



# SPH 308

## The Science of Speech Production

S1 Day 2018

*Dept of Linguistics*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

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Credit points

3

Prerequisites

39cp at 100 level or above including (6cp from LING units at 200 level including LING210 or LING217)

Corequisites

Co-badged status

### Unit description

The objectives of this unit are to foster a detailed understanding of the anatomy of the speech production mechanism and the complexities of speech physiology. Examination of research techniques used in physiological investigation form an integral part of the content and assessment. The unit consists of a combination of lectures and practical sessions. Topics covered in the lectures include: respiratory physiology and anatomy; laryngeal anatomy; phonation; articulatory anatomy and physiology; articulatory investigative techniques; the neuroanatomy and neurophysiology of speech and language; and speech production from a developmental and evolutionary perspective. Workshop topics may include: electroglottography; kinematic investigations; electropalatography; ultrasonic investigation, and measurement of nasality. This unit is a prerequisite for the Master of Speech and Language Pathology program.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Demonstrate understanding of respiratory anatomy and mechanics

Observe and discuss the processes involved in breathing for speech and breathing for life

Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology

Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production

Demonstrate an understanding of neuroanatomy and neurophysiology of speech and language

Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics

Describe important aspects of embryology, evolution and development in relation to speech processing

Engage in a research rich environment at Macquarie through participation in research

## General Assessment Information

It is a requirement of this unit that students complete all assessment tasks. Failure to complete all assessment tasks may result in failure in the whole unit even if the marks on the completed tasks total more than 50%. This is because each task is required to satisfy the learning objectives of the unit. If the learning objectives have not been met then a pass grade cannot be awarded.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Breathing Quiz</a>	10%	No	Week 7
<a href="#">Problem Sets</a>	30%	No	Variable
<a href="#">Articulography Report</a>	25%	No	Week 9
<a href="#">Exam</a>	30%	No	Exam Period
<a href="#">Research Participation</a>	5%	No	End of session

### Breathing Quiz

Due: **Week 7**

Weighting: **10%**

The online test will be a 30 minute test accessible from ilearn. Questions will be a mixture of short answer question and multiple choice.

On successful completion you will be able to:

- Demonstrate understanding of respiratory anatomy and mechanics
- Observe and discuss the processes involved in breathing for speech and breathing for life

### Problem Sets

Due: **Variable**

Weighting: **30%**

Students complete two out of a possible three on-line problem-based quizzes each relating to a tool used in speech production analysis: Two of Electroglottography (EGG), Electropalatography (EPG), Ultrasound, Airflow analysis, or Electroencephalography (EEG) will be selected each year depending on topics covered in lectures and practical sessions. These quizzes encourage students to revise material presented in class and assess their integration of this knowledge in finding solutions to problem-based questions.

On successful completion you will be able to:

- Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology
- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production
- Analyse and report on speech data collected via speech physiology instrumentation to

engage with theoretical issues in phonetics

## Articulography Report

Due: **Week 9**

Weighting: **25%**

Students will write up a research report based on data collected using articulographic techniques. Further details will be provided in the unit iLearn pages.

On successful completion you will be able to:

- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production
- Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics

## Exam

Due: **Exam Period**

Weighting: **30%**

The final examination will be a 1.5 hour exam and will consist of questions selected from a pre-advertised set of about 12 questions. The question set will be made available at the start of the semester. In the final exam, 6 of the questions will be selected and students will be expected to answer 4 (a little over 20 minutes for each question, on average). The rationale for the exam is to give students the opportunity to explore a range of topics of their choice in depth prior to the exam and to demonstrate their understanding of these topics under exam conditions. This allows students a certain degree of autonomy in managing their learning but also ensures breadth of unit content coverage.

On successful completion you will be able to:

- Demonstrate understanding of respiratory anatomy and mechanics
- Observe and discuss the processes involved in breathing for speech and breathing for life
- Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology
- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production
- Demonstrate an understanding of neuroanatomy and neurophysiology of speech and language
- Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics
- Describe important aspects of embryology, evolution and development in relation to

speech processing

## Research Participation

Due: **End of session**

Weighting: **5%**

Students are offered research participation for 5% of the total unit credit. Research participation typically involves one hour of time.

Research tasks are run by various members of the Linguistics, Psychology and Cognitive Science Departments including staff and research students.

On successful completion you will be able to:

- Engage in a research rich environment at Macquarie through participation in research

## Delivery and Resources

### UNIT DESCRIPTION AND RATIONALE

The objectives of this unit are to foster a detailed understanding of the anatomy of the speech production mechanism and the complexities of speech physiology. Examination of research techniques used in physiological investigation form an integral part of the content and assessment. The unit consists of a combination of lectures and workshops. Topics covered in the lectures include: respiratory physiology and anatomy; laryngeal anatomy; phonation; articulatory anatomy and physiology; articulatory investigative techniques; neuroanatomy and neurophysiology; and speech production from a developmental and evolutionary perspective. Workshop topics may include: speech breathing; laryngography; kinematic investigations; electropalatography; ultrasound, airflow and nasality.

The unit provides students with essential theoretical and practical skills that are fundamental to further study of speech and which assist clinicians in keeping abreast of current research findings in speech and hearing.

### DELIVERY AND RESOURCES

The learning and teaching strategies used in this Unit are structured around an extensive set of interactive text, image and audio based online materials as well as lecture presentation (including ECHO360 and associated Powerpoint presentations) and workshop participation. The unit website contains details of the timetable of topics with links to the relevant materials. Interaction with iLearn discussion facility is expected. Students **MUST** use iLearn to access important content and messages.

## Unit Schedule

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/policy-central) (<https://staff.mq.edu.au/policy-central>)

[q.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central](http://q.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central)). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](http://students.mq.edu.au/support/study/student-policy-gateway) (<http://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au).

### 4c. Assignment Submission

#### Internal Students

Unless you are explicitly informed otherwise for a specific assignment, all assignments **must** be submitted in hardcopy to the assignment box Student Administration Centre Level 3 C3A.

For each assignment, students **MUST** fill in and include the cover sheet provided on the Linguistics web site. Assignments will **not** be accepted unless they have the cover sheet.

<http://www.ling.mq.edu.au/support/resources.htm>

#### External Students

External students have the option of submitting assignments as an e-mail attachment to:

ling.assignments@mq.edu.au

If you submit electronically you will receive a return email indicating receipt.

Please do NOT submit the assignment by email to the unit convenor unless specifically instructed to do so by the convenor.

For each assignment, you **MUST**:

- submit the assignment in Word or pdf format with embedded fonts
- fill in and include the cover sheet provided on the Linguistics web site:  
<http://www.ling.mq.edu.au/support/resources.htm>
- add a footer to each page of the assignment, with page numbering, your name and student number, and “SPH399” clearly marked
- use the appropriate subject heading for the email (see below)
- use the appropriate file name for the attachments (see below)
- **type double-spaced**

Assignments will **not** be accepted unless they have both the cover sheet and the footer.

Assignments submitted electronically may be marked in hardcopy and returned by ordinary mail. Please submit assignments **one time only** unless specifically requested.

Email subject headers

When emailing assignments, please use subject headings such as: SPH308 ass1 or SPH308 ass2. Please also ensure that your full name and student number appear in the body of the email message.

Naming files

Assignments submitted electronically must use the format explained below for naming attached files. If Noam Chomsky is submitting assignment one, the file should be named:

“chomsky\_n\_308\_1”. If Paulo Freire is submitting assignment two, the file should be named: “freire\_p\_308\_2”. Coversheets must also be submitted with your name and assignment number “chomsky\_n\_308\_1coversheet”

#### **4d. Return of Marked Assignments**

Students' marked assignments will, in general, be returned to them within 3 weeks of submission. Please note that assignments cannot be accepted after the return of marked materials.

#### **4e. Writing and Communication Skills Support**

The Linguistics Department also offers undergraduate units in professional and academic communication: Academic Communication in the Social Sciences and Humanities (ACSH100) and Academic Communication in Science (ACSC100). These units are designed to help



students from non English speaking backgrounds to perform to a high standard in their other subjects. <http://www.ling.mq.edu.au/undergraduate/index.htm>

#### **4f. Student Support Services**

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at <http://www.student.mq.edu.au>

There is a range of other resources available for Macquarie students, including:

- electronic access to a variety of book chapters and journal articles
- electronic access to journals

### **5. POLICIES**

#### **5a. University Policy on Grading**

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG).

The following descriptions apply to assessment grades:

HD (85-100) High Distinction: denotes performance which meets all unit objectives in such an exceptional way and with such marked excellence that it deserves the highest level of recognition. D (75-84) Distinction: denotes performance which clearly deserves a very high level of recognition as an excellent achievement in the unit.

Cr (65-74) Credit: denotes performance which is substantially better than would normally be expected of competent students in the unit.

P (50-64) Pass: denotes performance which satisfies unit objectives.

F (0-49) Fail: denotes that a candidate has failed to complete a unit satisfactorily.

Please note that the above grades and descriptions apply to undergraduate degrees, postgraduate coursework degrees, diploma and graduate certificate programs.

Marks assigned in assignments are *raw marks*. These are subsequently converted into Standard Numerical Grades (SNG) in order to determine letter grades for the unit. On occasion the SNG which you receive may not be the same as the total of your marks for each assessment item. Results may be scaled to ensure that there is a degree of comparability across the various offerings of this unit. The process of scaling does not change the order of marks among students.

For an explanation of the university-wide assessment policy see <http://www.mq.edu.au/policy/docs/grading/policy.html>

#### **5b. Academic Honesty**

Academic honesty is considered to be extremely serious by the Department of Linguistics and the University. Students who submit material that is not their own work will receive zero marks for the offending assessment task. All assignments are scanned on a database and compared with other assignments (past and present) and with content on the internet. Students found guilty of academic dishonesty may receive a fail for the unit in line with serious breaches of academic dishonesty may result in failure of the unit or in extreme cases suspension or expulsion from the university

Please refer to the Linguistics Department's policy on plagiarism at [http://www.ling.mq.edu.au/support/policies\\_plagiarism.htm](http://www.ling.mq.edu.au/support/policies_plagiarism.htm) and to Macquarie University's policy on Academic Honesty at [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html). It is expected that you will be familiar with the department's policy before you begin work on the assignments.

Examples of dishonest academic behaviours are:

**Plagiarism** : Using the work or ideas of another person and presenting this as your own without clear acknowledgement of the source of the work or ideas. This includes, but is not limited to, any of the following acts: a) copying out part(s) of any document or audio-visual material or computer code or website content without indicating their origins b) using or extracting another person's concepts, experimental results, or conclusions c) summarising another person's work d) submitting substantially the same final version of any material as another student in an assignment where there was collaborative preparatory work e) use of others (paid or otherwise) to conceive, research or write material submitted for assessment f) submitting the same or substantially the same piece of work for two different tasks (self-plagiarism).

**Deception**: includes, but is not limited to, false indication of group contribution, false indication of assignment submission, collusion, submission of a work previously submitted, creating a new article out of an existing article by rewriting/reusing it, using the same data to form the same arguments and conclusion, presenting collaborative work as one's own without acknowledging others' contributions, cheating in an examination or using others to write material for examination.

**Fabrication** : includes, but is not limited to, creating fictitious clinical data, citation(s), or referee reports.

**Sabotage**: includes, but is not limited to, theft of work, destruction of library materials.

### **5c. Appeals Against Grades**

If a student has a problem with the mark given for a particular assessment, the student should first speak with the marker to discuss the matter. If difficulties and differences continue, a student can apply for a remark of an assessment by contacting the Unit Convenor/s directly. A fresh, unmarked copy of the assignment will need to be submitted for the new marker. The request for a remark must be lodged within two weeks of the date of receipt of the assessment.

The Unit Convenor/s will arrange for the assignment to be marked by another relevant staff member teaching that Unit and the assignment will be returned to the student via the Linguistics Undergraduate/Postgraduate Office. The final mark will be an agreed mark by the first and second marker and the Unit Convenor. The final mark can be sustained, raised or lowered.

If a student wishes to appeal against a final grade for a unit, then the student should see the Unit Convenor first. However, formal appeal must be lodged with the Head of Division by the date stipulated on the Handbook of Undergraduate/Postgraduate Studies. Failure to follow these procedures is likely to result in a request/appeal being disallowed.

### **5d. Student Email Account**

All Macquarie students have been issued with a University email account.

It is University policy that the University issued email account will be used for official University communication. All students are required to access their University account frequently. Email can be automatically forwarded from your Macquarie account to another account but each student is responsible for the information sent to a non-Macquarie account and for managing mailbox size to ensure that account remains active.

- You must check your Macquarie email account
- Messages sent to all students in your unit by the Unit Convenor will only be sent to your University email account.
- Your Macquarie email account can be accessed via the portal, myMQ at <https://my.mq.edu.au>
- To Sign On to the portal use your Student Number, and your original MQID password (i.e., 2 random characters followed by your date of birth in ddmmyy format).
- Your Email Address can be viewed in portal.
- The student email format will be first.last@students.mq.edu.au e.g., jan.block@students.mq.edu.au (any other students also named Jan Block will be jan.block1@students.mq.edu.au, jan.block2@students.mq.edu.au, etc.)

## **Student Support**

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

### **Learning Skills**

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## **Student Services and Support**

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

#### Assessment task

- Articulography Report

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

#### Assessment task

- Articulography Report

### Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

## Learning outcome

- Engage in a research rich environment at Macquarie through participation in research

## Assessment task

- Research Participation

## Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

## Learning outcomes

- Demonstrate understanding of respiratory anatomy and mechanics
- Observe and discuss the processes involved in breathing for speech and breathing for life
- Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology
- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production
- Demonstrate an understanding of neuroanatomy and neurophysiology of speech and language
- Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics
- Describe important aspects of embryology, evolution and development in relation to speech processing

## Assessment tasks

- Breathing Quiz
- Problem Sets
- Articulography Report
- Exam

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to

critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## **Learning outcomes**

- Demonstrate understanding of respiratory anatomy and mechanics
- Observe and discuss the processes involved in breathing for speech and breathing for life
- Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology
- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production
- Demonstrate an understanding of neuroanatomy and neurophysiology of speech and language
- Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics
- Describe important aspects of embryology, evolution and development in relation to speech processing

## **Assessment tasks**

- Problem Sets
- Articulography Report
- Exam

## **Problem Solving and Research Capability**

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## **Learning outcomes**

- Demonstrate understanding of respiratory anatomy and mechanics
- Observe and discuss the processes involved in breathing for speech and breathing for life
- Demonstrate advanced knowledge of laryngeal anatomy and phonatory physiology
- Identify the various structures associated with articulatory anatomy and physiology and demonstrate an understanding of how these are employed in speech production

- Demonstrate an understanding of neuroanatomy and neurophysiology of speech and language
- Analyse and report on speech data collected via speech physiology instrumentation to engage with theoretical issues in phonetics

## **Assessment tasks**

- Problem Sets
- Articulography Report

## **Effective Communication**

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

## **Assessment tasks**

- Articulography Report
- Exam

## **Changes since First Published**

Date	Description
01/03/2018	Changes to assessment task due dates