

## **AUTC Project - Learning Outcomes and Curriculum Development in Physics**

For all staff involved in organising or conducting focus groups

The identity of student participating in groups is only required on the Consent Form. Please remind students not to write their names on the individual written responses. The tape recording of the session may be used only for confirmation or clarification of particular points. It will not be transcribed in full.

Focus group sheets, consent forms, and tapes should be returned by the facilitator to:

AUTC Physics Project Officer  
Alberto Mendez  
School of Physics  
University of Sydney  
NSW 2006, Australia  
Telephone: (02) 9351 5982

If you have any queries, please contact Alberto.

### **Selection of students**

Staff in the physics department will be responsible for inviting 6 students, with a view to having a balance of breadth of interests. It will help by saving time in the focus group, if the person enlisting the students can give them each a copy of the sheet titled “A. Explanation to Student Participants in Focus Groups” at the time they accept the invitation.

The nominal duration of the focus group is 50 minutes, plus 5 minutes for welcome and finishing off.

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### Nominal Group Technique protocol

- Welcome by facilitator.
- Facilitator hands each student the following sheets:
  - B. Consent Form – Student Focus Groups,
  - C. Student Focus Group Questions, according to which group/subject-type,
  - D. Graduate Skills,
  - A. Explanation to Student Participants in Focus Groups if not already received.
- Participants fill in sheet B. Consent Forms and return it. Consent forms should be placed in a separate envelope within the main envelope.
- Participants spend 10 minutes answering the questions individually on form C.
- After the participants have filled in form C, they are asked, one by one, for their responses to the first question. The responses are written on butcher's paper by the facilitator and a discussion on those responses follows. Use a separate sheet of paper for each question. Please draw a column on the left hand side for students to later write their ranking of the items.
- With 4 questions  $\times$  7.5 minutes discussion per question, the total time spent to here should be ~40 minutes. All questions are important – IF there is a risk of running out of time, you may do question 4 in a shorter time (however note that Question 4 is important for service subjects).
- The facilitator provides students each with a marker pen. Participants are asked to look at the responses to each of the 4 questions, and then as individuals to rank the top 3 responses; the participants then marks 1, 2, and 3 against the chosen items on the butchers paper, for each question. (~5 minutes for ranking exercise)
- Finally the participants complete the sheet titled D. Graduate Skills, taking ~5 minutes, ticking the skills that they believe were present and/or were developed in their physics studies.
- The facilitator collects sheets C and D from every participant before leaving.
- Facilitator extends thanks to the participants.

## AUTC Project - Learning Outcomes and Curriculum Development in Physics



### A. Explanation to Student Participants in Focus Groups

29 July 2004

A study of teaching and learning in tertiary physics is being conducted for the Australian Universities Teaching Committee by a team led by Dr David Mills of Monash University and Dr Manjula Sharma of the University of Sydney. The study seeks to describe how physics teaching has responded to changes such as new technologies, student expectations, and multidisciplinary employment opportunities. We believe there will benefit to students taking physics, to employers and the community through improved teaching.

Students are invited to participate in focus groups of 4-6 students for approximately 1 hour to identify good teaching strategies and things which matter to students. The facilitator is a qualified person with no role in your course. The head of your physics department/school has given permission for student focus groups to be conducted.

Participation is voluntary; you may decline to be involved or may withdraw from the focus group at any point. If you have any queries please contact the Project Officer

Mr Alberto Mendez,  
School of Physics,

University of Sydney NSW 2006

Email: [alberto@physics.usyd.edu.au](mailto:alberto@physics.usyd.edu.au)

Telephone: (02) 9351 5982

The summary of your focus group is available to you on request. The Project report will be available at [www.physics.usyd.edu.au/super/AUTC/autc/](http://www.physics.usyd.edu.au/super/AUTC/autc/) by January 2005.

Confidentiality of data will be maintained by having the audio tape and written records only available to project staff responsible for the focus groups. Identities of participants will not be disclosed in records of the focus group or any other documents. An audio-tape of the session is taken in case particular points need to be clarified, but the original tape will be wiped to further protect the identity of participants as soon as the information from the session has been processed. The information will be kept secure, and data will be destroyed after the statutory time. Grievance procedures for this project are shown below.

Thank you for your interest.

Dr David Mills and Dr Manjula Sharma

Should you have any complaint concerning the manner in which this research ([project number 2004/042](#)) is conducted, please do not hesitate to contact the Monash University Standing Committee on Ethics in Research Involving Humans at the following address:

The Secretary

The Standing Committee on Ethics in Research Involving Humans (SCERH)

Building 3D

Research Grants & Ethics Branch

Monash University VIC 3800

Tel: +61 3 9905 2052 Fax: +61 3 9905 1420 Email: [scerh@adm.monash.edu.au](mailto:scerh@adm.monash.edu.au)

## **AUTC Project - Learning Outcomes and Curriculum Development in Physics**

### **B. Student Focus Groups – Consent Form**

I agree to take part in the above research project. I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records. I understand that agreeing to take part means that I am willing to:

- participate in a focus group session
- allow the focus group session to be audio taped

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party.

**Name** (block letters please)

**Signature**

**Date**

**Note:** This form is to be collected separately from your written responses on forms C and D. Please do not write your name on the other forms.

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### C. Student Focus Group Questions – 1st Year Service Physics

This is a focus group of 1<sup>st</sup> year students taking Physics as a service subject to gauge your opinions about teaching and learning in Physics.

Please fill in the following table. Do **NOT** write your name on this sheet.

Age	
Gender	
Did you do high school physics?	
(If applicable) Why did you decide to do high school Physics?	
Degree enrolled in	
Physics subjects/units done this year	

Please spend 8-10 minutes answering the following questions. Please write down brief answers (dot points); feel free to provide several points for the one question.

**1. What features of your first-year physics studies has most helped your learning?**

Focus on approaches, teaching and learning environments, assessment practices, *not* topics, individual lecturers, or how difficult physics is.

**2. What are the valuable skills and knowledge you have gained from your first-year Physics studies?**

**3. Has your first year Physics related Physics to the needs and directions of your degree? If so, how?** Focus on applications and any multidisciplinary aspects.

**4. What is the value or usefulness of your first-year Physics studies to your degree?** Focus on perceived relevance/importance *not* the credit points for the studies. Include any long-term perspective if possible.

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### D. Graduate Skills

Please fill in the following table by ticking the box that represents the level to which a particular skill or attribute was made use of or developed in your first year Physics studies.

Skill/Attribute	not at all	a little	some	A lot
<i>computational skills</i>				
<i>consideration of ethical and social issues</i>				
<i>experimental design</i>				
<i>information retrieval (electronic and print)</i>				
<i>laboratory skills</i>				
<i>oral communication</i>				
<i>problem solving</i>				
<i>project planning</i>				
<i>research methodology</i>				
<i>teamwork</i>				
<i>written communication</i>				

Please note any other significant skill which was developed:

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### C. Student Focus Group Questions – 1st Year Mainstream Physics

This is a focus group of 1<sup>st</sup> year Physics mainstream students to gauge your opinions about teaching and learning in Physics.

Please fill in the following table. Do **NOT** write your name on this sheet.

Age	
Gender	
Did you do high school physics?	
Why did you decide to do tertiary Physics?	
Degree enrolled in	
Are you intending to major in Physics?	Yes No Possibly (circle one)
Physics subjects/units taken this year	

Please spend 8-10 minutes answering the following questions. Please write down brief answers (dot points); feel free to provide several points for the one question.

**1. What features of your physics studies has most helped your learning?**

Focus on approaches, teaching and learning environments, assessment practices, *not* topics, individual lecturers, or how difficult physics is.

**2. What are the valuable skills and knowledge you have gained from your Physics studies?**

**3. Has your first year Physics related Physics to other areas of science and technology? If so, how?** Focus on applications, multidisciplinary aspects.

**4. Has your first year physics helped you find out about employment opportunities for Physics graduates? If so, how?**

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### D. Graduate Skills

Please fill in the following table by ticking the box that represents the level to which a particular skill or attribute was made use of or developed in your Physics studies.

Skill/Attribute	not at all	a little	some	a lot
<i>computational skills</i>				
<i>consideration of ethical and social issues</i>				
<i>experimental design</i>				
<i>information retrieval (electronic and print)</i>				
<i>laboratory skills</i>				
<i>oral communication</i>				
<i>problem solving</i>				
<i>project planning</i>				
<i>research methodology</i>				
<i>teamwork</i>				
<i>written communication</i>				

Please note any other significant skill which was developed:

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### C. Student Focus Group Questions - 3<sup>rd</sup> Year Physics

This is a focus group of 3<sup>rd</sup> year Physics students to gauge your opinions about teaching and learning in Physics.

Please fill in the following table. Do **NOT** write your name on this sheet.

Age	
Gender	
Did you do high school physics?	
Why did you decide to do tertiary Physics?	
Degree enrolled in	
Physics subjects/units done in 3 <sup>rd</sup> year	

Please spend 8-10 minutes answering the following questions. Please write down brief answers (dot points); feel free to provide several points for the one question.

**1. What features of your physics studies has most helped your learning?**

Focus on approaches, teaching and learning environments, assessment practices, *not* topics, individual lecturers, or how difficult physics is.

**2. What do you think are the valuable skills and knowledge you have gained from your Physics studies?**

**3. Have your Physics studies related Physics to other areas of science and technology? If so, how?** Focus on applications, multidisciplinary aspects.

**4. Have your physics studies helped you find out about employment opportunities for Physics graduates? If so, how?**

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### D. Graduate Skills

Please fill in the following table by ticking the box that represents the level to which a particular skill or attribute was made use of or developed in your Physics studies.

Skill/Attribute	not at all	a little	some	a lot
<i>computational skills</i>				
<i>consideration of ethical and social issues</i>				
<i>experimental design</i>				
<i>information retrieval (electronic and print)</i>				
<i>laboratory skills</i>				
<i>oral communication</i>				
<i>problem solving</i>				
<i>project planning</i>				
<i>research methodology</i>				
<i>teamwork</i>				
<i>written communication</i>				

Please note any other significant skill which was developed:

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### C. Student Focus Group Questions - Postgraduate

This is a focus group of postgraduate Physics students to gauge your opinions about teaching and learning in Physics. Participants should have done their undergraduate physics at the institution where this focus group is being conducted.

Please fill in the following table. Do **NOT** write your name on this sheet.

Age	
Gender	
Did you do high school physics?	
Why did you decide to do undergraduate Physics?	
Name of undergraduate degree completed	
How many year of postgraduate study have you done?	
Have you done any teaching, tutoring or demonstrating to undergraduates?	
Has your teaching affected your view of the way your undergraduate Physics studies were taught? If so, how?	

Please spend 8-10 minutes answering the following questions. Please write down brief answers (dot points); feel free to provide several points for the one question.

**1. What features of your undergraduate physics studies has most helped your learning?** Focus on approaches, teaching & learning environments, assessment practices, skills *not* topics, content or individual lecturers, or how difficult physics or maths is.

**2. What do you think are the valuable skills and knowledge you have gained from your undergraduate Physics studies?**

**3. Did your undergraduate Physics studies relate Physics to other areas of science and technology? If so, how?** Focus on applications, multidisciplinary aspects.

**4. Did your undergraduate physics studies help you find out about employment opportunities for Physics graduates? If so, how?**

## AUTC Project - Learning Outcomes and Curriculum Development in Physics

### D. Graduate Skills

Please fill in the following table by ticking the box that represents the level to which a particular skill or attribute was made use of or developed in your undergraduate Physics studies.

Skill/Attribute	not at all	a little	some	a lot
<i>computational skills</i>				
<i>consideration of ethical and social issues</i>				
<i>experimental design</i>				
<i>information retrieval</i>				
<i>laboratory skills</i>				
<i>oral communication</i>				
<i>problem solving</i>				
<i>project planning</i>				
<i>research methodology</i>				
<i>teamwork</i>				
<i>written communication</i>				

Please note any other significant skill which was developed: