

Macquarie University
DEPARTMENT OF STATISTICS: DISCIPLINE PROFILE
November 2006

Overview

Statistics is one of the few disciplines whose methodology is applied in just about every other area of intellectual endeavour. The sophistication of the methodology used varies widely and one of the Department's aims is to raise the level of statistical literacy of both the University community and the community at large. The Department also aims to train professional statisticians and competent users of statistical methods, and to add to the accumulated body of statistical methodology, both theoretical and applied. These aims are pursued in several ways:

- (a) Providing undergraduate and postgraduate programs that are up to date in both methodology and technology.
- (b) Development of research programs and collaborations as well as dissemination of the results of these.
- (c) Providing professional development courses that deliver new methodologies to professionals in various fields. Recent examples are epidemiology courses for physicians and a generalized linear models course for professional actuaries.
- (d) Providing advanced statistical consulting both within the University and outside.
- (e) Contributing to the development of the Statistics and allied professions.

Teaching

The Department offers a first-year undergraduate unit in statistics taken by over 2000 students per annum. This is by far the largest statistics unit in the country and considerable resources are devoted to ensuring its continued success. The Department has taken a proactive attitude towards curriculum development and over the past five years many innovations have been put into place. Whole courses have undergone radical change. One example is the introduction of STAT329 (e-Commerce) which teaches web site design and the use of web browsers to manage and query databases utilising a dedicated computer laboratory. Another example is the Operations Research (OR) stream that now attracts over 1200 students each year. The Department offers several postgraduate programs including the Master of Applied Statistics and makes contributions to other postgraduate programs such as the Master of International Business. The Department is a consortium member of the Biostatistics Collaboration of Australia and offer a full postgraduate program in biostatistics, in collaboration with the other consortium partners.

Research and Scholarship

In the research field, major activity is in four designated research groups (medical imaging, biostatistics and epidemiology, mathematical and computational statistics, and bioinformatics). In addition, individual staff are carrying out research in other areas, such as statistics learning (pedagogy). All groups have a number of academic staff and PhD students involved, as well as associated courses in the Masters program. Several staff within the Department have strong collaborative links with research groups outside the University, for example, medical imaging collaboration with radiologists at Westmead Hospital, and links with the NHMRC Clinical Trials centre.

Research in the Department is often collaborative and can arise out of consulting work. Statisticians undertake research singly or collaboratively. Often a statistician plays an important role as a

member of a research team undertaking a large empirically-based study. The adaptation of existing methodology in new areas as well as the development of new methodology, are both regarded as legitimate research activities. New methodology, or adaptation of existing statistical methodology, is relevant to the Department insofar as it contributes to *statistical* technology or understanding, or finds productive application in another discipline (e.g. in orthodontic or educational research).

While computing is important to many disciplines today it is more fundamental to Statistics than most. The Department manages two software-rich computer laboratories containing over 60 workstations, some running under Linux, others under Windows. A wide range of statistical, mathematical and other software packages are available, and are used in various undergraduate and postgraduate courses. Developing statistical software for teaching use is an important component of the Department's activity.

Service to the University and Community/Outreach

Service includes all aspects of administration necessary for the smooth running of units, programs, departments and division, as well as that undertaken at the level of the whole university or the profession. All members of the Department participate in some way in departmental, divisional and university-wide committees, in consulting activities with students and staff across the university and in making contributions to the running of professional organisations, academic journals and academic conferences. Important links exist with other departments within the University, other universities and professional bodies such as the Statistical Society of Australia.

Outreach includes all activities carried out beyond the immediate context of the University or the Profession, particularly those which have at least a component of altruism. Again, most members of the Department participate in some form of outreach activities, and these are valued by the Department. This includes, for example, liaison with schools, community groups and alumni, writing popular and accessible accounts of our professional activities, and contributing statistical expertise to local, national and international groups, whether in the form of paid consultancies or 'pro bono'.

Individual Staff Profiles

The Macquarie University Enterprise Agreement allows for staff to select different weightings for research and teaching activity, but all staff are expected to carry out some teaching, to make some contribution towards research activity and to be involved in some way in service and outreach activities.

Profiles by Academic Level

These summaries are intended to represent the *minimum* qualifications, skills and experience necessary for *appointment* at or *promotion* to the level specified. Staff already at a particular level can check their situation against the profile to ensure that they are meeting these levels (for example, for continuing satisfactory performance appraisals) and they can look at the profile for the next level up to see how their possibility for promotion is building up.

Level A (Associate Lecturer)

For appointment at Level A, an academic should have an honours degree and a serious intention to enrol for a doctorate (and indeed this will usually be a condition of appointment).

In terms of teaching, they would usually have experience at tertiary level in a tutoring capacity, and corresponding administrative experience at the level of individual tutorials. They would have serious plans for developing the quality of their teaching, for instance by enrolling for relevant professional development programs.

In terms of research, they would be expected to be able to discuss coherent plans for research and associated publication, possibly linked with their projected PhD topic. These plans should lead to publications if they are in the position for several years.

They will also be willing to participate in service activities within the department and outreach activities beyond the department.

Level B (Lecturer)

For appointment at level B or promotion to level B, an academic would usually have completed a doctorate. A possible, though exceptional, alternative would be a masters degree and significant research publication record (specified broadly as several recent publications in a related area). In this case, the appointee would be expected to enrol in a doctorate (a condition of appointment).

In terms of teaching, they will have experience with undergraduate teaching, substantial administrative experience with individual units and experience in preparing or modifying curriculum for individual units. They should be able to provide evidence for their commitment to the quality of their teaching (for instance, from teaching appraisals by their students or colleagues, critical reflection on their own practice, professional development or attendance at pedagogical conferences).

In terms of research, they will be expected to have an involvement with a research group and/or a research project of their own, and they will be expected to show some evidence of publication success (at least one refereed journal publication). They will be expected to have some experience supervising student projects at honours or coursework masters level, and to provide some evidence of a reputation for scholarship at least at the local level.

They will be able to indicate situations where they have taken some leadership role in teaching and/or research in terms of working with less experienced colleagues. They will have participated in service activities within the department or division and outreach activities beyond the university.

Level C (Senior Lecturer)

For appointment at level C or promotion to level C, an academic would usually have completed a doctorate. A possible, though exceptional, alternative is a significant research publication record (specified broadly as several recent publications in a related area). In this case, they should be prepared to enrol for a doctorate (which would then usually be a condition of appointment).

In terms of teaching, they will have experience at the undergraduate and the postgraduate level, and corresponding administrative experience, including being in charge of a unit and tutors. They will

also have experience in preparing or modifying curriculum beyond a single unit, as part of a program team. They should be able to provide strong evidence for their commitment to the quality of their teaching.

In terms of research, they will have established research projects and demonstrate an established momentum for research publications consistent with the University's definition of 'research active' (ie an average of one refereed publication per year – book chapter, journal article or good-quality conference publication). They will be expected to have some experience supervising masters or doctoral research students, and they should be able to provide evidence of a developing scholarly reputation beyond the university.

They will have evidence of providing leadership to teams of colleagues within and beyond the department. They will have participated in service activities within the university and in outreach activities beyond the university.

Level D (Associate Professor)

For appointment at level D or promotion to level D, an academic would have completed a doctorate. They will have extensive tertiary teaching experience at all levels, and associated administrative experience at the level of being in charge of a complete program. They will have substantial curriculum experience that has contributed to complete programs of study. They should be able to provide strong evidence for their commitment to the quality of their teaching.

In terms of research, they will have an established research program and experience developing and maintaining research links and leading research projects. This experience will be reflected in a range of refereed research publications and some successes with competitive research grants. Publications should exceed the University's definition of 'research active' in terms of quantity and/or the reputation of the journal in which they are published. They will successfully attract and supervise research students at masters or doctoral levels and they will have a developing international reputation as a scholar.

In terms of leadership, they will have experience mentoring colleagues and leading teams in research and pedagogy, and have taken leadership roles within and/or beyond the university. They will have participated in service activities within and beyond the university and a range of outreach activities.

Level E (Professor)

For appointment at level E or promotion to level E, an academic would have completed a doctorate. They will have extensive tertiary teaching experience at all levels, and associated administrative experience at the level of being in charge of a complete program or department. They will have substantial curriculum experience including being in charge of development of complete programs of study. They should be able to provide strong evidence for their commitment to the quality of their teaching.

In terms of research, they will have established research programs and extensive experience developing and maintaining research links and leading research projects. This experience will be reflected in a range of refereed research publications and possibly research monographs, and successes in attracting competitive research funding. Publications should exceed the University's definition of 'research active' in terms of quantity and/or the reputation of the journal in which they are published. They will successfully attract and supervise research students at masters and doctoral levels and they will have a mature international reputation as a leading scholar.

They will have experience in providing pedagogical and research leadership for groups of colleagues at the level of a complete unit or department. They will also have taken leadership roles within and beyond the university. They will have taken a prominent role in service activities within and beyond the university and a wide range of outreach activities.

Department of Statistics Profile Summary – November 2006

_ Dimension\Level _	A	B	C	D	E
(1) Qualifications					
PhD	Serious intention to enrol	Completed	Completed	Completed	Completed
or equivalent	(condition of appointment)	(significant recent research publications ¹)	(significant recent research publications ¹)		
(2) Teaching					
Experience	Tutoring at tertiary level	Undergrad lecturing	Undergrad & postgrad lecturing	Extensive	Extensive
Administration	At the level of individual tutorials	Substantial experience within units	In charge of unit and tutors	In charge of program	Extensive
Curriculum		Planning, material preparation within unit team	Beyond unit, within program team	Contribution towards complete program	Extensive
Quality ²	Plans (eg for prof development courses etc)	Evidence of commitment to quality	Strong evidence of commitment to quality	Strong evidence of commitment to quality	Extensive evidence
(3) Research					
Extent	Research plans	Research project, involvement in research group	Established research projects	Established research program, leading projects	Established research programs, leading projects
Publications	Publication plans	Some evidence of success (at least 1 refereed journal article ³)	Established momentum for refereed publications ³	Substantial publications ³ , some research grant success	Extensive publications ³ , research grants
Supervision		Undergrad, hons, masters projects (coursework)	Masters or PhD research student	Continuing experience with research students	Extensive and continuing experience
Reputation		Local reputation for scholarship	Developing reputation beyond the university	Developing international reputation	Mature international reputation, leading scholar
(4) Service/Outreach					
Leadership (in research and teaching)		Within department teamwork with colleagues	Contribution to teams with colleagues, and beyond department	Mentoring colleagues in research and pedagogy, links beyond university	Research and pedagogical leadership for department, links beyond university
Service ⁴	Willingness to participate	Within dept/div	Within university	Beyond university	Beyond Australia
Outreach ⁵	Willingness to participate	Engagement in outreach activities	Engagement in outreach activities	Engagement in outreach activities	Engagement in outreach activities

Notes: These represent minimum skills, experiences, qualities to have on entry at the level specified, or on promotion to the level specified. They are cumulative across rows, and equivalences can always be argued.

¹ Specified broadly as several recent publications in a related area.

² Evidence for quality or scholarship of teaching and learning can include teaching surveys (formal and informal), curriculum development, appraisals by colleagues, critical reflection on own practice, professional development activities, conference attendance, published work in scholarship of teaching.

³ At levels B–E, staff are expected to maintain a level of research activity satisfying the University definition of ‘research active’, with the extent and/or standard to increase from lower to higher levels.

⁴ Service can include membership of committees, union, professional organisations, refereeing, (paid) consulting activities, ie the idea is that this is professional activity.

⁵ Outreach includes any activities that help to establish links between the university and the outside world, particularly those where professional skills are applied altruistically.