



SPH 308

The Science of Speech Production

S1 Day 2019

Dept of Linguistics

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General Information

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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

Completion of all assessment tasks

It is a requirement of this unit that students make a serious attempt to complete all assessment tasks. Failure to complete all assessment tasks may result in failure in the unit even if the marks for 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.

Lateness

- Late submissions without an extension will receive a penalty of 3% of the total mark available for the assessment task per day including weekend days (i.e. this is 3% of the total marks possible for the task – NOT 3% of the marks you received for the assignment. For example, if the assessment task is worth 100 marks and you are two days late your mark for the task is reduced by 6 marks.)
- Late submission of an assessment task without an extension will not be accepted at all after the date on which marked assessment tasks have been released to the rest of the class. Any student with unsubmitted work at this date will receive a mark of 0 for the assessment task.
- Extensions will only be given in special circumstances, and can be requested by completing the Special Consideration request at ask.mq.edu.au and providing the requisite supporting documentation.
- Extensions that will result in submissions after the assessment task has been returned to the class will require a separate assessment task to be completed at the unit convenor's discretion.
- For more information on Special Consideration, see the university website <https://students.mq.edu.au/study/my-study-program/special-consideration>
- If you fail the unit due to non-submission of an assignment or non-attendance at an exam, an FA grade will be applied in accordance with the University's Assessment Policy.

Assessment Tasks

Name	Weighting	Hurdle	Due
Breathing Quiz	10%	No	Week 4
Problem Sets	30%	No	Variable
Articulography Report	25%	No	Week 9
Exam	30%	No	Exam Period
Research Participation	5%	No	End of session

Breathing Quiz

Due: **Week 4**

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 may 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.

ATTENDANCE

Attendance at workshops is compulsory and the roll will be taken. Learning the concepts necessary to gain a solid understanding of speech production and the analysis techniques in the field requires dedication, practice, and engagement. We are here to support your learning and we can only do this successfully through face to face contact with you to guide you through the materials and techniques. You must attend and actively engage in the learning process with your teachers and peers.

Attendance at lectures is also very important in this unit as it can be extremely difficult to grasp the complexities of speech production through audio (ECHO recordings). We make lectures highly engaging and interactive which you can't experience if you are not present.

Unit Schedule

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-centr) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-centr>)

al). 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](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://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 published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

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) 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

If you are a Global MBA student contact globalmba.support@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/.

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
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- 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:

Learning outcome

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

Assessment tasks

- Articulography Report
- Exam

Changes since First Published

Date	Description
26/02/2019	Unit convenor Anita added, change to due date for Breathing Quiz