1. **Programmes covered by the Periodic Review**

Undergraduate programmes:
- F300 BSc Physics
- F303 MPhys Physics
- F304 BSc Physics with foundation year
- F306 MPhys Physics with a year in Europe
- F3G5 BSc Physics with Computer Science
- FF39 BSc Physics and Meteorology
- FFH9 MPhys Physics and Meteorology
- F340 BSc Theoretical Physics
- F323 MPhys Theoretical Physics
- F3F5 BSc Physics and the Universe
- F3FM MPhys Physics and the Universe
- GF13 BSc Mathematics and Physics
- FG31 MPhys Mathematics and Physics
- F861 BSc Meteorology
- F862 BSc Meteorology with a year in Oklahoma
- F958 BSc Meteorology with a Foundation year
- GF19 BSc Mathematics & Meteorology
- GFC9 MMath Mathematics and Meteorology

Taught postgraduate programmes:
- MSc/Dip Applied and Modern Optics
- MSc/Dip Applied Meteorology
- MSc/Dip Physics Research
- MSc/Dip Weather, Climate and Modelling
- MSc/Dip Mathematical & Numerical Modelling of Atmosphere & Oceans
- MSc/Dip Met Office Graduate Training

2. **Date of the Periodic Review**

The Periodic Review took place on Thursday 22 and Friday 23 January 2004.

3. **Objectives of the Periodic Review**

The objectives of the Periodic Review were to:

- Monitor the quality and standards of the degree programmes under Review;
- Enable the Departments of Meteorology and Physics to evaluate their taught programme provision and in particular to evaluate student achievement of the appropriate academic standards, and the learning opportunities offered to students to support their achievements;
To enable an independent Panel to review this self-evaluation through consideration of documentation and discussions with staff and students;
- Provide a means by which the Departments of Meteorology and Physics were able to reflect on the success, development and possible improvement of the taught programmes that they offered;
- Ask fundamental questions about the rationale, structure and resourcing of the programmes under Review;
- Consider the educational aims and objectives of the programmes, and success in meeting these;
- Review teaching, learning and methods of assessment in their contexts;
- Consider whether the programmes under Review should continue to run for a further period of up to six years.

4. **Conduct of the Periodic Review**

The Periodic Review was conducted by a Panel chaired by the Director of Teaching and Learning of the School of Human and Environmental Sciences (Faculty of Science), and also comprising two other internal members of academic staff (neither from the School of Mathematics, Meteorology and Physics) and two external academic members specialising in Physics and Meteorology.

The Panel received a range of documentation in advance of the Review, including the Self Evaluation Documents prepared by the Departments and also relevant programme specifications. During the Review Visit, the Panel considered other documentation and met with relevant staff from the two departments and from service departments in the University. Members of the Panel also met with current students studying a selection of the degree programmes under review and were given a guided tour of the facilities.

5. **Evidence Base**

In addition to the meetings held with academic staff and current students, the Panel considered a wide range of evidence, including examples of student work with staff feedback, copies of programme handbooks, minutes of relevant committees and statistical data. The Panel was able to see External Examiners’ reports for the three previous years. Both this report and those produced by the External Examiners commented on the high levels of student achievement.

The Panel was also able to see the evaluation questionnaires produced by students and the minutes of recent meetings of the termly School Staff Student Committee, which indicated that appropriate action was taken in response to issues raised.

6. **External peer contributors to process**

The external members of the Review Panel were present for the duration of the Periodic Review. The Joint Faculty Board for Teaching and Learning for Science and Life Sciences appointed the external members of the Review Panel, after considering nominations from the School of Mathematics, Meteorology and Physics. The role of these External members was to provide subject expertise and to provide an expert judgement of the validity and appropriateness of the programmes under review.
7. **Overview of the main characteristics of the programmes covered by the review**

Both departments operate programmes that are clearly structured and well thought out. There is excellent variation in teaching methods, with use of FLAP (Flexible Learning Approach to Physics), group learning, problem-based learning, emphasis on presentations and guided self-study. The programmes are current and match well with national subject benchmarking statements and the students are clearly enjoying their degree programmes. Moreover, both departments are responsive to change and keep their curricula under review. Meteorology is only taught in a few competitor institutions, and the research rich department and links with the Meteorological Office make it a particularly dynamic place to study.

8. **Conclusions on innovation and good practice**

Examples of good practice:

- The Physics Department is to be commended for its active engagement with Widening Participation and outreach work through a wide variety of programmes: e.g. Physics Masterclasses for A level students, the Christmas lecture for children, Physics Teacher Drop-in during the Association for Science Education Conference (ASE), and the Annual Science Roadshow.

- Physics also supports access for students with non traditional entry qualifications through the September Qualifying Course, and the Foundation Year. This attention to student support continues through into Part 1 with diagnostic testing of the mathematical skills of students. This enables the students to be advised to do selected self-directed modules where necessary. These are initiatives that the rest of the University can learn from, and indeed have, with the creation of the broader Foundation Year in Science. The result has been steady recruitment in a subject area in national decline.

- Physics also has successfully applied for research monies to develop Teaching and Learning Methods, developments which have attracted national recognition through awards such as a National Teaching Fellowship and two Institute of Physics Bragg Medals for teaching innovation.

- The Staff Student Committee in the School works in an innovative way, and both student opinion and minutes demonstrate the effectiveness of the way that problems are both identified and solved.

9. **Conclusions on quality and standards**

The Review Panel concluded:

- that the intended learning outcomes of the undergraduate programmes were generally clear and appropriate and were being obtained by students.

- that quality and standards were in general being achieved

- that the programme specifications were being delivered.
10. **Conclusions on currency and validity of the programmes under Review**

The Review Panel concluded that all programmes under review remained current and valid and recommends to the Joint Faculty Board for Teaching and Learning that, subject to the programme team addressing the issues shown below, the following degree programmes be re-approved to run for a further six years:

**Undergraduate programmes:**
- F300 BSc Physics
- F303 MPhys Physics
- F304 BSc Physics with foundation year
- F306 MPhys Physics with a year in Europe
- FF39 BSc Physics and Meteorology
- FFH9 MPhys Physics and Meteorology
- F340 BSc Theoretical Physics
- F323 MPhys Theoretical Physics
- F3F5 BSc Physics and the Universe
- F3FM MPhys Physics and the Universe
- F861 BSc Meteorology
- F862 BSc Meteorology with a year in Oklahoma
- F958 BSc Meteorology with a Foundation year

**Taught postgraduate programmes:**
- MSc/Dip Applied and Modern Optics
- MSc/Dip Applied Meteorology
- MSc/Dip Physics Research
- MSc/Dip Weather, Climate and Modelling
- MSc/Dip Met Office Graduate Training

The Panel also recommends that the following programmes be re-approved to run until such time as the next Periodic Review of programmes in Computer Science and Mathematics:

- F3G4 BSc Physics with Computer Science
- GF13 BSc Mathematics and Physics
- FG31 MPhys Mathematics and Physics
- GF19 BSc Mathematics & Meteorology
- GFC9 MMath Mathematics and Meteorology
- MSc/Dip Mathematical & Numerical Modelling of the Atmosphere & Oceans

11. **Recommendations**

The Panel deemed the following to be **Necessary**:

(a) Revision of the Programme Specification for MPhys Physics with Meteorology (FFH9), so that it is compliant with the National Qualifications Framework.
The Panel deemed the following to be **Advisable:**

(b) MSc handbooks must comply with the University template for postgraduate handbooks.

(c) The learning outcomes of the BSc Year 3 and MPhys Year 4 Physics projects, which are currently identical, must be differentiated to reflect their different levels of achievement.

(d) Physics Module Description Forms should vary less in detail and should all comply with the University template.

(e) Physics runs Careers Management Skills in Part 3 instead of Part 2 as advised by University policy: ‘unless there are exceptional circumstances’. The Panel were not convinced such circumstances existed.

(f) First Destination Data should be reviewed and discussed by Boards of Studies; this did not appear to be taking place in Physics.

(g) Peer review must be implemented across the School.

(h) The Physics SED does not comply with University requirements. The Department of Physics must maintain better awareness of changes in University guidance.

The Panel deemed the following to be **Desirable:**

(i) Consideration be given to converting the 4-year BSc in Meteorology with a year in Oklahoma in to an MMet degree, which would reflect better the level of student achievement.

(j) The provision of mathematics and statistics (particularly for Meteorology) within the Physics and Meteorology undergraduate programmes should be kept under review.

(k) Review whether some of the aspects lost when the Meteorology degree was redesigned should not be reinserted into the programme (particularly the field course and some extended written work before the final year project).

(l) Enhance the student awareness of Collusion and Plagiarism.

(m) Consider raising awareness amongst students of grade descriptors for different levels of achievement.

(n) Consider the variety of ways in which team-working can be assessed by examining other practices across the University.

(o) Keep under review the difficulty of the Part 2 module PH2001 *Thermal Physics*

(p) Reflect more on trends in progression data

(q) Some of the Physics equipment appeared rather old. A policy of resource management should be in place to ensure gradual replacement.

(r) Copies of responses to external examiners were not easily located. Better record keeping required.

(s) The effectiveness of the new School Board of Studies and Course Committee should be kept under review.

(t) The School undergraduate teaching office is a new initiative, however with its current restricted opening hours its effectiveness needs to be keep under review.

(u) A more pro-active approach to continuing professional development might be taken within the school.

(v) The School might like to consider where and how it gains the view of employers in maintaining the currency of its programmes.
12. **Summary of actions taken in response to the Review**

*To be added once the Subject Provider’s Action Plan has been produced and subsequently over-written one year later, to provide details of the Subject Provider’s ‘follow-up’ report*