing/student\\_wellbeing\\_service.htm](http://life.curtin.edu.au/health-and-wellbeing/student_wellbeing_service.htm)

## Recent unit changes

Students are encouraged to provide unit feedback through **eVALUate**, Curtin's online student feedback system. For more information about **eVALUate**, please refer to [evaluate.curtin.edu.au/info/](http://evaluate.curtin.edu.au/info/).

 <p>Give feedback on the My Studies tab and you could win prizes</p>	<p>To view previous student feedback about this unit, search for the Unit Summary Report at <a href="https://evaluate.curtin.edu.au/student/unit_search.cfm">https://evaluate.curtin.edu.au/student/unit_search.cfm</a>. See <a href="https://evaluate.curtin.edu.au/info/dates.cfm">https://evaluate.curtin.edu.au/info/dates.cfm</a> to find out when you can <b>eVALUate</b> this unit.</p>
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Recent changes to this unit include:

- Reducing the workload in the unit by dropping a group assignment. The content covered by the group assignment is included in the laboratory classes.
- Reducing the amount or duration of activities in the laboratory classes to give more time for students to absorb and understand key concepts through class discussion and answering questions.

## Program calendar

### Program Calendar – Semester 2 2016

Week	Begin Date	Lecture Topic	Laboratory Topic	Assignment
Orientation	<b>25 July</b>	Orientation Week		
1.	<b>1 August</b>	Measurement Reliability & Accuracy 1 (Pring 11, pp. 140-150 or Coolican 2, pp. 520-547)	NO LAB	
2.	<b>8 August</b>	Measurement Reliability & Accuracy 2 (Pring 3, 4 or Coolican 13, 15)	Perceptual judgments	
3.	<b>15 August</b>	Objective Evaluations 1 (McGuire; Kent 4; Behrman 5)	Evaluating samples	
4.	<b>22 August</b>	Objective Evaluations 2 (Kent 8; Behrman pp. 342-352)	Respiration & phonation	
5.	<b>29 August</b>	Tuition Free Week		
6.	<b>5 September</b>	Digital audio recording (Kent & Read pp. 61-74; Raphael et al. 281-282)	Articulation & resonance	
7.	<b>12 September</b>	Analysis: Multi-Level (Pring 6 or Coolican 20)	Lab group presentations	
8.	<b>19 September</b>	Analysis: Multifactorial (Pring 7 or Coolican 21)	One-way designs	
9.	<b>26 September</b>	Tuition Free Week		
10.	<b>3 October</b>	Analysis Multiple Regression (Pring 10 or Coolican 19)	Multifactorial designs	7th Oct (Report)
11.	<b>10 October</b>	Analysis Multivariate (Pring 7 pp. 99-101)	Multiple regression	
12.	<b>17 October</b>	Analysis: Single Cases 1 (Pring 15)	MANOVA/DFA	
13.	<b>24 October</b>	Analysis: Single Cases 2 (Pring 10)	Time series analysis	
14.	<b>31 October</b>	Review and Exam Information	Categorical analysis	
15.	<b>7 November</b>	Study Week		
16.	<b>14 November</b>	Examinations		
17.	<b>21 November</b>	Examinations		