



ENVS3102

Urban Climate and Air Quality

Session 1, In person-scheduled-weekday, North Ryde 2022

School of Natural Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

Paul Beggs

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Please email for an appointment

Vladimir Strezov

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Please email for an appointment

Credit points

10

Prerequisites

(130cp at 1000 level or above) including (GEOS216 or ENVE216 or ENVS216 or ENVS2116 or EESC2160)

Corequisites

Co-badged status

Unit description

More than half of the world's population lives in urban areas, and virtually all countries are becoming increasingly urbanised. Australia is one of the most urbanised countries in the world, with about 90% of our pollution living in urban areas. For these reasons, urban climate and air quality are extremely important, directly influencing the health and wellbeing of billions of people around the world. This unit explores urban climate and air quality through detailed study of interactions between the atmosphere and the Earth's surface in the relatively thin veneer of air that we live in known as the planetary boundary layer. The unit will be of interest to all students in science and engineering and more generally any student with an interest in the environment, and provides knowledge and skills that will be of value for a range of careers and employers, ranging from environmental consultancy and local and state government, to private industry.

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:

ULO1: describe urban climate and air quality, including the physical, chemical and biological processes operating to produce or change the state of the urban atmosphere.

ULO2: demonstrate knowledge and conceptual understanding of the dispersive capabilities of the atmospheric environment near the surface of the earth, how pollutants emitted into the atmospheric environment move and interact with the surface.

ULO3: examine and integrate scientific information from various primary and secondary sources.

ULO4: apply practical knowledge to undertake analysis of climate and air quality data.

ULO5: demonstrate practical laboratory and field based skills associated with typical measurement problems in the field of climate science.

General Assessment Information

Details of the Literature Review and Scientific Report assessments will be provided in Weeks 1 and 8 respectively.

The Literature Review and Scientific Report assessments must be submitted via Turnitin (a link will be provided on the iLearn web site for the unit).

Quizzes 1-4 will be completed in iLearn.

General Faculty Policy on assessment submission deadlines and late submissions:

Online quizzes must be undertaken at the time indicated in the unit guide. Should these be missed due to illness or misadventure, students may apply for Special Consideration.

All other assessments must be submitted by 5:00 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

Late submissions will only be accepted for the Literature Review and Scientific Report Assessments.

A consistent penalty will be applied for late submissions as follows:

A 12-hour grace period will be given after which the following deductions will be applied to the awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Quizzes</u>	60%	No	Weeks 4, 7, 10, and 13 (in Practical class)
<u>Literature review</u>	20%	No	5:00 pm Monday 25 April 2022
<u>Scientific report</u>	20%	No	5:00 pm Friday 27 May 2022

Quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 20 hours

Due: **Weeks 4, 7, 10, and 13 (in Practical class)**

Weighting: **60%**

Four quizzes throughout the session.

On successful completion you will be able to:

- describe urban climate and air quality, including the physical, chemical and biological processes operating to produce or change the state of the urban atmosphere.
- demonstrate knowledge and conceptual understanding of the dispersive capabilities of the atmospheric environment near the surface of the earth, how pollutants emitted into the atmospheric environment move and interact with the surface.
- examine and integrate scientific information from various primary and secondary sources.
- apply practical knowledge to undertake analysis of climate and air quality data.
- demonstrate practical laboratory and field based skills associated with typical measurement problems in the field of climate science.

Literature review

Assessment Type ¹: Literature review

Indicative Time on Task ²: 19 hours

Due: **5:00 pm Monday 25 April 2022**

Weighting: **20%**

Literature review of urban climate and air quality topic.

On successful completion you will be able to:

- describe urban climate and air quality, including the physical, chemical and biological processes operating to produce or change the state of the urban atmosphere.

- examine and integrate scientific information from various primary and secondary sources.

Scientific report

Assessment Type ¹: Report

Indicative Time on Task ²: 20 hours

Due: **5:00 pm Friday 27 May 2022**

Weighting: **20%**

Scientific report of urban climate and air quality topic.

On successful completion you will be able to:

- describe urban climate and air quality, including the physical, chemical and biological processes operating to produce or change the state of the urban atmosphere.
- apply practical knowledge to undertake analysis of climate and air quality data.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Classes

There is a two hour Workshop and a three hour Practical for this unit that you are expected to attend each week. See the University Class Timetable for details (<https://timetables.mq.edu.au/2022/>).

There is no Practical in Week 1.

Required Text

The required text for this unit is:

Oke TR, Mills G, Christen A, Voogt JA (2017) Urban climates. Cambridge University Press, Cambridge.

The Library provides online access [QC981.7.U7 O34 2017].

Also highly recommended:

Oke TR (1987) Boundary layer climates (2nd ed). Routledge, London. [QC981.7.M5.O34/1987]

Unit Schedule

See the iLearn web site for the Unit Schedule.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

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

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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.

COVID Information and on-campus classes

On-campus teaching continues to be scheduled for Session 1, 2022. Masks are compulsory for

all classes in indoor spaces and social distancing will be implemented wherever possible. Students will also be required to sanitise surfaces before and after use.

Students are requested to minimise the risk of spreading COVID to themselves and others in accordance with the university and NSW Health guidelines: <https://www.mq.edu.au/about/corona-virus-faqs> and <https://www.nsw.gov.au/covid-19/stay-safe>.

Any further requirements or changes to units in relation to COVID will be communicated to students via iLearn.

Off-shore students

Off-shore students **must** email the convenor as soon as possible to discuss study options.