Course Outline

Code: ENS242
Title: Introduction to Weather and Climate

School of: Science & Engineering
Teaching Session: Semester 2
Year: 2019
Course Coordinator: Associate Professor Neil Tindale  Email: ntindale@usc.edu.au
Course Moderator: Dr Aaron Wiegand

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1 Description
This course provides you with a practical introduction and overview of meteorology and climate. The nature of the physical processes responsible for changes in daily weather will be discussed, including links between oceans, atmosphere and land. You will gain a better understanding of the nightly television weather charts and reports, and an improved understanding of important issues including climate change and the impacts of severe weather. The course will focus on Australian and regional Queensland conditions.

1.2 Course topics
Meteorology; climate change; global warming; greenhouse gases; marine and coastal weather and forecasts; severe weather; waves, currents and surf; weather forecasts.

2. What level is this course?
200 level Developing - Applying broad and/or deep knowledge and skills to new contexts. May require pre-requisites and introductory level knowledge/skills. Normally undertaken in the 2nd or 3rd year of an undergraduate program

3. What is the unit value of this course?
12 units
4. **How does this course contribute to my learning?**

<table>
<thead>
<tr>
<th>Specific Learning Outcomes</th>
<th>Assessment Tasks</th>
<th>Graduate Qualities or Professional Standards mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognise, understand and explain key concepts in weather and climate, and the links to</td>
<td>Tasks 1, 2 and 3.</td>
<td>Knowledgeable.</td>
</tr>
<tr>
<td>Earth System Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and collect weather/climate data from different sources including the Internet</td>
<td>Tasks 1 and 2.</td>
<td>Empowered.</td>
</tr>
<tr>
<td>Critically assess sources and types of weather/climate data and trends</td>
<td>Tasks 1, 2 and 3.</td>
<td>Creative and critical thinkers.</td>
</tr>
<tr>
<td>Understand, describe and present weather/climate data and information to a non-professional</td>
<td>Tasks 1, 2 and 3.</td>
<td>Empowered.</td>
</tr>
<tr>
<td>audience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate climate data in relation to possible impacts on the Earth and on humanity</td>
<td>Tasks 1, 2 and 3.</td>
<td>Sustainability-focussed.</td>
</tr>
</tbody>
</table>

5. **Am I eligible to enrol in this course?**

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1 **Enrolment restrictions**

Nil

5.2 **Pre-requisites**

Nil

5.3 **Co-requisites**

Nil

5.4 **Anti-requisites**

Nil

5.5 **Specific assumed prior knowledge and skills (where applicable)**

Computer and internet literate; access to television and internet; access to, and use of, MS Word, PowerPoint and Excel.

6. **How am I going to be assessed?**

6.1 **Grading scale**

Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

6.2 **Details of early feedback on progress**

Several of the tutorials include group tasks that are reviewed to provide formative feedback to the students. Tutorials in weeks 3, 5 and 6 contain such tasks. The tutorial tasks in weeks 8 and 9 will be assessed as components of Task 1.
### Assessment tasks

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Assessment Tasks</th>
<th>Individual or Group</th>
<th>Weighting %</th>
<th>What is the duration / length?</th>
<th>When should I submit?</th>
<th>Where should I submit it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tutorial exercise report(s) and quiz</td>
<td>Individual</td>
<td>20%</td>
<td>&lt;600 words</td>
<td>Beginning of next tutorial lab</td>
<td>Blackboard (Safe Assign)</td>
</tr>
<tr>
<td>2</td>
<td>Weather/climate project presentation</td>
<td>Group</td>
<td>40%</td>
<td>~20 min group presentation plus accompanying presentation notes (&lt;2000 words)</td>
<td>End of week 10</td>
<td>Blackboard (Safe Assign)</td>
</tr>
<tr>
<td>3</td>
<td>Final examination</td>
<td>Individual</td>
<td>40%</td>
<td>2 hr + 10 mins perusal</td>
<td>Centrally scheduled examination period</td>
<td>Exam venue</td>
</tr>
</tbody>
</table>

#### Assessment Task 1: Tutorial lab exercise report(s)

**Goal:** You will understand weather and climate terms and develop proficiency of using weather observations to forecast weather. You will find, access and use weather data and other information to create weather forecast(s) and/or answer short answer quizzes.

**Product:** An understandable, concise report and/or answers

**Format:** Create a brief (<600 words), written forecast (report) of the weather using weather data either supplied and/or accessed via the Internet and answer a content knowledge quiz about weather.

**Criteria:** Assessed on the ability to create a knowledgeable, accurate, readable forecast that matches the data and scientific assumptions/understanding used and that shows understanding of the technical terminology used in meteorology.

#### Assessment Task 2: Weather/climate project report

**Goal:** Working as a group, report some aspect of weather and/or climate studies (students’ choice to topic), either by data gathering, literature research or a field project.

**Product:** Professional group presentation, and accompanying presentation notes, on topic or issue.

**Format:** Attractive, professional oral presentation to class, summarising the project and findings. Includes presentation notes and references.

**Criteria:** Demonstrated ability to produce a comprehensible, formal, professional presentation of the project. Includes presentation notes and relevance to project/task and issues, clarity of language and logic, and sources of information used.

#### Assessment Task 3: Final Examination

**Goal:** This exam will allow you to consolidate and demonstrate your learning of the key concepts, theories and practices in weather and climate science covered in this course.

**Product:** Final examination.

**Format:** Two-hour examination held during formal end-of-semester, examination period, and comprised of a mixture of short, medium and essay length questions.

**Criteria:** Accuracy of:
- Answers and clarity of language and logic used
- Explaining key concepts in weather and climate science
- Explaining and/or assessing contemporary issues in weather and climate science
7. **What are the course activities?**

7.1 **Directed study hours**

The directed study hours listed here are a portion of the workload for this course. A 12 unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

<table>
<thead>
<tr>
<th>Location: Specific Campus(es) or online</th>
<th>Directed study hours for location</th>
</tr>
</thead>
<tbody>
<tr>
<td>USC Sunshine Coast</td>
<td>Lecture: 2-hrs per week</td>
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<td></td>
<td>Tutorial/Computer Lab: 2-hrs per week</td>
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</tbody>
</table>

7.2 **Course content**

<table>
<thead>
<tr>
<th>Week # / Module #</th>
<th>What key concepts/content will I learn?</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture: Overview - earth, atmosphere and ocean. Tutorial: Introduction to course and assessment items.</td>
</tr>
<tr>
<td>2</td>
<td>Lecture: Biometeorology – the effect of weather on us. Tutorial: Introduction to meteorological and oceanographic instruments and observations</td>
</tr>
<tr>
<td>5</td>
<td>Lecture: Australian weather patterns. Tutorial: Quirky weather phenomena</td>
</tr>
<tr>
<td>6</td>
<td>Lecture: Weather forecasting part 1 Tutorial: Practical group activity - writing a TV weather forecast presentation.</td>
</tr>
<tr>
<td>8</td>
<td>Lecture: Weather forecasting part 2 Tutorial: – practical group activity: Real-time forecasting exercise, and revision for mid-semester exam</td>
</tr>
<tr>
<td>11</td>
<td>Lecture: Extreme weather Tutorial: Case studies and impacts of extreme weather events</td>
</tr>
<tr>
<td>12</td>
<td>Lecture: Climate and climate trends part 1. Tutorial: Greenhouse gas levels and climate trends/change data Final exam revision</td>
</tr>
<tr>
<td>13</td>
<td>Lecture: Climate change part 2. Tutorial: Case studies of Climate Change sceptics and deniers. Final exam revision!</td>
</tr>
</tbody>
</table>

Course content is subject to variation.
8. What resources do I need to undertake this course?
Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. Please log in as soon as possible.

8.1 Prescribed text(s)
No prescribed textbooks required.

Following textbooks are recommended but NOT required, and are available through the USC Co-op bookshop:

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahrens</td>
<td>2016</td>
<td>Meteorology Today 11th Ed. (or older editions)</td>
<td>Cengage Learning</td>
</tr>
<tr>
<td>Aguado and Burt</td>
<td>2015</td>
<td>Understanding Weather and Climate. 7th Ed.</td>
<td>Pearson</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(or older editions)</td>
<td></td>
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</tbody>
</table>

Also recommended as background reading:

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitaker and</td>
<td>2012</td>
<td>The Australian Weather Book. 3rd Ed. (or older editions)</td>
<td>CSIRO Publishing</td>
</tr>
<tr>
<td>Colls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sturman and</td>
<td>2005</td>
<td>The Weather and Climate of Australia and New Zealand. 2nd Ed. (or older edition)</td>
<td>Oxford University Press</td>
</tr>
<tr>
<td>Tapper</td>
<td></td>
<td></td>
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</table>

8.2 Specific requirements
Links to relevant web pages including the Australian Bureau of Meteorology (BoM) will be provided also during tutorials. Students expected to view daily weather forecasts (TV, newspaper or internet).

9. Risk management
Health and safety risks for this course have been assessed as low.

It is your responsibility as a student to review course material, search online, discuss with lecturers and peers, and understand the health and safety risks associated with your specific course of study. It is also your responsibility to familiarise yourself with the University's general health and safety principles by reviewing the online Health Safety and Wellbeing training module for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1 Assessment: Academic Integrity
Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.
10.2 Assessment: Additional requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent on the following conditions applying:

a) The final mark is in the percentage range 47% to 49.4%

b) The course is graded using the Standard Grading scale

c) You have not failed an assessment task in the course due to academic misconduct

10.3 Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to Student Hub.

Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:
http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.6 General Enquiries

In person:

- USC Sunshine Coast - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- USC South Bank - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- USC Gympie - Student Central, 71 Cartwright Road, Gympie
- USC Fraser Coast - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- USC Caboolture - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au