

## Review of the Student Learning Experience in Physics

### Questionnaire for Directors of Teaching

#### Preliminary Data

Please complete the details below, answering on behalf of your department rather than as an individual. No identification of particular departments, or members of staff, will be made in any report derived from this questionnaire. Year 4 is the final year of an MPhys/MSci course, Year 3 the final year of a BSc. Year 0 is a Foundation Year (or the first year in Scotland).

University:

Name of Department:

Your Job title:

Web site of department:

Web site of Physics course:

### Section 1 Departmental Facts and Figures

#### Staff

How many members of staff teach in the department? Please distinguish part-time staff as P.T.

Professors/Readers .....; Senior lecturers .....; Lecturers .....; Teaching fellows.....;

Tutors, Laboratory Instructors, and similar associate staff .....; Post-doctoral fellows with some teaching duties .....

How many of the teaching staff are: Male ...? Female .....

How many members of staff have an H.E. teaching qualification .....? Are currently undertaking one.....?

#### Students

How many students (FTE) are there currently in the department in

Year 0 .....; Year 1 .....; Year 2 .....; Year 3 .....; Year 4 .....

What was the intake in 2005 .....; 2006 .....; 2007 .....

What 'A' level points score/set of grades (or equivalent) was asked for BSc entry in

2005 .....; 2006 .....; 2007 .....

What 'A' level points score/set of grades (or equivalent) was asked for MPhys/MSci entry in

2005 .....; 2006 .....; 2007 .....

For BSc, what minimum 'A' level (or equivalent) score was required in Physics?.....

No minimum

For BSc, what minimum 'A' level (or equivalent) score was required in Mathematics? .....

No minimum

How many students achieved each **BSc degree** grade in:

2007: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?(e.g. 3, pass, aegrotat)

2006: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?

2005: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?

How many students achieved each **MPhys degree** grade in:

2007: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?(e.g. 3, pass, aegrotat)

2006: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?

2005: ..... Class 1; ..... Class 2.1; ..... Class 2.2; ..... other degree?

Do you have student grants or bursaries available of value £1k or more, specifically for Physics (or Physics-related) degrees (Yes/No)?

How many such bursaries does your department offer per year?.....

How many are usually taken up?.....

**Programmes**

Is transfer possible between BSc and MPhys/MSci part-way through the course (Yes/No)?

Does the Department offer

i) BSc with an industrial placement scheme (Yes/No/intending to introduce)?

ii) MSci/MPhys with an industrial placement scheme (Yes/No/intending to introduce)?

If your department runs **joint** honours degree courses (Physics with ... , or Physics and ...) where Physics is approximately 50% of the degree content, which are the three most popular **joint** subjects?

1.....

2.....

3.....

If your department runs **combined** honours degree courses (Physics with ... , or Physics and ...) where Physics is significantly more than 50% of the degree content, which are the three most popular **combined** subjects?

1.....

2.....

3.....

**Student support**

Does your Department/School have a Personal Tutor system (Yes/No)?

Does your Department/School have a senior student mentoring system (Yes/No)?

Any comments on these schemes?.....

.....

.....

**Section 2 Teaching, Learning, Feedback and Assessment**

**2.1 Developing teaching skills**

1. Does the *department* provide a course of teaching skills for new members of staff? (Yes/No)
2. Does the *university* provide an *accredited* (certificated) teaching skills course? (Yes/No)
3. If so, are new staff recommended  obliged  to attend the departmental course?  
recommended , obliged  to attend the university course?
4. Do you, or anyone else, observe members of staff teaching – formally, or informally? (Yes/No)
5. Do you think the way in which teaching quality is monitored in your Department is fair and fit for purpose? (Yes/No)
6. Has any member of staff been promoted primarily on the basis of good teaching? (Yes/No)

**2.2 How much teaching?**

1. What is the departmental norm for staff for direct student contact load?.....hours/week
2. Is there a variation in teaching allocation between strongly research-oriented staff and less strongly research-oriented staff? (Yes/No)
3. Who does most of the teaching of *workshops, seminars and tutorials*:  
post doctoral fellows , post graduates , lecturing staff , split but mainly lecturers ,  
split but mainly others ?

## 2.4 Teaching provision

### 2.4.1 General

1. What percentage of your lecture rooms and classrooms would you rate as:  
excellent, modern teaching space with all facilities available .....%  
reasonable accommodation with most facilities available .....%  
teaching rooms in need of refurbishment and additional facilities .....%
2. Is attendance at teaching events compulsory for students? Lectures....(Yes/No);  
Tutorials....(Yes/No); Labs...(Yes/No); Other...(Yes/No) *if yes, please specify*.....
3. Is attendance at teaching events monitored? (Yes/No/Sometimes)
4. In an average semester week what would be the distribution of the *number of formal teaching hours* that students would experience? –  
Lectures      tutorials      project work      lab work      other (please specify)  
Year 0  
Year 1  
Year 2  
Year 3  
Year 4
5. How many additional hours of *independent study (including work set for tutorials and workshops)*, would be expected of students during a week in the department?  
Year 0 .....hr; Year 1 .....hr; Year 2 .....hr; Year 3 .....hr; Year 4 .....hr.

### 2.4.2 Tutorials (i.e. a small group of students – 2-6 – directed by a tutor specific to that group)

1. What size is a student tutorial group? Year 0 .....Year 1..... Year 2..... Year 3..... Year 4.....?
2. Are there types of group teaching in the department other than lectures and tutorials (Yes/No)?
3. If yes, please specify: .....

### 2.4.3 Lab work

1. What is the ratio of supervisors/demonstrators to students? One supervisor to ..... students in year 0; to ..... students in year 1; to ..... students in year 2; to ..... students in year 3; to ..... students in year 4.
2. Are experiments allocated , selected by student , some of both ?
3. Do students undertake pre-lab activities (Yes/No/Some); post-lab activities (Yes/No/Some)?
4. What proportion of work carried out in the laboratory is open ended – in Year 0 .....%; year 1 .....%; year 2 .....%; year 3 .....%; year 4 .....%?
5. Are there significant health and safety restraints against mounting the type of laboratory course you would wish to provide for students? (Yes/No)
6. Are there significant financial restraints against mounting the type of laboratory course you would wish to provide for students? (Yes/No)
7. What percentage of your teaching laboratory accommodation would you describe as:  
i) thoroughly modern, recently upgraded to near research standard?.....%  
ii) adequate, but lacking a few modern features?.....%  
iii) in need of upgrading, lacking some modern instrumentation and facilities?.....%

#### 2.4.4 Group work

1. What forms of *group work* do students experience during their course – projects , problem solving or problem based learning activities , lab classes , joint presentations , other ? Please specify .....

#### 2.5 Assessment

1. What forms of *summative assessment* are used in your department (*please tick all that apply*)?  
marked coursework (essays/reports  problems  laboratory exercises ,  
tests (objective tests/multiple choice  short answer   
computer assessment ,  
long written examinations   
oral examinations   
laboratory examinations   
observation of practical performance   
projects   
oral presentations   
poster presentations   
group work   
other  (Please specify .....)
2. Typically, how often are students assessed? – during a module , at the end of a module ,  
at the end of a semester , at the end of an academic year .
3. Is formative assessment used as well as summative assessment (Yes/No/Don't know)?
4. Is formative assessment in the same styles as summative assessment (Yes/No/Don't know)?
5. What percentage of students progressed from Year 1 of an honours degree into Year 2  
in 2005..... ? in 2006..... ? in 2007..... ?
6. What percentage (over the past three years) of students progressed into Year 2, but  
subsequently failed to obtain a degree?.....

#### 2.6 Feedback on teaching

1. Does the department have a policy and procedure to collect feedback from students (Yes/No)?
2. Does the department have a student complaints procedure (Yes/No)?
3. Does the department have a student/staff committee (Yes/No), or student representatives on a departmental teaching committee (Yes/No)?
4. Is student feedback on teaching considered formally by the department (Yes/No)?
5. Are students involved in course or module development (Yes/No)?
6. Do you think that students in your department are effective in influencing staff teaching (Quite a lot/Some/Not at all)?

#### 2.7 Project work

1. How many course credits (out of a nominal 120) are allocated to student project work?  
Year 0.....; Year 1.....; Year 2.....; Year 3.....; Year 4.....
2. Is project work done individually (enter I), in pairs (P), or in groups (G)?  
Year 0.....; Year 1.....; Year 2.....; Year 3.....; Year 4.....

## 2.8 Other strategies

1. Have you incorporated Enquiry-based learning/Context-based learning/Problem-based learning into your teaching programme (Yes/No/Don't know)?
2. Does your department have a specific strategy to develop the problem-solving abilities of students (Yes/No/Don't know)?

## 2.9 Non-Physics subjects

1. Do you provide *compulsory* mathematics modules in: Year 0? (Yes/No); Year 1? (Yes/No); Year 2? (Yes/No); Year 3? (Yes/No); Year 4? (Yes/No).
2. Is mathematics taught within the department  by an outside department or lecturers  A mixture of both ?
3. Can students chose optional modules in advanced mathematics? (Yes/No)
4. Do opportunities exist in your degree courses for students to elect to study other subjects outside physics (Yes/No)?
5. Are such opportunities optional ? or compulsory ?
6. Do students have all free choice ? choice but with recommendations or restrictions ? no choice ?
7. Which of the following subjects, other than mathematics or computing, are available?  
other science  philosophy   
languages  other non-science (e.g. humanities)   
business/accountancy/management
8. How many course credits (out of a nominal 120) would the study of question 7 represent?  
Year 0.....; Year 1.....; Year 2.....; Year 3.....; Year 4.....

## Section 3 Curriculum

### 3.1 Teaching and research

1. Do you aim to develop a link between teaching and departmental research?  
Yes  No  Don't know
2. Do you think this link is important?  
Yes  No  Don't know

### 3.2 Curriculum

1. How would you describe the curriculum you are trying to teach? *Tick all that apply-*  
Modern  traditional  old fashioned  academic   
applied  innovative
2. Which (if any) of the following areas do you consider it essential to include if student interest and/or recruitment is to be maintained?  
Astronomy/astrophysics  Cosmology  Particle Physics   
Quantum computing/information  Superconductivity   
Nanotechnology  Other  (Please specify.....)

### 3.3 Curriculum development

1. Who has responsibility for curriculum development? Head of Department   
Director of Teaching  Departmental Committee  Individual lecturers ?
2. Does the department have a policy of regular curriculum review and development (Yes/No)?

## Section 4 Developing practice

1. Does your University have an ongoing teaching development programme for academic staff (Yes/No)?
2. Does your individual department/school arrange teaching development activities? (Yes/No)
3. How many of your staff regularly attend workshops, seminars or conferences on physics education?.....
4. Is anyone in the department actively engaged in Physics education research (Yes/No)?
5. Has your department/school introduced and particularly effective teaching technology recently? (Yes/No) *if yes, please specify*.....  
.....
6. Do staff use physics-based wikis, blogs or social networking sites? (Yes/No/Don't know)?
7. Do students use physics-based wikis, blogs or social networking sites? (Yes/No/Don't know)?

## Section 5 Employability

### 5.1 Programme content

1. In your University does the responsibility for providing careers advice rest with (i) the department ? (ii) the university ? (iii) both ?
2. At any time during their programme are students given help with  
writing a job application (Yes/No)?  
preparing a *curriculum vitae* (Yes/No)?  
preparing for an interview (Yes/No)?
3. Are courses of the following type available to your students?  
Business studies ?  
Innovation ?  
patents and intellectual property rights ?  
nothing of this type ?  
Health and Safety regulations ?
4. If you do not include course material related to employability at the moment, has it been considered and rejected ? not considered ?
5. Does the department expect students to keep an academic portfolio/PDP/personal log (Yes/No)?

### 5.2 Work placement (if offered by the department)

1. Does your department work placement scheme last 3 months ? 6 months ? a year ? some other length of time ? ..... ?
2. Is it optional ? or obligatory ?
3. If optional, what proportion of students take up a work placement opportunity? .....
4. Are placements arranged by the department ? individual students ? either/both ?
5. Are students able to take up placements only in the UK ? in the UK and Europe ? worldwide ?
6. Is course credit given for work placement on BSc (Yes/No)? on MPhys (Yes/No)?
7. Do you think that work placement is a good way to prepare students for employment? (Yes/No)
8. Do students have to make a report on their work placement? (Yes/No)
9. Do the employers also have to make a report? (Yes/No)

10. Do these reports form part of the assessment scheme for the degree? Student report (Yes/No); employer report (Yes/No).
11. Is the content of these reports reviewed (Yes/No), and used to improve the work placement system? (Yes/No)

### **5.3 Student University exchange schemes (if offered by the department)**

1. Does your department participate in any student University exchange scheme (Yes/No)?
2. If so does it last 3 months ? 6 months ? a year ? some other length of time ..... ?
3. What percentage of students take part?.....
4. Are placements arranged by the department ? or individual students ?
5. Are students able to go on exchange only in Europe ? worldwide ?
6. Is course credit given for work completed while on an exchange (Yes/No)?
7. Do students have to make a report on their exchange activities? (Yes/No)
8. Is the content of these reports reviewed (Yes/No), and used to improve future exchange arrangements? (Yes/No)

### **5.4 Input from employers/employees**

1. Is there an established procedure to obtain regular feedback from employers of your graduates? (Yes/No)
2. Is there an established procedure to obtain regular feedback from graduates who are now employees? (Yes/No)
3. Do you think employers believe that the MSci/MPhys is a more valuable degree than a BSc? (Yes/No)
4. Has the answer to this question influenced the promotion of your courses (Yes/No)?
5. Do employers visit the department to give guest lectures about their careers or companies? (Yes/No)
6. Are employers invited to contribute to course planning (Yes/No)?
7. Do you think your Department engages effectively with employers (Yes/Sometimes/No)?
8. Are any industrialists teaching on your courses (Yes/No)?

## **Section 6 The Secondary-Tertiary transition**

### **Entry**

1. Does your Department run any diagnostic tests on entry (Yes/No)?
2. If yes, in what subject areas? mathematics  physics   
other  (Please specify..... )
3. (i) If so, do you find the diagnostic information  
essential  very useful  useful  not very useful ?  
(ii) Is special support provided for students diagnosed as exceptionally strong? (Yes/No)  
(iii) Is special support provided for students diagnosed as less able? (Yes/No)?
4. Are Year 1 tutorials (or any other classes) streamed by "ability" (Yes/No)?
5. Is there any other identification (and special support) on entry of  
(i) exceptionally strong students? (Yes/No)  
(ii) less able students? (Yes/No)
1. Do you feel that first year modules in your department take into account the variations between pre-University courses? Yes  No  Don't know

**Section 7 Do you have any other comments?**

## **Additional Interview Questions for Directors of Teaching**

### **Teaching provision**

1. In your departmental teaching programme, what is working – what is not working?
2. Do you think students pay much attention to learning outcomes?

### **Lab work**

1. Are lab courses, or anything else, constrained at all by resources? In what ways, and to what extent?

### **Courses taught**

1. What is the structure of your degree course?
2. Are you thinking about Bologna?

### **Project work**

How are students guided in project work? (e.g. half-hour tutorial in student pairs with staff member)  
How is project work assessment carried out?  
Who does the project work assessment?

### **Other strategies**

What vehicles have you used to incorporate Enquiry-based learning/Context-based learning/Problem-based learning into your teaching programme?  
How have the students reacted to this method of teaching and learning?  
Do you ask all students to buy a particular physics and/or mathematics textbook in Year 1 or Year 2? If so, which ones?

### **Non-Physics subjects**

If opportunities exist in your degree courses for students to study subjects outside Physics, are they encouraged to do so?

### **Curriculum development**

1. In recent years, what topics have been added to the curriculum?
2. What topics have been dropped from the curriculum, if any?
3. Are there topics that ought to have found their way into the teaching programme but have not done so yet? What are they?
4. If you were asked to develop the curriculum, what changes would you like to see made?
5. How do you think that developments in the curriculum have improved the students' learning experience?
6. Do you have any comments on the QAA Physics, Astronomy and Astrophysics Benchmarking statement and its relevance for your degree schemes?
7. Do you have any comments on the IOP "Core of Physics" and its relevance for your degree schemes?

### **Work placement**

1. If you offer work placement, do you know why it is popular with students, or why not?
2. Would you say the better students are the ones to take up work placements? Are they the ones who benefit most from it?

### **Student University exchange schemes**

1. If exchange schemes are offered to students, do you know why they are popular, or why not?
2. Would you say the better students are the ones to go on an exchange? Are they the ones who benefit most from it?

### **Input from employers/employees**

What have you learned through feedback from employers, and graduates; how has it affected your teaching programme?

What makes you think employers are satisfied with your graduates?

If there are industrialists teaching on your courses, what do you and they believe are the benefits?

### **Secondary/Tertiary transition**

Do you think school courses are preparing students effectively to begin a university physics course? In what ways could this preparation be improved?

Have you recognised specific problems in teaching, learning or pastoral care of recent student intakes?

### **Special arrangements for disability needs**

2. Do you have any particular useful experience/good practice that you can share?