

# Research and Consultancy Skills MTMG05

<b>Module conveners:</b>	<b>Dr D. B. Stephenson, Prof. K.P. Shine, Dr D.I.F. Grimes</b>	<b>Providing Department:</b>	<b>Meteorology</b>
<b>Number of credits:</b>	<b>10</b>	<b>Terms taught:</b>	<b>Autumn,</b>
<b>Spring, Summer</b>			
<b>Pre-requisites:</b>	<b>None</b>	<b>Co-requisites:</b>	<b>None</b>
<b>Modules excluded:</b>	<b>None</b>	<b>Current from:</b>	<b>2003</b>

## **Aims:**

The aim of this module is to enhance skills and give practice in techniques relevant to many areas of research and consultancy work in meteorology. These skills include

- Literature and internet searching;
- Critical reviewing of literature;
- Synthesising and presenting information in written and oral form with strict time and space limitations;
- Working to rigid deadlines;
- Team-working;

## **Intended learning outcomes:**

Assessable outcomes

### Part 1 - Communication Skills (Autumn term: Dr. D.B. Stephenson)

There is no direct assessment of this part of the module, but the skills acquired are assessed in Parts 2 and 3 of this module and in other modules in the MSc programme.

### Part 2 - Team Project (Spring term: Prof. K.P. Shine)

By the end of this part of the module the student will have obtained experience in

- Planning a small research project both in terms of the student's own work and in terms of the team as a whole;
- Carrying out this research and demonstrating the ability to work within a team and critically assessing the relevance of material to a particular project;
- Organising and producing written material and producing and delivering an oral presentation describing this work.

### Part 3 - Forecasting Course (Summer term: Dr. D.I.F. Grimes)

By the end of this part of the module the student should be able to:

- Describe how the Met Office provides its forecast services;
- Analyse standard weather charts and satellite imagery and interpret them in terms of weather experienced on the ground;
- Give appropriate weighting to model forecast products as compared with subjective interpretation of weather data in a variety of circumstances;
- Recognise the importance of a forecast routine in developing a local forecast based on central guidance model output and actual data;
- Produce a written or oral forecast of required length for specific user needs and to a rigid deadline.

## Additional outcomes

Students should have enhanced skills in

- Preparing a clear and well-structured scientific report, paper, or dissertation
- Planning and giving clear and well-structured oral presentation of scientific work
- Using online databases to search the scientific literature
- Team-working

The Team Project will allow the students to discover and describe areas of topical interest in meteorology and its related disciplines and, via attendance at the presentations given by other teams in the same year group, learn of scientific issues in other areas of the subject.

The Forecasting Course will increase students' appreciation of the practical impact on operational forecasts of limitations on time and data.

## **Outline content:**

Part 1 - Communication Skills for Scientific Research: Oral presentation and skills, Scientific Writing skills, Bibliographic searching skills using online library facilities such as UNICORN and the ISI Web of Science scientific article database.

### Part 2 - Team Project

Students will work in teams of 3 or 4 on a subject of topical interest in meteorology and its related disciplines. Students will be able to express preferences as to which project they do, from a list provided to them by the convenor earlier in Spring Term. Projects could include analyses of recent weather events, studies of recent atmospheric phenomena, such as the previous year's Antarctic Ozone Hole, or Hurricane Season. The project will take place entirely during one week in spring term when no other modules will be running.

### Part 3 - Forecasting Course

Students will cover the following topics:

- Provision of Met Office forecasting services;
- Optimising forecasts under operational time and data constraints;
- Appropriate use of NWP model products and radar and satellite imagery;
- Practical applications of fluid dynamics theory in real time forecasting;
- Production and presentation of customer-specific forecasts.

### Brief description of teaching and learning methods:

#### Part 1 - Communication Skills

Lectures and workshops on various aspects of communication skills. Practice in writing reports, synthesising information and preparing and delivering, oral presentations. Useful skills needed for the MSc dissertation project later in the course.

#### Part 2 - Team Project

Students will receive a short introduction to the structure of the team project and some background on the understanding of the general roles of individuals in teams from the course convenor. They will meet with their team supervisor for approximately 30 minutes each day for a week; the supervisor will provide input on resources available for the subject and will provide critical input to both written and oral material produced by the team.

#### Part 3 - Forecasting Course

Lectures and 'hands on' practical exercises making use where appropriate of Met Office operational forecasting software packages.

### Contact hours

	Autumn	Spring	Summer
Lectures/workshops	5	1	12
Tutorials/seminars		5	
Practicals	4		24
Other contact (e.g. study visits)			
Total hours	9	6	36
Number of essays or assignments		2	3
Other (e.g. major seminar paper)			

### Assessment:

Part 1 – No formal assessment.

#### Part 2 – Team Project

A team project written report, comprising an Executive Summary, individual students sections, conclusions and a listing of sources of information. An oral presentation, of typically 30 minutes per team (depending on team size) in which each student must present for at least 5 minutes.

#### Part 3 – Forecasting Course

Oral and written weather forecasts produced and presented; written test on forecasting theory.

<b>Relative % of coursework:</b>	100%
<b>Penalties for late submission:</b>	Part 2 - Team Project Written Report: 5% of max mark per hour. Otherwise not applicable
<b>Examinations:</b>	None
<b>Requirements for a pass:</b>	50%
<b>Reassessment arrangements:</b>	Not applicable

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