



CBMS235

Engaging the Community in Science

FY1 Day 2014

Chemistry and Biomolecular Sciences

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Disclaimer

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General Information

Unit convenor and teaching staff

Unit Convenor

Joanne Jamie

joanne.jamie@mq.edu.au

Contact via joanne.jamie@mq.edu.au

F7B231

Students are encouraged to arrange a meeting via email.

Credit points

3

Prerequisites

15cp and permission of Executive Dean of Faculty

Corequisites

Co-badged status

Unit description

This unit provides an opportunity for university students from all disciplines to undertake science outreach. Through participation and community engagement this unit aims to inspire an appreciation of the fascination of science and its relevance to everyday life as well as provide leadership skills and positive role models at the school and university levels. This unit will provide you with the opportunity to work with secondary and tertiary students and staff to run interactive science shows and other science activities for Indigenous and non-Indigenous students, rural and refugee students, Aboriginal community members and the wider public. The curriculum will develop your skills in mentoring and working with children and Indigenous people, as well as interactive science-based activities. Further, this unit will provide you with leadership and communication skills and an appreciation of ethics, and through the interaction with the wider community, will be an important part of preparing you to become a socially responsible global citizen. This unit is of value for all university students and does not require a science background.

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:

An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.

An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.

To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.

Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.

An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.

Cooperative skills necessary for working effectively with peers in a variety of activities.

Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.

The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Assessment Tasks

Name	Weighting	Due
<u>Science activities training</u>	5%	Weeks 3-8
<u>Orientation/induction</u>	5%	Weeks 1-8
<u>Essay</u>	10%	Week 6
<u>Science activities</u>	40%	D2 Week 14
<u>Group discussions</u>	10%	D2 Week 14
<u>Reflection journal</u>	10%	D2 Week 14
<u>Presentations</u>	20%	D1 W13/14, D2 W13/14

Science activities training

Due: **Weeks 3-8**

Weighting: **5%**

On successful completion you will be able to:

- To develop presentation and communication skills needed to effectively communicate

with students, peers and the wider community through science activities, verbal communication and presentations.

- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.
- Cooperative skills necessary for working effectively with peers in a variety of activities.
- Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.

Orientation/induction

Due: **Weeks 1-8**

Weighting: **5%**

Completed through attending meetings (face to face and/or online), reading online resources, and online discussions

On successful completion you will be able to:

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.
- Cooperative skills necessary for working effectively with peers in a variety of activities.
- Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.

Essay

Due: **Week 6**

Weighting: **10%**

On successful completion you will be able to:

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.

Science activities

Due: **D2 Week 14**

Weighting: **40%**

Achieved throughout the year

On successful completion you will be able to:

- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Group discussions

Due: **D2 Week 14**

Weighting: **10%**

Through weekly meetings

On successful completion you will be able to:

- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.

Reflection journal

Due: **D2 Week 14**

Weighting: **10%**

On successful completion you will be able to:

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Presentations

Due: **D1 W13/14, D2 W13/14**

Weighting: **20%**

On successful completion you will be able to:

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.

Delivery and Resources

Required Reading

There is no textbook recommended. Instead CBMS235 makes extensive use of web-based teaching resources on the unit iLearn web site (see below for more information). This includes resources especially designed for PACE units.

iLearn Unit Web Page and Other Technology

The web page for this unit can be found at ilearn.mq.edu.au. Just login and follow the prompts to CBMS235. You can use any web browser such as Firefox, Internet Explorer or Safari to login.

iLearn is the name for Macquarie University's Learning Management System (LMS). The iLearn online learning environment enables learning, teaching, communication and collaboration.

It is essential that you login to the unit iLearn web site on a regular basis. As well as web-based

teaching resources, the iLearn web site will also provides other support for this unit, including an Announcement board for important notices, the Unit Outline, Discussion Forums, and access to your grades.

You can log directly into iLearn by going to ilearn.mq.edu.au or you can log in by going to the “Students” homepage of Macquarie’s website: <http://students.mq.edu.au/home/> (select “online units” from the top right hand side of the page). If you have any problems with iLearn go to http://www.mq.edu.au/iLearn/student_info/index.htm.

If you do not have your own computer you may wish to access the iLearn web resources on campus using the PC computers in the Library or in the C5C computer laboratories. To view pdf documents on the web site, you will require Adobe Acrobat Reader Version 9 or later to be installed on your computer. Acrobat Reader can be downloaded from the Adobe web site <http://get.adobe.com/uk/reader/>. If you are using the computers at Macquarie, then Acrobat has already been installed.

Please note information will also be sent frequently by email to your student email account so please look at your email account on a frequent basis.

Teaching and Learning Strategies

CBMS235 will consist of a mixture of face to face training workshops and group discussion sessions, online discussions and interactive science activities. There will be a dedicated 1 hr session (Tuesday 9-10am through both session 1 and 2, with some classes extended (8-10am) for training workshops. The community activities – the experiential science activities component of the unit – will be timetabled once the dates are known. Enrolled students will identify which activities they can be a part of. The range of activities provided over the year will allow sufficient choice for all students to be a part of many wonderful science outreach events.

Introduction: Week 1 will be a meet and greet session to get to know everyone's interests in the unit, the strengths you bring to the unit and the potential areas of growth.

Meetings/groupWorkshops:

Meetings/group discussions: Once a week there will be a 1-2 hour group session. From weeks 2-8, the focus will be on workshops related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken. These sessions will also be used throughout the year to discuss about upcoming activities, including with other teaching staff and community partners, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to critique their effectiveness and consider changes needed, etc. These sessions will also be used to reflect more broadly.

Online Discussion: You are expected to participate regularly in online discussion using the iLearn Discussion forum about the unit content, science activities and methods of presentation, and issues that may arise, as well as reflect more broadly.

Experiential Activities: The experiential component will involve engaging community (eg school students) in science activities including those of relevance to everyday life (eg examining the microscopic world, extracting DNA from fruit, making slime from wood glue and borax). The

activities are expected to commence April/May and will be spread throughout the year. At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection.

Reflection: Reflection will be a particularly important tool for you in this unit. The participation activities will inherently challenge your approaches, ideas, and understandings about the communities around us and the communication of science therein. You will keep an on-going journal reflecting on your experiences and at the end of each semester, be required as a part of your assessment to present to fellow students and staff about the key achievements. This includes a summary of your contributions to the partner organisation(s) and community.

Workload expectation: CBMS235 is a 3 credit point unit and as such it is generally expected that you will commit at least 5 hours per week throughout the combined semesters (1 and 2). However, as a PACE unit, there is recognition that workload may vary in comparison to traditional unit offerings. This is due to teaching delivery, which is in-class, online and in the community, differences in timing for PACE activities, and individual styles of learning. Further, experience to date in other PACE units has indicated that students often choose to commit more time than required to their PACE activities in response to the associated personal and professional reward and learning opportunities, which could not otherwise be achieved in the classroom. With this in mind, you should understand that workload associated with a 3 credit point unit must ultimately constitute 150 hours in total. The following workload hours have therefore been allocated and approved for CBMS235 with the recognition that some variation may occur:

Orientation/introduction - 15 hours (includes induction course, private study and 5% supervisors' mark)

Scaffolding for skills and knowledge development - 35 hours (includes private study and assessment, science activities preparation workshops, preparation of essay on role of science outreach; participation in weekly meetings).

Experience (community engagement activities) - 50 hours (includes at least 30 hours for the actual participation, 10 hours for the planning outside of meetings and 10 hours reflective practice through online journal).

Self study/assessment preparation - 40 hours total for preparation and conduct of actual assessment tasks beyond the 'in class' or 'in workshop' activities and participation with community.

Wrap-up/debrief - 10 hours towards presentation session.

Who to Contact

A/Prof Joanne Jamie is the coordinator of this unit and should be your main point of contact.

You will get to meet the other staff during scheduled sessions and/or during the various activities. They will all be happy to help in answering questions relevant to their expertise throughout this unit. You are encouraged to direct any questions or queries first to A/Prof Jamie, who will pass them on to the other teaching staff as needed. A/Prof Jamie has an open door policy, but you are encouraged to phone or email to organise a meeting. You may also wish to ask questions using the discussion board on the ilearn website.

What has changed

CBMS235 now has a dedicated 1 hr weekly class. No other significant changes have been made.

Feedback

We are always open to suggestions for improving the content and delivery of this course. We are very happy to receive any constructive criticism that you may wish to provide. We hope you find this course both educational and fun!

Unit Schedule

The orientation/introduction will involve directed reading of online resources and workshops related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practice and an introduction to various science outreach activities that CBMS235 will encompass (weeks 1-8). Participation in these workshops and online resources is compulsory and will contribute 5% of the assessment tasks.

Scaffolding for skills and knowledge development will include hands-on workshops early on to familiarise you with the main types of science experiments used in the science outreach activities and role playing with your peers (week 2-8). This will contribute 5% towards assessment and will include peer evaluation of the role playing. Developing knowledge will also come from completion of a written report of ~1500 words (10%) on why such outreach/community engagement is important, especially to those in groups previously under-represented in higher education, and an example from the literature showing how such outreach can improve educational outcomes. This will be submitted in week 6. You will also attend weekly 1 hour meetings throughout D1 and D2 (excluding mid-session and mid-year breaks) to discuss as a group about upcoming activities, including with community partners, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to critique their effectiveness and consider changes needed, etc. The active participation in these meetings will contribute 10% towards the assessment total. Feedback on this participation will be provided in week 10 of D1 and week 5 and week 9 of D2 to allow opportunity for improvement.

The experiential component will incorporate the science activities with the community and on-going reflection. A range of science activities will be available. Activities and interaction with partner organisations will occur throughout the year subsequent to the initial orientation and familiarisation exercises. The activities are expected to commence April/May and will be spread throughout the year. A reflective journal will be filled in throughout the year both before and following each science activity. At least 30 hours of direct interaction with the community with the science activities will be expected and an average of 10 hours committed to the preparation. This experiential component will be worth 50%. Feedback from peers and the community participants will be sought to determine your level of engagement and commitment. You will be expected to spend at least 10 hours reflecting on these specific activities and their impact. You will undertake reflective practice as part of an on-going journal reflecting on your activities – to be filled in throughout the semester both before and following each science activity. As part of this reflection process, an open web forum will be available for you to discuss your experiences online.

In week 13/14 of D1 an ~1000 word report (7.5%) will be provided by you summarising the most

significant features of the experience to date. This, along with the reflective practices (5%) to date will contribute 12.5%. In D2 week 13/14, an ~1000 word report will be provided with an overview of the entire experience. A presentation in the form of a short oral will be provided as part of a debrief wrap up session to the class in week 13/14 of D2. This oral, and the report (total 12.5%), in combination with the on-going reflective practices (5%) will contribute 17.5% of the unit. There will be no exam.

To summarise on assessment tasks:

Orientation/introduction – attendance of meeting/workshops and reading online resources 5% (weeks 1-8, D1).

Scaffolding skills/knowledge development - compulsory workshops (inc peer assessment), weeks 2-8, D1, 5% plus ~1500 word report 10% (week 6, D1) plus active participation in fortnightly meetings (inc peer assessment) 10%. (Total of 25% of assessment)

Experience/project – a minimum of 30 hours of direct community engagement and 20 hours planning and reflecting will be expected of each student. Community engagement will be worth 40% (through academic, self-, peer and community assessment). Reflective practice (through journal entries will be worth 10%). A 1000 word report week 13/14 D1, 7.5%. A 1000 word report week 13/14 D2, plus short presentation, 12.5%. (Total of 70% of assessment)

Wrap up/debrief – compulsory (presentations as above and general discussions occurring)

Learning and Teaching Activities

Workshops

Workshops will be run related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken

Meetings/group discussions

These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection

Online discussion

These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly

Experiential activity

At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection

Reflection

You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student_conduct/

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

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

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

Graduate Capabilities

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:

Learning outcomes

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.

Assessment tasks

- Science activities training
- Orientation/induction
- Science activities
- Group discussions
- Reflection journal

Learning and teaching activities

- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their

effectiveness and consider changes needed, etc and for reflection

- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

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

- Commitment to continual learning and/or revision of scientific processes that can be used to engage students and the wider community in science.

Assessment tasks

- Science activities training
- Orientation/induction
- Science activities
- Group discussions
- Reflection journal

Learning and teaching activities

- Workshops will be run related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken
- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will

be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection

- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

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

- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Assessment tasks

- Science activities training
- Orientation/induction
- Science activities
- Group discussions

Learning and teaching activities

- Workshops will be run related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken
- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their

effectiveness and consider changes needed, etc and for reflection

- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

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

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Assessment tasks

- Science activities
- Group discussions
- Reflection journal

Learning and teaching activities

- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their

effectiveness and consider changes needed, etc and for reflection

- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

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

- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Assessment tasks

- Essay
- Science activities
- Group discussions

Learning and teaching activities

- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow

students and staff about the key achievements

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:

Learning outcomes

- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.
- The ability to adjust content to the levels of the students/community member in regards to their knowledge of science and their personal interest in science.

Assessment tasks

- Science activities
- Group discussions
- Reflection journal

Learning and teaching activities

- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

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 outcomes

- To develop presentation and communication skills needed to effectively communicate with students, peers and the wider community through science activities, verbal communication and presentations.
- Research and planning skills necessary to understand the content and to present the science activities to students and the wider community.
- An understanding of scientific processes and the ability to present these processes in an interesting and engaging fashion to students and/or wider community.

Assessment tasks

- Science activities training
- Orientation/induction
- Essay
- Science activities
- Group discussions
- Reflection journal
- Presentations

Learning and teaching activities

- Workshops will be run related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken
- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection
- You will keep an on-going journal reflecting on your experiences and present to fellow students and staff about the key achievements

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- An understanding of the need for community engagement to help encourage students to maintain at their studies in order to complete high-school and tertiary education.
- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- Cooperative skills necessary for working effectively with peers in a variety of activities.

Assessment tasks

- Science activities
- Group discussions

Learning and teaching activities

- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- An understanding of the need for community engagement to help encourage students to

maintain at their studies in order to complete high-school and tertiary education.

- An understanding of the social disadvantages present within Indigenous, rural and refugee communities, and the benefits that community engagement provides.
- Cooperative skills necessary for working effectively with peers in a variety of activities.

Assessment tasks

- Science activities training
- Orientation/induction
- Science activities
- Group discussions

Learning and teaching activities

- Workshops will be run related to mentoring, working with children, working with Indigenous people and ethical aspects, reflective practices, and an introduction to the overall science outreach activities to be undertaken
- These will be used to discuss upcoming activities, to prepare and plan for the actual activities and evaluate and improve on resources; and following activities to discuss their effectiveness and consider changes needed, etc and for reflection
- These will include discussions on various aspects including the science activities and methods of presentation, and issues that may arise, as well as reflections more broadly
- At least 30 hours of direct interaction with the community with the science activities will be expected from you and an average of 10 hours committed to the preparation and 10 hours to reflection

Background on PACE

CBMS235 is an accredited Professional and Community Engagement (PACE) unit and will be running according to the PACE criteria and with support from the PACE team in the Faculty of Science (see pace.science@mq.edu.au).

As the third pillar of the Macquarie undergraduate curriculum, PACE is a key component of the University's strategic direction, emphasising its commitment to excellence in research, learning and teaching and community engagement. According to the Macquarie PACE website, "PACE units provide an academic framework through which students can engage with the community, learn through participation, develop their capabilities and build on the skills that employers value. By completing a PACE unit, students develop all these skills and capabilities, and also gain academic credit towards their degree" (Macquarie University, PACE website, 2014).

As a PACE unit, CBMS235 will be flagged on academic transcripts with the symbol 'π' after the unit code and before the unit title. Students can highlight this designation to future employers and

academic institutions as the following definition:

π : Units marked with a π are designated PACE units. These units provide students with an opportunity to learn through practical experience and make a valuable contribution to the community by applying knowledge and skills acquired at the University.

For more information about PACE see:

http://mq.edu.au/about_us/offices_and_units/participation_and_community_engagement/

Graduate capabilities detailed

CBMS235 will also help develop your graduate capabilities through the unit outcomes. These are the building blocks for developing the attributes valued in a university graduate. Some of the attributes and skills that CBMS235 can help you develop are:

- *Discipline Specific Knowledge and Skills:* The science activities employed in this unit overlap with discipline knowledge and skills from various sciences, including chemistry, biomolecular sciences, biology and physics (with the possibility of extension in other sciences). By learning the scientific processes involved in the activities, you will gain a greater understanding of scientific processes in general and specific knowledge and skills required to safely perform experiments in these disciplines.
- *Problem Solving and Research Capability:* You will begin the unit by undertaking a search of the literature relating the benefits of outreach especially to those in groups under-represented in higher education. The presentation of this research into a brief 1-2 page document forms a beneficial and appropriate research task to introduce you to the value and importance of science outreach/engagement. Planning and running of the science activities, and working with fellow students and the outside community will pose many challenges that you will need to overcome. The unit is designed to give you many opportunities for reflection, discussion and assistance where necessary. As a result, you will develop confidence in facing such challenges in the future.
- *Critical, Analytical and Integrative Thinking:* Your engagement in presenting the science activities to the community requires you to be capable of planning, reasoning, questioning and analysing. You will need to critique constraints, assumptions and limitations, be able to think independently and yet work as a team. As you present science to others from a variety of different backgrounds, you will need to incorporate your scientific and academic knowledge with social and ethical concerns. You will be required to relate your knowledge in a form understandable by the community (eg secondary education students). This will challenge you to synthesise and distill your university-level knowledge and skills into a useable form for this context.
- *Creativity and Innovation:* There are many opportunities in this unit for you to express their own creativity and innovative ideas. You will be encouraged to create new activities for the science program if you wish and your ideas about how the activities could be run will be actively encouraged, discussed and implemented where appropriate. You will also encounter situations during the science outreach activities that will require you to act creatively to accommodate changing circumstances and unexpected events.

- *Effective Communication:* This unit will develop your ability to communicate on a variety of different levels. The communication of science to the community is the focus of the science activities and you will be involved in all stages of this process from planning, to implementation, and final assessment of the outcome. Furthermore, you will be required to communicate in a more formal academic manner, through an initial written assessment task introducing the value of outreach/community engagement, online discussions, written assignments and a final oral presentation.
- *Engaged and Ethical Local and Global citizens:* In working with culturally diverse communities this unit fosters the development of ethical awareness, responsibility, co-operation, group management and teamwork.
- *Socially and Environmentally Active and Responsible:* You will be working in small teams for much of CBMS235, especially in the demonstration component of the course, giving you the opportunity to develop your ability to work with others as you make informed decisions and play an active role within society.
- *Capable of Professional and Personal Judgement and Initiative:* Especially during your demonstration of science activities, you will be expected to develop discernment and common sense in your professional and personal judgement as to the level of content appropriate for presentation. Further, the experience of working with groups from outside the university will broaden your outlook, equipping you with the knowledge to make appropriate professional and personal judgements about a range of issues affecting the community. Periods of reflection through the unit will enable you to learn from your experiences and to develop confidence in your own personal judgement skills and abilities to take initiative in challenging situations in the future.
- *Commitment to Continuous Learning:* Throughout the unit you are expected to strive to understand and learn about each event that you participate in, in addition to you continuously revising and discussing with peers the best method for the presentation of the science activities.

Non-Attendance and Extensions

Non-Attendance: Students unable to attend any of the meetings/workshops or make up the 50 hours towards the experiential component of this unit due to illness or other extenuating circumstances must fill in a special consideration request on-line at ask.mq.edu.au and provide formal documentary evidence as soon as possible AND contact A/Prof Joanne Jamie.

If an absence is anticipated (perhaps for a mandatory religious or University associated sporting event) you must inform the unit convenor in advance that this will be the case and discuss alternative arrangements. It is your responsibility to undertake this. Notification after the event of an anticipated absence will not be looked upon favourably. For any unjustified absences students will receive a zero mark for any assessment task that was missed.

Extensions: Students unable to complete a form of assessment on time due to illness or other extenuating circumstances must request special consideration at ask.mq.edu.au and provide formal documentary evidence as soon as possible and contact A/Prof Joanne Jamie to discuss possible

extensions. Extensions will be granted based on merit and will be more favourably considered if consultation with the unit coordinator on the need for an extension occurred BEFORE the due date. If there is no acceptable reason for a late submission, marks will be deducted up to 5% per weekday for every day late.

PACE and Related Policies and Procedures

PACE and Related Procedures and Policies

Please consult with the Faculty of Science PACE (team) for more information on the procedures and policies including:

1. Participation Activity – Commencement Prior to Unit Enrolment Procedure
2. Disruption due to Participation Activity Procedure
3. PACE Local and Regional Critical Incident Response Plan

PACE Grants and Prizes

To assist you in your involvement in the community engagement component of this course, you may be eligible for PACE grants. At the end of this unit, you will be eligible to apply for the Prof. Judyth Sachs PACE prize. Please see

http://students.mq.edu.au/opportunities/professional_and_community_engagement/grants_prizes/ for further information.