Professional Skills for Physicists: Seminars I

Communication and Team Work

October 2007 – January 2008

How to use this document:

– **In week 2/3 of Term 1**, read up to and including the section on the 'Topic Review', i.e. pages 3–12 of this booklet. This will give you an overview of the seminar series and set you up for the first part of the course on written communication, including Assessment Task 1.

– **By week 8**, read through the paperwork on the Group Presentation Project (Assessment Task 2, pages 13–19). The organisation of this task has some complexities that this written description takes you through.

– **Early in term 3**, read through the short description of the tutorial talk you will deliver. This is on pages 20-21 in the printed/pdf versions of this document.

– Appendices A to D (pages 22–27) are there for you to consult when appropriate.

Aims & Objectives

The first component of the weekly seminar series will occupy the whole of the first term, and the first two weeks of the second. It will be followed up, at a later time, with the requirement to prepare a short (8–10 minute) talk to be given to your academic tutor and tutorial group.

The primary aim of this course component is to give you practice in some important transferrable skills that are valuable both in the long term, and more immediately in your work as an undergraduate. These mainly concern written and spoken communication, viewed as a two-way process: on the one hand you should aim to be effective in gathering and making sense of information; on the other, it will be important also to be able to convey your knowledge and understanding to others. This seminar series is built around the idea that the best way to acquire these skills is through continuing practice, supported by advice. We will also be looking at the standards of scholarship we will increasingly expect of you in the referencing of the work and ideas of others.

In today's world, the common experience is to have to work alongside others in teams – be they formal groupings or looser temporary alliances. For many people with an aptitude for science, this kind of working is not the preferred style: many of us are more comfortable defining and pursuing our own goals without having to accommodate to the changing views of colleagues. So team-working is another area in which it is valuable to accumulate experience. Beginning from within your weekly seminar you will participate in a 6-week group project, starting in week 8 of term 1, that culminates in a presentation to your peers, early in term 2. The ground rules and timetable for this project are laid out in this document. A further benefit of the group project and, indeed of the seminar series as a whole, is that it is a venue in which you meet and get to know more of your fellow students.

At the end of this course component (including the tutorial talk), you will have

- improved (through guidance, practice and feedback) your ability to read technical literature for understanding and to summarise it.

- begun to grasp how professional scholarship places high value on the accurate referencing of literature/web sources (and so better avoid unintended plagiarism)

- experienced working within a formal group, where delegation of tasks and effective communication and pooling of ideas are essential to success.

- thought about how to select material from a body of researched literature in order to present it both as a talk and on paper.

- had individual practice in giving a talk to a small group of peers.

Course Assessment

'Communication and Team Work' is assessed by 3 items of coursework. These will contribute up to 15% of the marks for the credit unit that also incorporates 'Problem Solving' (Seminars II), and the 'Structure of Matter', ' Vibrations & Waves' and 'Quantum Physics' lecture courses (all assessed by test/examination). These three coursework items are:

- A $\leq$500-word summary report of a research topic of current interest. The topic you are required to describe will be defined by your seminar leader early in the first term. He/she will give a short verbal outline of the topic and provide some photocopied material about it. You will then further explore the topic on your own, in order to prepare the written summary identifying the context of the research, its purpose, and the new advance it makes. This will be marked and graded by your seminar leader.
  (Worth up to 1/4 of the Seminars I grade)

- Presentation of a group project and portfolio. This exercise will occupy the later stages of the first term, and carry over into the first two weeks of the second term. Working in a group of 5 to 7 students, you select a topic to present, research it and then prepare and deliver a 13-minute verbal presentation to the rest of your seminar group. In order to document the process, each group will also develop a portfolio that (i) describes how the group has organised its working and (ii) identifies the source material used. Both the portfolio and the presentation will be assessed. Individually you will be required to submit a short self-evaluation of your team-working, to be enclosed with the portfolio at hand-in.
  (Worth up to 1/2 of the Seminars I grade)

- Tutorial talk. This activity will be organised by your academic tutor – in week 4 of term 3. You will prepare and give an 8–10 minutes talk on your own.
  (Worth up to 1/4 of the Seminars I grade)

Seminar attendance

Attendance at the seminar series is compulsory. A register of attendance will be kept. If you cannot attend because of e.g. sickness, a family crisis... you must notify your seminar leader as speedily as possible, and (where possible) in advance. Email is usually the best means of communication – you will find your seminar leader's email address below.

On your return from an absence, you should collect a self-certification form from the Undergraduate Office on level 3, fill it in, and return it to the Office to be linked to your personal record. Always do this, regardless of the reason for your absence.

At the end of the academic year, the seminar team reserves the right to multiply credit gained from the formal assessment by the fraction of seminars attended. This sanction will be applied where there has been frequent unjustified absence.

Seminar Team: Contact Details

Dr Y. C. Unruh (Seminars Organiser, seminars x1, x2: room Blackett 1114, email y.unruh)
Prof. M. Dougherty (seminars y1, z2: email m.dougherty),
Prof. A. Jaffe (seminars a1, a2: email a.jaffe),
Dr. R. A. Smith (seminars y2, z1: email r.a.smith),
Prof. T. Sumner (seminars b1, b2: email t.sumner),
Dr. J. Tisch (seminars c1, c2: email john.tisch),

Seminar Diary

Week 2: Introductions
Meet your seminar leader and fellow students.

Week 3: Understanding and summarising I
Friday afternoon seminars will be moved forward to Friday morning, this week only.
In-class practice and discussion of the requirements of effective science text comprehension and summary. A longer article will be given to you at the end of the session to summarise for week 4 (word limit: 300).

Week 4: Understanding and summarising II
In-session review of the practice article summary. You will get to read other students' summaries in an attempt to identify 'the best'. The session will end with a short discussion of what was needed in a good summary. Also your seminar leader will collect the summaries in for some further review.

Week 5: Plagiarism v Scholarship; Topic Review I
The session will start out with a discussion of examples of the right way, versus the many deficient ways, of referring to sources used to inform your writing or presentations. We want you to put this greater insight into immediate use in the way you write your topic review. The seminar will finish with an introduction to the topic review you will be required to write (word limit 500): the topic/field of research to be described will be identified. You will receive supporting photocopied hand-outs and some tips on how to research the topic.

Week 6: Topic Review II
Your seminar leader will give a short presentation on the topic you have been asked to tackle. You will then have an opportunity to ask any questions you have about it. After this session, you are expected to write up your topic review, to have it ready to hand in no later than the week 8 seminar.

Week 7: Path to the future: enhancing employability
This session is geared towards eventual career planning. It will incorporate a ranking exercise, followed by discussion, that aims at raising issues relevant to making your way, successfully, towards a preferred career (whatever that may be).

Week 8: Group Project I: Introduction
Hand in your topic review for marking no later than at this seminar
This seminar will include a discussion of different team-working roles and you will be asked to complete a simple psychometric test that will give some insight into the team roles that suit you. In your groups you will discuss how you want to organise yourselves, and begin to consider possible topics.

Week 9: Group Project II
This is the second seminar given over to group project planning and development. Your

seminar leader will want to discuss with each group how ideas on the choice of topic are developing.

Week 10: Group Project III
The third seminar given over to project group meetings and discussion with seminar leaders about matters arising. The exact topic to be presented should be finalised no later than at this meeting.

Week 11: Group Project IV
Your seminar leader will go through the "dos and don'ts" of presenting. For many groups this could be the last chance to meet and delegate tasks to be completed separately over the Christmas vacation. Each group will need a clear vision of where it wants to be at the start of the second term, when the presentation will need to be rehearsed.

CHRISTMAS VACATION; note that term starts on Thursday 3rd January. Groups a1 to c2 will have their first seminar session in week 1, groups x1 to z2 in week 2. Seminars finish in week 11 for groups a to c, in week 12 for groups x to z.

Term 2, Week 1: Group Project V
By this time, group presentations should be advanced to the point that they might be rehearsed and fine-tuned. Your seminar leader will be checking on the state of your presentations and your plans for rehearsing them. Information will be provided on departmental room availability for rehearsing.

Term 2, Week 2: Group Project Presentations
Each group will have a maximum of 13 minutes to present their material. You will be asked, when listening to other groups presenting in your seminar, to jot down some constructive comment that can be fed back in Week 3.

Term 2, Week 3: Project talk feedback → Seminars II (Problem Solving)
Group portfolios are to be handed in, together with individual self-evaluations.
Each group will receive informal feedback on how their presentation, in week 2, went. You will receive Section A of the 'Problem Solving' script in the latter part of this seminar.

Term 2, Weeks 4–11: Professional Skills for Physicists, Seminars II (Problem Solving)
This second component of the seminar series is described in separate documentation.

EASTER VACATION

Term 3, week 4
At a time arranged with your academic tutor, you will give a short talk on a topic of your own choosing to your tutorial group. This will be assessed by your tutor, who should provide you with some individual written feedback.

Supporting textbooks

Given that this is a course where the emphasis is on gaining experience and seeing how others do things, and not upon abstract knowledge, it is not one that demands textbook support. However you may find the following three of use or interest:-

1. We expect to be able to give you a College-produced booklet during the first term that is well worth the modest amount of time it takes to read: entitled 'Learning to Learn', it is an introduction to being a student in university. This will be of most use to you if you read it sooner rather than later. It advises on how to use your time as a student effectively.

2. A full-scale book aimed at first year physics undergraduates like you is:

- 'Studying Physics' by David Sands, published in the Palgrave Study Series by Macmillan (ISBN 140390328X). The list price is $12.99.

In a review, this book has been summarised as "A unique guide to the essential skills in physics that a student will need to acquire by the time they graduate." It discusses the mind-set and methods of the physicist, the point of mathematics in physics and how the university subject feels different from school physics. It finishes with a chapter on report-writing and giving talks.

3. To help you specifically with the business of giving presentations, a book that you might like to either borrow from the libraries or buy for yourself is:

- 'Speaking Technically' by Sinclair Goodlad, published by Imperial College Press (ISBN 186094034X). Recently listed by Amazon as costing about $8.

This book is a comprehensive guide to the mechanics of giving talks with a technical/scientific content, written by a now-retired member of the College's Humanities Department who spent many years helping College staff improve technique.

Reading for Understanding & Summarising, weeks 3/4

Week 3

The very general task of reading scientific literature for understanding and assimilation begins to be considered. This is basic to survival as a working scientist both at university and beyond. More immediately, this is a skill that critically underpins all three assessment tasks set within 'Professional Skills for Physicists I'.

In this session, you will read and summarise short pieces of science news in the form of bullet points. After these have been pooled, there will be some reflective discussion of the nature of the task. At the end of this session, you will be given a copy of a longer article to take away, read and summarise for week 4.

Week 4 – bring your $\leq$300-word article summary to this session

Writing a length-limited summary of the kind requested here is not easy to do well – its intellectual challenge lies in the need to distil and prioritise the original article's content. In the week 4 session, you will pass it over (anonymously) to other people in your seminar group to read through and feed back on informally. By the end of the seminar, everyone will have had the chance to read what is judged to be the best summary of the entire set. When all is over, your seminar leader will collect the summaries in, in order to read and advise on your writing.

How your summary should be presented:-

– Use the title of the article you have been given as your title.

– The summary itself, excluding the title, should not be longer than **300 words**.

– A word count should appear at the bottom of the summary.

– DO NOT write your own name at the top of it – use a pseudonym of some kind that you expect to be distinctive. The in-class review of the summaries is to be anonymous.

– Adopt a plain-speaking (e.g. broadsheet newspaper) style of writing. Do not try to be funny or hype-up what you are saying. The main aims of most writing we have to do as scientists are to ensure clarity and to convince. To convince we have to be taken seriously. (See also Appendix C)

In preparing your own summary, and in assessing others that you get to read, these are the features to look out for:

- – Easy legibility. Presence of word count.

- – Good use of English, spelling, paragraphing, appropriate writing style

- – Information content (good summaries deftly pack in the information)

- – An overarching logic that reflects the spirit of the original article

Note that there is usually some tension between the last two of these categories: getting the balance right between holding on to information and needing to tell a clear well-ordered story is at the heart of this task.

Assessment Task 1: Topic Review – Weeks 5 & 6

This is an assessed piece of work. You will review a specified topic in **not more than 500 words**.

Think of it as a summary review such as you might prepare for an educated professional (...minister of state, ...your PhD supervisor, ...a company technical director). Your aim is to give as well-explained, jargon-free and complete a review as the upper word limit allows you. It is also very important that you refer appropriately, in text, to the literature or web sources you are drawing on. For writing style, adopt the plain-speaking language of the quality newspapers (e.g. The Guardian and Daily Telegraph) and intelligent magazines (e.g. The Economist).

Why you have been asked to do this

In the article summary exercises you have just completed, the essence of the task was the business of reading and seeing the point of science literature. Now we'd like you to take this a bit further, both in terms of the kind of literature you begin with and the piece of work you produce. This task will expose you to examples of a more formal writing style, closer to that of professional science (in which you will see proper referencing at work). Here it is particularly important to try to pass beyond straightforward information-gathering in order to grasp the big picture – this is what your senior professional who has commissioned the review will want to know about. He/she will not want to be bothered with trivial detail. Instead, the interest will be the context, the aims of the work, what is new, and where it all might lead.

Once again, then, this is an exercise that practises your comprehension and research skills. The difference with respect to narrower summarising is that we want you to present a well-structured overview that draws upon more than the single source given to you.

Your seminar leader will also use this opportunity, in week 5, to go through with you how you should use researched sources without slipping into plagiarism.

What it involves

The starting point is to be a copy of a published article from a refereed professional science journal, or similar. This article will be about a particularly 'newsworthy' scientific advance that has taken place in recent times. You will most likely find this more challenging to read and take in. In fact we do not expect you to be able to sit down and read it like a novel – you may have to come back to it a time or two, after breaking off to explore other sources for help with jargon and some understanding of the background. Even if you are fortunate enough to understand the article without checking out other sources, you should gain a better idea of context by seeking out and reading related text-book material, or other journal articles.

So the approach here is to take the week, in between receiving this journal article and the Q&A session, to try and get 'into' the article and the point it is trying to make. By the time of the Q&A session you can help yourself by being ready to ask questions of your seminar leader after he/she has presented on the topic. We encourage you to share ideas and findings with other members in your seminar group to give you confidence and better focus regarding the best questions to ask. Once the Q&A session is over, you will have two weeks to write your review (see term diary for timetable).

Topic Review: basic layout of written piece

Word-processed submissions are preferred. Note that we require these to be in a font no smaller than 12pt. Hand-written is acceptable provided it is easily legible and in black or other dark pen. Make sure your name is on it.

Your piece should have your review topic as title.

If you decide you want to include a figure (this is *not* a requirement), it must have a caption. The text of the caption should include a reference to the figure's source. The words in the caption count as main text and so should be included in the word count.
Also include, at the foot of your piece, a list of references that gives all the details needed by the reader to recover your sources (see Appendix D). These should link up to your in-text references. One of these references will surely be the original article given to you by your seminar leader. DO NOT QUOTE WIKIPEDIA: it is a secondary, not a primary source – you can consult it to help you find your way into your topic and then move on from it to primary sources. If a list of references is not given, marks will be deducted (see below).

There should be a word count at the foot of your piece. If there is not you will lose marks. You will also lose marks if your piece is more than 500 words long (see below). Count just the words in the main body of text – do not include your name, the title, or the reference list at the end in the word count.

Topic Review: how it will be graded

The marking of these will be according to the following weighting scheme (out of a maximum available mark of 20):

- Use of English and paragraphing; suitability of writing style: **5**

- The appropriateness of the science overview presented, and its factual accuracy: **6**

- Logical flow, and evaluation of context: **6**

- The extent to which the piece engages the reader: **3**

Warnings:-

Marks deductions can be made on the following grounds: (i) too long a piece (1 mark to be deducted for every 10 words or part of 10 above the 500-word limit); (ii) absence of a word count (1 mark - 2 marks if it is also found that the piece is over the word limit); (iii) hard-to-decipher and/or scrappy presentation; (iv) absence of bibliography. The punishment for these last two infringements is at the marker's discretion.

As will have been explained to you, plagiarism is seen as a disciplinary offence equivalent to cheating. So do NOT lift and use material, word for word, from the internet or any other medium, unless you enclose it within quotation marks and clearly acknowledge the source. Make sure you have a clear picture of what plagiarism is. Ignorance of what it is will not be a defence that can be accepted. If you are found to have plagiarised you will risk losing most/all credit for work submitted and it will be reported to the Senior Tutor for possible further sanction.

Topic review: feedback/initial grading

Your review will should returned to you by your seminar leader before the end of term. Attached to it will be the breakdown of your grading and some qualitative feedback. This initial grading is provisional – there may be a minor rescaling at later moderation when the marks from all seminar groups are considered together.

Assessment Task 2: Group Presentation Project

It has been the experience among previous years of students in the department that these projects are among the most enjoyed tasks they have been set. This project is about teamwork, research, sharing of that research and presentation. Do not start out with the expectation that this is easy, because it is actually challenging to do well and calls on judgement and interpersonal skills to achieve the right balance between positive encouragement and critical intervention to correct growing problems.

To produce a good presentation you will have to get to work promptly in your groups, meet more often than just at the timetabled seminars, and pay careful attention to the *assimilation* of all the data/research you obtain communally. What you should be aiming for, as a group, is a well-integrated narrative with a clear point. The most common weakness in project presentations is that they fail to knit together, and come across instead as bulging sequences of undigested facts.

Projects approached casually, or that are the work of just one busy individual, usually come across as such when they are presented – there are no safe short cuts. Apart from the guarantee of a decent grade, the reward for commitment to this group task is a real and public sense of shared achievement. To produce something your group is pleased with, will take both your individual effort and attention to the team's cohesion. The outcome is much more a reflection of team-working skill than of individual intellectual brilliance.

Below you will find a definition of what each group is to produce, when it is to be produced and how it will be graded.

Overview of Group Presentation Project Goal and Timeline

- Assessment: participation in this project accounts for up to 1/2 of the total course mark. Half of this is allocated to the oral presentation, the other half to a written portfolio.

- The task: You work collaboratively in groups of about 6 on researching and preparing a **13-minute talk** to give to your seminar meeting in Week 2 of the second term. The talk should aim to engage and inform your audience of fellow students – you may try to answer a question in it, tell a story and/or place in context a piece of science that interests you. Whatever the topic chosen, the presented content should centre on a scientific or technical issue.

- Presentation preparation timetable:- The introductory seminar will introduce a language for describing teamworking roles (the widely-used Belbin scheme) and you will be placed in groups. It will then be up to you to arrange a first meeting in your group as soon as possible after the introductory session so you can start choosing a topic and decide who might be best suited to looking after the group paperwork. Four further seminars will be given over to project preparation before your group has to present. In addition, your group should get together several times, outside seminars, to discuss what needs to be done and, eventually, to rehearse the presentation (at least once).

- Presentation: these will be given in week 2, term 2.

- Visual aids: a laptop and laptop projector will be available. Your seminar leader will advise you on how you will be able to access this on the day of the presentation.

- Group portfolio: each group is required to compile a project portfolio to be handed in, in week 3, term 2, a week after the presentation. The required contents of the portfolio are defined in the section entitled 'The Group Portfolio'

- Peer assessment: as the portfolio is finally assembled, you are expected as a group to discuss the fair apportioning of the group's grade among the members. The main criterion for this marks profile is to be commitment to the group enterprise – for example, individuals who fail to attend group meetings without good reason or who fail to deliver on promises to complete tasks can reasonably expect to be given a reduced weighting. You are *not* assessing each other's charm or intellectual abilities.

- Self-evaluation: After the presentation, and in time to go into your group portfolio, you should also prepare your individual self-evaluation (described later).

- Group portfolio hand-in: hand it in to your seminar leader at the seminar 3, term 2, a week after the presentation.

- Grading and feedback: You will discover how your group has fared in the presentation in the Week 3/Term 2 feedback session. You will be given the overall grade for the project 2-3 weeks later.

Important advice

- Appendices B to D of this document contain basic advice relevant to preparing talks, giving them and writing bibliographies.

- Delegation is critical to success. For example, it is vital to identify a group member *early on* who will take on the role of 'group secretary' – he/she will be responsible for taking minutes and compiling the group portfolio. Another could usefully take on the leadership role of group 'co-ordinator' who communicates with group members about meeting times/places, chivvies people and perhaps chairs discussions. To help you think about who should do what, in your group, and perhaps provide a little personal insight, you will be given a questionnaire at the start that helps tease out your preferred roles in teamwork (the Belbin scheme, see the outline of it in http://www.belbin.com/belbin-team-roles.htm).

- As a team, you must blend and harness individual group members' aptitudes and enthusiasms. For this to happen, you need to take time to give each other a proper hearing, and be ready to positively acknowledge the contributions from other team members - even if (as should happen) some of those contributions end up unused. Equally, you should be ready, as an individual, to speak up if

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you have a concern that your group is failing to make satisfactory progress. A frequent group deficit is that everyone in it is too 'nice' and uncritical.

- In your groups, you choose your topic and decide how you want to present it – a list of topic suggestions is included here to help get you started. As few as just one group member can present when the time comes, or several/all may participate. The best option, usually, is to have 2 or 3 group members sharing the presenting.

- Marking schemes are given for both the presentation and the portfolio in later subsections.

Ideas for topics

Here are some ideas to start you thinking. You can choose one of these or think up something completely different yourselves. Before finalising your choice you should (a) do some preliminary checking out of the sources you will be able to access for this (to confirm they exist and are going to be helpful), (b) talk to your seminar leader about it.

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The prospects for controlled nuclear fusion
MRI in medicine
Self-organisation, sand piles and earthquakes
Fluidized beds
Maxwell's demon
Harnessing solar energy
The origin of the aurorae OR solar storms
The case for and against dark matter
The LHC project
What nanotechnology can do for us
Gravitational waves
Asteroid impacts on the earth
The origin of the earth-moon system
Terraforming Mars - fantasy or future?
Extrasolar planets in the habitable zone
Occam's Razor
Colour Vision
The physics of flight
The physics of Formula 1 racing (or another sport)
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The Group Portfolio

This should contain the following:

1. Cover page, identifying topic and presenting a list of group members

2. A list of the tasks undertaken by each group member

3. A meetings diary – for each meeting, the date, time, attendance and decisions of the meeting should be recorded. It is the group secretary's job to build up this record. We also recommend you include under this heading or as an appendix, copies of emails/notes passed between group members or anything else that helps illustrate how you worked.

4. A group 'commentary'. This is critical to getting a good mark, and involves careful reflection. It should contain

   (a) a description of how you decided to manage yourselves (e.g. were there any formal or informal sub-groupings? how did you deal with decision-making or resolve any conflicts? ...this amounts to the story line behind the list of tasks and meetings diary);

   (b) comments on the research and assimilation exercise (did the topic selected present expected or unexpected problems of any specific kind? – which source materials were most useful to you, and why?);

   (c) a statement of how you reached a decision on the marks profile across the group membership;

   (d) your proposal for the marks profile across the group membership. Express this as a set of weight factors achieving a mean value of 1.0. These will be used to rescale, for each group member, the numerical grade awarded to the group. Note that extreme proposals are more likely to be moderated by your seminar leader according to his/her judgement.

   Be self-critical in this document - with hindsight, would you have done anything differently? The total length of this commentary should not exceed 2 sides of A4. Your group 'co-ordinator' is probably the right person to take responsibility for drafting this. As this document speaks for the whole group, all group members should have the chance to see and comment on its content.

5. Prints of the presentation slides, or the slides themselves. These do not have to be in colour. In the case of a powerpoint or other electronic presentation, you would be well-advised to submit printed transparencies prepared as back-up in case of laptop/projector disasters ahead of the presentation itself.

6. A full bibliography of *all* sources consulted, prepared to a professional standard (see Appendix D)

7. A set of self-assessments. As these must be confidential, each group member should prepare his/her own and put it in its own envelope, and then give this to the group secretary collating the portfolio. The main reason for asking you to do this is to encourage you to reflect, individually, on the group exercise in order that you can learn from it. It also provides your seminar leader with insight into the decision the group reaches on the apportioning of the overall grade. The self assessments are not themselves graded.

Please note that incomplete portfolios will suffer a marks penalty.

Individual self-evaluation statement

You should submit your own short statement (of order 200 – 300 words) in which you:

- identify the aspects of the group work experience you have or have not enjoyed.

- comment critically on your own performance within the group (i.e. your own strengths/weaknesses – did you have one or several roles? – what would you do differently if you had your time again?). We recommend you attempt the Belbin questionnaire again as you think about this: it will help you to see how your perceptions may have changed as a result of your teamwork experience.

- comment on the collective performance of your group (...strengths/weaknesses – what, if anything, should have been different?),

- if appropriate, identify for special praise individuals or factors that enhanced the outcome.

If you fail to provide a self-evaluation, you will personally suffer a marks penalty (the amount being at the discretion of your seminar leader).

Presentation marking scheme

The formal assessment of your group's 13-minute presentation will be carried out by your seminar leader and postgraduate assistant. Informal and qualitative feedback from your audience, your fellow students, will also be organised.

Half the project marks go on the presentation. This is further broken down as follows:

- Presentations skills – 33% (The use and quality of your overheads or other visual aids are relevant here. The other factor is the delivery of your talk – was it presented clearly and engagingly?)

- Content – 33% (Did you have something to say? Was there a tangible science content? We will be looking for evidence of a well-researched and assimilated topic, placed properly into a context.)

- Structure and timing – 33% (This is about talk organisation and planning. Was your material organised logically with an introduction, middle and conclusion? Did you judge the timing well?)

Note that these same criteria will be used in the assessment of the talks you will be asked to prepare and give within your tutorial groups in Term 2. See the appendices for tips on preparing slides and giving technical talks

Portfolio marking scheme

The portfolios will be marked by your seminar leader. Half the project marks go on this written component, and are further broken down as follows:

- Meetings diary – 25% (Your seminar leader will be looking for: a sensible meetings frequency; evidence of meetings being used to pool ideas, resolve difficulties and foster progress; good meeting attendance)

- Group commentary – 50% (The required content of this commentary was laid out above. Your seminar leader will be looking for evidence of committed, inclusive and sensitive/intelligent group working.)

- Bibliography – 25% (This will be judged on completeness of the information given for each reference, and on the number, variety and relevance of them. Broader evidence from e.g. the talk overheads that a range of sources actually contributed to the presentation will be taken into consideration here, as well.)

Assessment Task 3: Individual Tutorial Talk

This will probably be your first opportunity, at Imperial, to make a short presentation on your own. Practice in this is relevant to a wide range of eventual careers – and you can expect to give a talk at least once each year during your undergraduate course. On this occasion you will be talking to a small audience who know you and have to go through the same experience as you.

You can seek advice on this talk in several ways: talk to your tutor; consult the appendices to this document; or try Sinclair Goodlad's book, 'Technically Speaking'.

Ground rules

- Date, time and location: your academic tutor will fix this. He/she will be asked to organise this for week 4 of term 3.

- Time limit: your tutor will advise you of the exact time limit you should work to. You can expect this to be between 8 and 10 minutes.

- Topic: you choose your own. The only (loose) restriction on it is that it should have some scientific/technical content.

- The media available to you are to be worked out with your tutor. You will be able to obtain transparencies, suitable for writing on, b/w photocopying or for a laser printer, from the student administration office on Blackett level 3.

Marking scheme

This is *exactly* the same as used for the group presentations at the end of term 1. Here it is again:

- Presentations skills – 33% (The use and quality of your overheads or other visual aids are relevant here. The other factor is the delivery of your talk – was it presented clearly and engagingly?)

- Content – 33% (Did you have something to say? Was there a tangible science content? Your tutor will be looking for evidence of a well-researched and assimilated topic, placed properly into a context.)

- Structure and timing – 33% (This is about talk organisation and planning. Was your material organised logically with an introduction, middle and conclusion? Did you judge the timing well?)

Note that the grade earned for this talk contributes up to one-quarter of the total course grade. This is not very much, but in the past most students have scooped up most of the modest credit available. The commitment of effort in preparing a talk and turning up to deliver it is typically generously rewarded by tutors.

Tutorial talk: notification of assessment outcome

Your academic tutor will be supplied with a feedback form that he/she should fill in and return to you as soon as feasible. On this you can expect to find a quality grade. To these the following translations apply: a^+ = 'very good', a = 'good', b = 'satisfactory', c = 'needs to improve'. Tutors are also asked to provide some written qualitative feedback as well.

Appendices

Appendix A. Tips on technical writing

Books have been written on this subject. For most of us, a good writing style takes years to develop. The more you are a reader, the better you are likely to be at writing. All that can be done in a page or so is point to some tried-and-tested practice in technical writing. Apply this advice in your lab reports as well as in any pieces you are asked to prepare for professional skills assessment, throughout your time at Imperial.

To begin, here is a very important general point: technical writing does not have the same aims as creative writing. The main aim of technical writing is to communicate with the minimum of ambiguity and maximum of clarity. In contrast, creative writing might even deliberately exploit ambiguity for its effect. A simple, clear style is prized in the technical domain. Many of the points below are motivated by this central idea.

A thorough and occasionally amusing discussion of writing concisely and for meaning can be found at
http://grammar.ccc.commnet.edu/grammar/concise.htm

1. **Aim for simple sentence structure.**
This generally means watching out for and eliminating over-long sentences. In printed text a sentence filling up two lines is already getting long. If you have a tendency to forget to start new sentences, you might be able to expose it by reading what you have written out loud.

2. **Prefer simple words.**
It has been shown that as mean word length rises from 2 to 3 syllables, the readability of text plummets. So simple is definitely best. Whilst you should try to vary your vocabulary to make your writing more interesting, you do not have to worry that intellectual credibility depends on choosing long words. Also, do not assume that plain language is necessarily dull – it is *what* you are trying to say that will hold the interest.

3. **Write in variable-length paragraphs.**
Over-exposure to popular articles on the internet may cause confusion about the point of paragraphing text. Paragraphs are logic units made up, usually, of several sentences. A new paragraph at fixed intervals of every sentence or every two is a nonsense. The meaning of the text should dictate where the paragraph breaks are – not some knee-jerk habit. The extreme of no paragraph breaks is just as bad as the opposite of dicing up into pointless short ones.

4. **Use jargon sparingly.**
Furthermore, always define any jargon that you feel you have to use. Be aware that the language describable as jargon will depend on the intended reader – so be sensitive to who you are addressing.

5. **Use parentheses sparingly.**
Parentheses, or brackets, can break the flow of text and hence damage its readability. The more you use them, the worse it gets.

6. **Write logically and concisely.**
Say what you mean and no more. Do not switch the analytical brain off when you write. When the scientist writes, the logical flow of the text is as important as if it were a piece of mathematical reasoning.

7. **Write iteratively!!**
This is the single most important habit to get into. Until you have acquired decades of experience, you can assume your first draft of anything is going to fall far short of what it could be. After a first attempt, the best plan is to leave a piece of writing for, ideally, more than 24 hours and then go through it again ...and again .... Once you have put a stretch of time between you and your previous hack, you will read what you have written more nearly as your intended audience would. You can then see where you have been long-winded, ambiguous, downright obscure, clumsy, repetitive... Try to be your own worst critic, or get a trusted and outspoken friend to take on this role.

And now for some punctuation issues....

8. **Commas go around in pairs...**
In fact, pairs of commas can be tried as a less intrusive substitute for brackets. There are times when commas have to be used on their own but, very often, they have a natural role placing the bounds on a phrase or clause within a sentence. Commas that you might be tempted to place on their own can often be left out without harm.

9. **Colons (:) and semi-colons (;)**
The colon is punctuation you can practically do without. Its main use is to imply that the part of the sentence following the colon has a stronger-than-usual dependence on the part before it. Very commonly, these two parts can stand alone as independent sentences. Semi-colons have a limited use too – they usually separate successive items in a list. Only use these punctuation beasts if you feel comfortable with them.

10. **Make sure you know the difference between "its" and "it's"**
Muddling these two up is awesomely common. The form without the apostrophe, "its", is the possessive form. The second form with the apostrophe is the abbreviation of "it is". It can be argued that any formal piece of writing, such as a piece for assessment, should not use abbreviated forms anyway. So usually you will want "its".

Appendix B. Tips on planning and giving talks

1. **Structure**
Choosing a good structure for your talk is very important. Always, always, include a formal title at the beginning. Always have an introduction, a middle bit, and a proper conclusion.

2. **Pay attention to timing**
Clear, logically-ordered visual aids are the first step to success in this regard (Appendix C). As you plan the talk, think carefully about what will fit in the time available to you. Making sure you have a sensible number of presentation slides to get through will help enormously with timing a talk. Too many will certainly cause you to rush. ...far better to risk too few. Around 1 transparency/slide per minute is a reasonable rate for average content (2 or 3 bullet points per slide, or a picture that warrants some explanation).

3. **Introduction**
If you take good care of this, you're more than half-way there. There should be 3 elements to an introduction. They are: (a) motivating the topic so your audience can see a reason to listen to the rest of the talk; (b) establishing a background to, and possibly a language for, the topic – this equips the audience to grasp what you are going to go on and say; (c) telling your audience what you are going to say (talk outline). How much time goes to (b) will depend on your topic and what you think your audience already knows about it.

4. **Conclusion**
You don't need to plan a very long one. The main thing is to ensure you have one and that you don't abandon it through time pressure. Its content is usually improved if you build in the briefest of summaries of what you have said.

5. **How to ensure you know what to say next.**
Different people adopt different strategies. However there are strategies that don't work – chief among these is reading out from densely-written notes. The major problem with note-reading is that you focus your attention on the paper instead of speaking to the audience. Two common techniques that do work are *either* to use your presentation slides as prompts, positioning yourself so that you can both see them and your audience with only a small turn of the head, *or* to have a set of small prompt cards that you hold at chest height so you can still maintain good eye contact with the audience.

6. **Pace what you say**.
For many people this means taking care not to talk too quickly and/or not fearing the natural pause (e.g. when you move from one section of the talk to the next or, more simply, when changing slide). Silence, like a change in tone of voice, is a useful way of modulating a talk.

7. **Talking over technical pictures.**
It is good discipline, generally, to say everything that you write down on your slides (and more, of course). When it comes to graphs the same principle applies – actually say

what is plotted against what – actually say what the graph shows. The more complex a picture is, the more you will probably have to say about it to keep your audience with you.

8. **Look at your audience**
This will be very difficult to do, if you are dependent on written notes. But it is very important for the success of a presentation that you do look at the audience. Drama students are told that, if they are concerned about too much eye contact, they should look just above the heads of the audience – which has the positive effect of keeping the face open and the chin up. This is much better than the opposite of seeming to study your shoes.

9. **Try to be aware of the volume of your voice.**
As time runs on, you may get quieter.

10. **REHEARSE!**
This is most effective if you can do this in front of fellow group members, who should be interested enough in your success that they will point out to you if you are rushing/too quiet or that your talk content is hard to follow. Seek constructive criticism. The absence of it does not augur well.

Appendix C. Tips on laying out presentation slides

These guidelines are included with the intention of helping you over the major part of the hurdle in preparing presentations. Well-thought out slides make the business of talking much easier. Regardless of whether they are hand-written or prepared on a PC/laptop, these are the rules:

1. **Legibility**
Any text on the overhead needs to be easily read by even the audience in the back row of the room where the presentation is given. This means the individual letters need to be big enough and in an easily-read colour. Fancy fonts or curly/complex handwriting should be avoided. Watch out for axis labels or similar on imported figures that might not be big enough to be read – if they are too small, replace by or add bigger text that *can* be read.

2. **Simple slides**
The content of any one slide should be limited. Complexity *seriously* distracts or turns the audience off altogether. This requirement is more important than any other and leads on to the two following suggestions...

2a. **Show only one important diagram or picture at a time.**
Ensure that any labels needed to grasp why the diagram/picture is being shown are in place. It is good practice to have a title for each picture/diagram. ...but don't be tempted to write any plump paragraphs of text next to it. The aphorism that a picture is worth a 1000 words should apply, if the picture is worth having.

2b. **Limit text to headings and bullet points**
Do not expect your audience to read very much – after all, they are really supposed to be listening to you, and they will cope better if your accompanying slides contain only bullet points or headings that take negligible effort to read. If you find yourself writing flowing sentences and/or paragraphs of text, you have for sure overstepped the mark. Assume the audience won't read them!

3. **Logical slide structure**
The layout of your slide, alone, implies a structure. If you want to encapsulate a logical argument, or imply relations between different items appearing on a slide, you can make them explicit by using arrows, connecting lines, or simple spatial groupings.

4. **Achieve some visual variety**
Slightly unusual or quirky ways of presenting material on a slide, from time to time, can be very enlivening. Occasional use of devices like 'mind maps' can be good. Try hand-drawn sketches or cartoons. Visual variety helps ...so don't go so far as to turn a quirk into a habit.

5. **Use colour thoughtfully**
Colour is good but can backfire if not used sensibly. Red is a notoriously tricky customer when used for text. A riot of randomly chosen colour can be a big distraction: use colour in a consistent and logical manner.

Appendix D. The layout of a professional-standard reference list or bibliography.

The point of a bibliography is to give the reader the means to rediscover, *exactly*, the sources you have consulted.

The common problem students seem to have in specifying references consulted is in ensuring that each one is complete. Indeed the most usual omission is the information that ties down the source in time. Think of a reference as a four-dimensional entity that has both a place and a time – both must be specified. Anything less is unprofessional.

Here are three styles of referencing for you to emulate, when you have to prepare a bibliography.

1. A reference to particular pages in a book:
E. Hecht, 1987, *Optics*, 2nd edn., Addison-Wesley Publishing Company, USA, pp32–34
(Author is listed first; followed by date; followed by edition if other than first; followed by publisher and country of publication. If you want to point to particular pages in a book, you list these last.)

2. A reference to a journal article:
Grabelsky D. A., Cohen R. S., Bronfman L., Thaddeus P., May J., 1987, ApJ, 315, 122
(The authors are listed first; then the year of publication; then the name of the journal - here 'ApJ' is an accepted acronym for 'Astrophysical Journal'; finally the volume number and first page of the article are specified)

3. A reference to a website:
http://vo.obspm.fr/exoplanetes/encyclo/encycl.html, *The Extrasolar Planets Encyclopaedia*, J.Schneider, last update 28 September 2005
(Here, it is logical to start with the web address itself as it is the most significant item enabling someone to find it; this is followed by the website's title and the name of the person maintaining it; lastly, to fix it in time the last update is noted. If there is no 'last update' specified on the site, give your access date instead.)