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A perspective on university academic workload measurement

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Internationally, universities are increasingly seen as being part of the wider community, which has an impact on academic workload. This paper explains the importance of a model for investigating such academic workloads. Quantifying and reporting workloads are complex tasks. Despite this complexity, the model developed at the University of the Witwatersrand's School of Mining Engineering gives some insight into the three main components of academic workload, namely lecturing, research and administrative services. Today there is a better understanding of the meaning of workload, the problems to consider when quantifying workloads, the relationship between workload and performance and the issues to consider for staff development. This perspective concludes with lessons learnt over a five-year period.

'n Perspektief op die werksladingsmeting van universiteitsakademici

Internasionaal word universiteite al hoe meer beskou as deel van die breë gemeenskap, wat 'n impak het op die werkklading van akademiese personeel. Hierdie artikel sal die belangrikheid van 'n model vir die ondersoek van akademiese werkklading verduidelik. Die meting en rapportering van akademiese werkklading is kompleks. Ten spyte daarvan verskaf die model van die Universiteit van die Witwatersrandse Skool vir Mynbou insig in die drie hoofkomponente van akademiese werkklading, naamlik dosering, navorsing en administrasie. Deesdae is daar 'n beter begrip van wat hierdie werkklading behels, die moeilikhede wat oorbrug moet word by werkkladingsberekening, die verband tussen werkklading en prestasie, en hoe om personeelontwikkeling daarvolgens te beplan. Die perspektief sluit af met lesse geleer oor 'n vyf-jaar periode.

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Academic workload is not only an issue of concern at universities in South Africa (SA). It has recently been gaining international significance as universities are increasingly seen as part of a wider community. Consequently, concerns have been raised as to how academics spend their time. This paper explains the reasons for measuring academic workload, considers the issues involved, and proposes a method.

A workload model was developed and implemented in the School of Mining Engineering (Mining) at the University of the Witwatersrand (Wits). The project was initiated as part of a strategy to meet the strategic planning objectives of the school, where workload distribution among staff was identified as crucial to ensure quality education and good staff morale. However, the model turned out to be more complex than merely analysing workload distribution. The paper also considers workload studies performed at other local and international universities and gives some background and principles on general workload issues. It describes the quantitative aspects of the model and gives a qualitative assessment of the workload issues as identified in the model. It concludes with lessons learnt over a five-year period. In theory, the workload model should be capable of covering the whole institution, thereby allowing for transparency and comparison between schools with widely different disciplines.

Currently, there is a better understanding of the meaning of workload, the problems to consider when quantifying workloads, the relationship between workload and performance, and finally, which workload issues to consider for staff development. The workload model also reduces emotional and subjective workload claims by members of staff. It provides guidance to staff on standard hours to be spent on different tasks and how much productive time is required to achieve desired performance criteria. The model is useful to the Head of School (HoS) for allocating equitable workloads, for team-teaching of certain subjects to ensure equity and flexibility, for successful planning of staff development taking account of capacity shortcomings, for developing new and specific subject areas, and for scheduling of study and other leave. In fact, the HoS consults the workload model every year to allocate workloads for the following year.

It is also easier for school management to account for expenditure on resources and staff salaries when these can be linked to detailed workload models. It assists members of staff with planning for measurable and maximum output in their approach towards teaching, research and services as well as in using their information as motivation for mapping career development. Members of staff also want to see equity in workload distribution and recognition for lecturing, research and service achievements. Other parties who can potentially benefit from the model include management at both the university and the faculty level, since they can use workload models for division of budgets; sponsors of research when establishing research efficiency, and other universities wanting to compare academic workloads.

Many other issues need to be investigated and assessed when analysing workloads. Issues that are very important but fall outside the scope of this study include the quality of the degree as measured by graduate performance in industry, which in turn is affected by the quantity and quality of students entering the school and graduates leaving the school, accreditation requirements of the degree and student throughputs achieved. Another issue is adequacy of resources, where the strengths and weaknesses of academic staff, research output, academic support and infrastructure need to be considered. A third issue requiring additional research is the viability of the school as a business unit, which is influenced by government subsidy at the school level, industry support, the ability to generate external income, the national demand for higher education and collaboration with other universities offering the same or similar programmes.

1. Background information on workload issues

This section considers quantitative studies conducted at other universities and gives some background on workload rules and principles. It concludes with a comparison between workloads per rank as suggested in this paper with actual workloads as measured at Wits Mining. The discussion of this comparison leads to some conclusions, suggested improvements and the distinction of myth from fact in academic workloads.

1.1 Workload studies

The Graduate School of Business at Stellenbosch University developed an accounting model for the workload components consisting of undergraduate and postgraduate lecturing, research and services (Gevers 1995: 18-25). What makes this model important is first, the attempt to link workload to financial reward and second, the improvement of research output for the school as a result of introducing this model. The link with financial reward raised equity issues because some components of workload could earn additional income, while others could not. The equity hurdle was overcome by a points system that allowed standard ratios for different ranks of academic staff, coupled with a minimum-maximum points range to ensure sufficient resources for additional remuneration were available for staff having a higher than expected workload. The minimum workload, defined as a total workload of 440 credits, is an interesting concept because any shortfall in one year had to be recovered during the following year. If not reached in that year, certain penalties applied. The definition of a typical academic workload at the school is indicated in Table 1. The percentages in the table are for a graduate school and one can, therefore, expect that the ranks involved are senior lecturer and above.

Table 1: Academic workload at the Graduate School of Business

Activity	Score	Percentage of total workload (%)
Lecturing	240	54
Research	140	32
Services	60	14
Total	440	100

Source: Gevers 1995: 18-25: Appendix A

Soliman (1999) described the workload policy and model for academic staff at the University of New England. The following principles identified were of relevance to Wits Mining:

- Workloads vary between individual staff members and academic units;
- Determination of a workload model must be transparent, equitable and occur in consultation with staff members;

- It must be consistent with university principles, policies and practices;
- It must recognise the full range of academic activities;
- Paid consultancy work undertaken independently from the university does not constitute part of workload;
- Full-time staff must be involved in the full range of academic activities;
- The number of working hours in a year cannot exceed 1 725, and
- Workload allocation must be done by the HoS or Dean of the Faculty.

The 1969 US Statement on Faculty Workload¹ noted that no single formula for an equitable faculty workload could be devised for American higher education. An investigation identified the following inconsistencies when comparing the 1969 Statement with the current US situation at universities:

- The recommended 12 lecturing hours per week are typically exceeded in community colleges, and
- The lecturing hours per week should be reduced to 9 to take account of preparation, conferences, examinations, research and supervision of students.

In a study at the University of the North, typical issues that could be expected when analysing academic workloads in SA were discussed (Ruth 2001: 194-216). Ruth's workload analysis only considered undergraduate lecturing load because other components of workload, for example research, were regarded as voluntary. The starting points in the lecturing workload model described by Ruth were the number of students per subject and contact time (lecturing hours). This is understandable because these numbers are real and can easily be verified from academic year books and student registrations per subject. The following multiplication factors were then used to calculate the total workload:

1 The Association of University Professors' Committee on College and University Teaching Research. Interpretive comments on the Statement of Faculty Workload are available from *Academe* [Washington, USA] May/June 2000, 86(3): 69-73.

- Preparation time: 4.4 hours for every hour of lecturing;
- Assessments: 24 hours plus a variable component of 0.4 hours per student;
- Subject administration: 10 minutes per student, and
- Student consultation: 0.3 hours per student.

After incorporating all the workload components of undergraduate lecturing, the standard ratio representing total workload for undergraduate lecturing was calculated as 10.5 hours for every hour of lecturing. In the interpretation of the workload model, Ruth found that, on average, the numbers only accounted for 4 to 5 months in a year! This led to the obvious question of "... what were we doing for the rest of the time?" (Ruth 2001: 205). Understandably the analysis prompted a negative response from staff, who questioned the accuracy of the total numbers because of the subjectivity reflected in the ratios, despite "... the fact that every member of the department had contributed to the discussion in which we had arrived at the figures" (Ruth 2001: 205).

In an international study by Sharobeam & Howard (2002: 436-41), the relative importance of teaching, research and services was discussed. Indicators for measuring workload were also given attention. For example, teaching was measured through productive time spent in the classroom, research by the number of refereed publications and services by membership of faculty meetings — a rather narrow understanding of community service. The results of the survey of 154 academic staff members in various schools within science and mathematics faculties at several universities in the US were:

- The average number of teaching contact hours was found to be 13 hours per week, which resulted in first, a workload ratio of 2.8 hours for every hour of lecturing and second, a total teaching workload of 36 hours per week;
- On average, each member served on 5 faculty committees over a two-year period, and
- Research was normally done during summer recess, weekends and holidays.

A workload survey of 54 higher education institutions (most of these were North American) indicated that lecturers are expected to teach 12-20 hours in a week, which time accounts for 40%-53% of their workload during semester time (Minnesota Management Team, for the Workload Taskforce 2004).

A workload model that was developed at the University of Tasmania (2004) intended to capture the full workload of research, teaching and administration. The maximum hours of 1690 made up the total base year after accounting for four weeks leave and public holidays. Table 2 illustrates the outcome of the exercise, in which the study indicated that teaching load can constitute up to 80% of the typical workload of an academic.

Table 2: Workload of academic staff at Tasmania

Activity	Hours/year	Percentage of total workload
Research	338-676 maximum	20-40 %
Administration	10-50 (excluding HoS)	1-3 %
Teaching	Balance	Balance

Source: University of Tasmania (2004)

Table 3 summarises the findings of the literature review for comparison with first, Wits workload policy and second, the workloads as measured for Wits Mining. The Table indicates wide ranges for the three main components of academic workload, namely research, administration and lecturing. These wide ranges reflect the difficulty of quantifying academic workloads and perhaps support the view that such a study is inappropriate in the university context. Another explanation could be the differences in the length of academic year at different universities, which is particularly prevalent between northern and southern hemisphere universities. The status and academic focus of universities also differ vastly. Those with a teaching emphasis will have larger teaching workloads while research universities should reflect a better spread between research and lecturing loads. Even among staff in one school the loads will vary greatly, which differences are caused by rank, qualifications of staff and emphasis placed within the school on the components of

workload. Apart from these variances in workload distribution, the literature review also indicated that policies differ widely. While some universities stipulate targets for the three main components of workload, others will regard research as a voluntary activity. Finally, some universities express their workloads as percentages of each activity, while others express it in terms of either hours spent on each activity or credits gained per activity. Credit systems are more comprehensive and attempt to incorporate fairness during comparison of workloads. The information in Table 3 suggests that academics should spend about 60% of their time at work on lecturing activities, 30% on research and the remaining 10% on service activities. The rest of this paper will compare this suggested workload with, first, the Wits policy and, second, the actual workloads in Wits Mining as measured over a five-year period.

Table 3: Summary of academic workloads

Activity	% of total workload	Hours Workload	Median % workload	Suggested workload
Lecturing	40-80%	9-20 hrs/week	60%	60%
Research	20-40%		30%	30%
Services	1-32%		16%	10%
Maximum load	100%	1690-1725 hrs/year		100%

2. Workload rules at Wits

The rules and principles governing workload at Wits are as open to interpretation as those at other universities, both nationally and internationally. Although all staff must perform some lecturing, research and service duties, it is generally accepted that the workloads of the different ranks must have at least one core focus. This is illustrated in Table 4.

The policy on workload at Wits states that all academic staff are expected to demonstrate a sense of responsibility for the well-being of their school and the university at large (Wits HRA 2003). This is achieved through satisfactory performance in the areas of teaching, research and administration. The policy is silent on how much time should be spent at each activity, but individual contracts mention

that senior lecturers must spend 14 contact hours per week on face-to-face lecturing. Allocation of equitable workloads is the responsibility of the HoS, who is expected to develop a workload model to defend her/his decisions. The two main features of the policy are:

- Actual allocation of workloads is done by the HoS, and
- Satisfactory performance is required in the three primary areas of teaching, research and administration.

Table 4: Core focus for academic workloads

Rank ²	Core focus area(s)	Remarks
HoS	Services	Running day-to-day business of the school
Professors	Teaching, services and research	Balanced workload
Senior lecturers	Teaching and research	Workload skewed towards lecturing
Lecturers	Teaching and research	Adequate provision for obtaining PhD
Junior lecturers	Research and teaching	Focus is on improvement of qualifications

The guidelines are open to interpretation and ultimately workload decisions are taken by heads of schools. Considering that academic staff are allowed to use one day per week for research, one can interpret it that on average, academic staff must spend 20% of their time on research. The 14 hours of contact lecturing per week (35%) accounts for face-to-face contact with students, which leaves 45% of time (18 hours per week) for time spent on other teaching activities (preparing for lectures, updating learning material and assessment of students) and services. When comparing this interpretation with

- 2 Wits HRA/8 of 2003 does not stipulate precise criteria for the definition of academic ranks, but does give some guidance in this respect. The criteria for a lecturer are someone with a higher degree, usually at Master's degree level and who shows research potential. A senior lecturer usually has a PhD, participates in the service and teaching activities of the school and has published before. Associate professors and above are promoted from senior lecturership on the grounds of performance on teaching, services and research output.

the examples cited in the literature review, one will find that the Wits policy compares favourably with international academic workloads (Table 5).

Table 5: Comparison of suggested workloads with Wits policy

Activity	% of total workload	Hours workload	Suggested workload	Wits policy
Lecturing	40-80%	9-20 hrs/week	60%	14 hrs/week
Research	20-40%		30%	20%
Services	1-32%		10%	
Maximum load		1690-1725 hrs/year		

Source: Table 3 and Wits policy

3. The Wits Mining workload exercise

The need for developing a workload model for Wits Mining was first identified during a strategic planning exercise done in January 2000. The process followed in the development of the Wits Mining workload model is outlined below:

- 1 A member of staff was tasked by the HoS to champion the issue and to collect, process and present academic workloads within the school;
- 2 A committee was established who researched workload model exercises at Wits and other universities;
- 3 Detailed questionnaires were developed on the main components of academic workloads;
- 4 Separate models were established to quantify total hours for undergraduate and postgraduate lecturing, research and services;
- 5 Analysis of results occurred through combining all the models into one spreadsheet representing the annual workload per individual, where the workloads are compared using histograms indicating the activities of each member of staff, and
- 6 The final stage was to combine the activities for comparison per rank, which showed grouped workloads for the ranks of professor, senior lecturer and lecturer. The exercise started in 2000 using 1999 statistics and has been repeated annually since then. Every year data is analysed in retrospect.

3.1 Issues encountered at Wits Mining

The responses from staff interviewed on workload issues over the five-year period varied significantly. While most members of staff participated enthusiastically, a few rejected the model as, among other reasons, “statistical rubbish”, and they felt that they should distance themselves from any effort to quantify academic workload. A particularly sensitive issue was the factors used for the preparation for lectures and the updating of learning material. This section gives an overview of issues raised during the workload analysis in the school.

3.1.1 Performance appraisal

One may question the effectiveness of performance appraisal in the absence of a comprehensive workload model. Having said that, ultimately performance appraisals are driven by perception and one must acknowledge that, despite this weakness, there is no realistic alternative than basing assessment on workload. Ruth’s (2001) observation that performance appraisal is feared by most academic staff therefore came as no surprise. One may argue that approaches like staff interviews, course evaluations and student-lecturer evaluations have some potential, but these are all subjective by nature — probably more subjective than workload numbers. A key issue is how to handle the results of such methods and to use the results in a way that is meaningful and centred on the individual’s career development. This raises the difficult question of “could workload performance be linked to salary or other benefits?” — something that is not done at Wits — apart from different scales of remuneration applicable to different academic ranks. This thinking suggests that professors should work much harder than junior lecturers — because they are paid more.

3.1.2 Subject differences

The difficulty and level of a course are important issues to consider for equity in distribution of workloads. Some undergraduate courses are more difficult and require more time for student consultations. Others have more lab or practical components while postgraduate courses require more research time as part of preparation for lectures. Linked to this is the number of different course preparations per academic member of staff. Less effort is required if all lectures are in

the same subject area compared to lecturers who teach a wide range of topics. There are also issues regarding differences between undergraduate and postgraduate courses. For this reason, Auckland University of Technology investigated a workload policy for postgraduate supervisors (Melrose 2002: 89-94). The study found that a ratio of 5.0 workload hours per hour of lecturing is appropriate at postgraduate level; the actual hours for supervision and laboratories were appropriate (a factor of 1.0), and lecturers should supervise 5-6 postgraduate research students at any point in time. However, these could vary from school to school and even among courses within a school. Another factor influencing ratio analysis was student composition, where it was found that students whose first language is not English require more academic time and administrative support.

3.1.3 Staff development

Staff development is very important. The improvement of qualifications, personal development and better subject knowledge have positive impacts on academic work performance and, later, promotion. An issue not given sufficient attention in the past is the multi-cultural society of academics and students at universities and the importance of better communication and understanding among the diverse cultures for improved higher learning. South African higher education institutions face major challenges in supplying future generations of academics who will meet national equity targets and reflect the country's demographic realities (Koen 2003: 500-21). The recruitment, retention and successful development of historically disadvantaged South Africans have proven to be difficult within the traditional university workload and remuneration structures.

Related to staff development and workload is the need to develop a variable workload distribution taking account of the years of service and the grades of staff. All staff could work the same number of hours but differed in the amount of time they spent on each activity. This discrepancy led to a need to create bench-marks for different levels of seniority and to allow more time for new members of staff for developing lecturing material, preparing for lectures and studying towards higher degrees.

3.1.4 Staff efficiency

Related to workload and performance, is the pressure on higher academic institutions to increase efficiency caused by reduction of expenditure on academic resources and staff. The drive for greater efficiency at school level has resulted in reduced research output and lack of time for the non-teaching (and difficult to measure) components of academic workload. In the workload context, measurable research indicators are doctoral degrees awarded, published research and industry contract research. Because of the time lag between the starting and measuring dates for research, in addition to the real possibility that the research may never appear in a measurable format, there is understandably little motivation for the individuals to participate in research, apart from gaining academic standing among colleagues and international recognition in their subject fields. This probably explains Koen's (2003) observation that South Africa only contributes 0.5% to world research output. Another research issue in the context of academic workload is academic supervision of research for dissertations and theses. The role of the supervisor is to supply expertise, student support and constructive critique as well as to assess the knowledge levels of candidates (Lessing 2004: 73-87). To do this, supervisors must spend time with candidates, especially at the early stages of the research. The average amount of time spent on candidates should be quantifiable through a contract between supervisor and candidate.

3.1.5 Student numbers growth

Another issue to consider is growth in student numbers, compared to growth in numbers of academic staff. The easiest way to do this is to divide the number of students registered for a school's programme into the number of lecturers in that particular school. This calculation is also somewhat subjective because it ignores service teaching provided for and by other schools. The *National Plan for Higher Education* (Ministry of Education 2001) allows for a 5% increase in student growth over the next 10 to 15 years in an attempt to reduce university subsidy, and more importantly, increase throughput rates for programmes. This has an impact on student/staff ratios, which have risen significantly since 1980 (at 13.7 students per lecturer),

1985 (at 17.5 students per lecturer) and peaking in the early 1990s (estimated 39.2³ students per lecturer in 1990). Many of the additional students came from disadvantaged backgrounds. Upon graduation, very few of these students could be attracted by universities to follow academic careers because of the shortage of positions and the general absence of development positions — a national objective that would have been achievable if student/staff ratios had been maintained at a level of about 20 students per lecturer! Another way of overcoming this challenge is to obtain additional state and donor funding; specifically for the purpose of attracting and developing black and female academic staff.

3.1.6 Transparency

Finally, any attempt to quantify workload must have integrity and be totally transparent during the compilation of numbers and ratios. Such integrity and transparency will be relatively easy when policies provide clarity on the minimum amount of time, or perhaps minimum workload ratios that should be allocated to different workload activities. The goal of transparency led to the model developed in the School of Mining Engineering at the University of the Witwatersrand, which model is discussed in the next section.

4. Workload analysis at Wits Mining

A challenge experienced during the design of the model was to derive an equitable unit for measuring workload. A unit was necessary to account for all academic activities in each of the focus areas (teaching, research and services) and then to combine the three areas to account for total workload for each member of staff. Ideally, such a unit should also be reflective of the specific issues listed in the previous section in order to avoid emotional complaints. The committee decided that time was an appropriate indicator because workload in terms of hours over an academic year can be expressed in daily, weekly, semester, or annual

3 This is significantly higher than overseas universities. For example, Charles Stuart University in Australia had an average a ratio of between 1:20 up to 1:30 from 1999 to 2003.

time periods. Annual workloads expressed in hours are more comparable with other institutions, staff needs and leave requirements.

Once all information has been gathered, discussed with individual members and processed in the model, the results are discussed at a staff meeting, after which meeting staff have a final opportunity to query specific issues. Staff are then allowed two weeks to raise any concerns or request corrections to the model. The model is updated, and the approved model is presented to the HoS with a report emphasising the most important issues. The committee does not make recommendations with regard to changes to workloads of individual staff members, and the report is merely a reflection of activities for the past year. Managing workloads is the responsibility of the HoS.

4.1 Undergraduate lecturing

The components of undergraduate lecturing are lecturing (contact) time, preparation for lectures, new course development, substantial revision and student assessment. Contact hours and class size per subject are easy to establish from the yearbook, the lecturing programme and student registration statistics. The factors for preparation, new course development, revision and assessment were initially developed from a literature survey and interviews with other schools that had already analysed workloads at the time. This was followed by interviewing each member of staff. The information gathered during the interviews was accepted and used as such for the first two years. Based on the results over this two-year period, the factors were standardised by taking the average in the school. These factors are multiplied with either the numbers of lecturing hours or student numbers, depending on which is appropriate:

- Preparation factor: 1.8 hours for every hour of lecturing;
- New course development:⁴ 2.1 hours for every hour of lecturing;
- Substantial revision:⁵ 1.4 hours for every hour of lecturing;

4 This is applicable only to a new course or for a new member of staff, who lectures an existing course for the first time.

5 It is expected that each course must be substantially revised over a two-year period. For this reason, such time could only be attributed to a course every second year.

- Setting assessments: 9.8 hours per course, and
- Marking of assessments:⁶ 1.2 hours per student.

The next step is to calculate the total undergraduate workload for each member of staff and to divide this total time with the standard lecturing hours. This ratio then becomes a measure of efficiency, a term which, for obvious reasons, was rejected very early in the investigation. It is now referred to as total hours to contact hours ratio. Shortcomings⁷ of the approach to undergraduate lecturing are as follows:

- The model does not take account of the workload associated with student consultation, which over the years has consumed more of lecturers' time, and
- No provision is made for time spent during invigilation of examinations, co-ordinating courses and laboratory preparation.

4.2 Postgraduate lecturing

This section accounts for postgraduate lecturing and is similar to what was discussed for undergraduate lecturing. The factors for postgraduate lecturing were standardised as follows:

- Preparation factor: 2.0 hours for every hour of lecturing, plus 15 hours per subject credited to the course convenor;
- New course development: 4.0 hours for every hour of lecturing;
- Substantial revision: 3.0 hours for every hour of lecturing;
- Marking of assessments: 1.5 hours per student, and
- Setting assessments: 18.3 hours per course.

The final step for analysing the lecturing workload is to combine undergraduate and postgraduate lecturing. Table 6 below shows the final percentage of total workload after adding postgraduate numbers to those for undergraduate lecturing. The information in Table 6 shows significant variation from year to year and also among ranks. However, the five-year average percentage for the school (56%) compares well with the suggested workload of 60% as derived in Table

6 Assessments are normally a test, project assignment and an examination.

7 These were corrected for the 2005 model.

3. It also supports the information in Table 4, which indicates that lecturing is a core focus area for lecturers and senior lecturers.

Table 6: Historical percentage of all lecturing of total workload

Category of staff	Average (%)					
	2000	2001	2002	2003	2004	Five year
Lecturers	55	56	61	65	73	62
Senior lecturers	69	60	63	68	69	66
Professors	32	34	50	43	48	41
School	52	50	58	58	61	56

Source: Wits Mining Workload Model

4.3 Postgraduate supervision and research

The categories of activities constituting the postgraduate supervision and research sub-model are listed in Table 7. As is the case with the rest of the model, the credit hours were initially derived from interviews. These were refined over time as a result of the annual surveys and continuous feedback.

Data on publications is extracted from official School records compiled from the annual lecturer submission of publications for subsidy purposes. Staff are allowed to carry out consultancy work or to deliver Continuing Engineering Education (CEE) courses. These activities generate income for personal gains and staff pay a predetermined percentage in the form of a levy back to the university. The levy payments are again extracted from the School's accounting system and back-calculated as consulting hours using a fixed hourly rate.

Table 7: Credit hours allocation for postgraduate supervision and research

Activity	Sub-activity	Credit hours allocated	Comment
Postgraduate supervision	PhD	50 hrs/student/yr	Total hrs = no of students x credit hours per student
	100% MSc	30 hrs/student/yr	
	50/50 MSc	20 hrs/student/yr	
	Inv topic	10 hrs/student/yr	
Publications	Refereed	45 hrs per paper	Published in DoE* accredited journals or in refereed conference proceedings
	Non-refereed	30 hrs per paper	Publications in most journals not accredited by the DoE* and in non-refereed conference proceedings
Higher degree studies by staff	MSc	75 hrs per year	Junior academic staff required to register for a post-graduate qualification as a condition for employment Credit is limited to prescribed minimum duration of degree programme
	PhD	150 hrs per year	
Membership of editorial boards		Variable	Hours obtained and verified through staff interviews
Contract work	CEE	Variable	Hours back-calculated from levy payments to school
	Consulting	Variable	

*Department of Education (DoE)

Source: Wits Mining Workload Model

Table 8 below shows the final research percentage of total workload over the five-year period. The information in Table 8 shows some variation from year to year and a clear distinction between professors (significantly higher at 36%) and other members of staff. The five-year average percentage for the school (27%) compares favourably with the suggested workload of 30% as derived in Table 3. It

also supports the information in Table 4, which indicates that the workload of professors should be more balanced than that for other members of staff. More interestingly, it points to a shortcoming in the Wits policy. The current one day per week allowance or 20% of time is clearly inadequate. This matter was also raised during the interviews with the prominent researchers in the school, who admitted that most of the work done to produce publications happened after normal working hours.

Table 8: Historical percentage of research of total workload

Category of staff	Average (%)					
	2000	2001	2002	2003	2004	Five year
Lecturers	25	27	27	25	16	24
Senior lecturers	16	27	21	22	14	20
Professors	37	44	31	39	31	36
School	26	33	26	29	21	27

Source: Wits Mining Workload Model

4.4 Administration and services

Of the three components constituting the Wits Mining workload model, services are the most difficult to capture in great detail because some of the activities are difficult to quantify. The same observation was made in earlier studies (Ruth 2001: 194-216, Gevers 1995: 18-25), for example, “should one be rewarded for membership to an external committee or for the amount of responsibility s/he carries on such committee?” Over the years of developing and refining the Wits Mining Workload Model, accounting for service recognition has evolved to the stage that it can be meaningfully applied to the activities of the School.

Work on the administration and services sub-model starts with the sending out of a questionnaire to all staff members (See Appendix for details). The questionnaire asks for a staff member’s participation in the following specific areas: student mentoring, school networking with other institutions, attendance of training and development courses relevant to area of specialization, membership of committees

external to the University (these are limited to professional bodies and other services where there are direct benefits to Wits), membership of management committees at School, Faculty and University levels, attendance of conferences, accompanying student tours and camps, and any extra-ordinary service not captured under the existing categories.

Collected data is then entered into the model and checked for integrity. Staff members with large discrepancies compared to previous years and other members of staff are interviewed to ensure accuracy. The hours spent on administration and services are expected to increase with increasing level of seniority and length of service in the school. Specifically, the HoS is expected, by the nature of her/his work, to have the most hours for administration and services, whereas, newly appointed members of staff are expected to have the least hours as they only get incorporated into committees over time. The completed model is then sent for deliberation at a staff meeting and any further discrepancies corrected. This deliberation ensures that the data compilation process is transparent.

Table 9 shows the final services percentage of total workload over the five-year period. The information shows first, a steady reduction of time spent on services and second, a clear distinction between professors (significantly higher at 22%) and other members of staff. The five-year average percentage for the school (17%) does not compare favourably with the suggested workload of 10% as derived in Table 3, which extra time could be better spent on research. The table also supports the information in Table 4, which indicates that the workload of professors should be more balanced than that of other members of staff.

Table 9: Historical percentage of services of total workload

Category of staff	Average (%)					
	2000	2001	2002	2003	2004	Five year
Lecturers	20	17	12	10	11	14
Senior lecturers	15	14	17	10	18	15
Professors	31	22	19	17	21	22
School	22	18	16	13	17	17

Source: Wits Mining Workload Model

The comparison of workloads in Table 10 illustrates the following workload issues at Wits:

- The Wits policy providing for a lecturing workload of 14 hours per week is realistic;
- The one day per week (or 20% of time) for research is inadequate and more time should be allowed for this activity, and
- Too much time is spent on services, and schools need to investigate ways of reducing the administrative time of academics.

Table 10: Final comparison of workloads

Activity	% of total workload	Hours workload	Suggested workload	Wits policy	Wits Mining
Lecturing	40-80%	9-20 hrs/week	60%	14 hrs/week	61%
Research	20-40%		30%	20%	22%
Services	1-32%		10%		17%
Maximum load	100%	1690-1725 hrs/year	100%		1800 hrs/year

Source: Table 5 and Wits Mining workload model

The committee also checked the statistics produced for the workload model for some guidance on distinguishing between myth and fact. Some of the observations from the Wits Mining workload model were:

- 1 The increase in student numbers at Wits increased academic workloads. True — student per lecturer ratios increased considerably over the past five years, which significantly increased the variable component of calculating workloads.
- 2 Workload models based on credits are better than those based on hours. Probably true — credits are less sensitive to emotive resistance but become more difficult to do planning from.
- 3 Staff efficiency could be improved by linking the workload model to targets for lecturing, research and services. Probably true — this has been done successfully at other universities, and the experience in Wits Mining was that staff plan activities better by spending their time more efficiently.
- 4 Some members of staff are good at lecturing, while others are good at research. Probably not true — the study showed that members of staff with a high lecturing load were also responsible for the main research output of the school.
- 5 Subject differences make it impossible to compare workloads. Probably not true — this could be overcome by putting more effort into developing ratios to accommodate subject differences.
- 6 In order to be research productive, lecturing workloads need to be reduced. Probably not true — higher lecturing workloads correlated with higher research output in the school.
- 7 Some courses are more important than others. Probably not true — it was found that multiplying factors for calculation and theory subjects for different years of undergraduate study did not show any trends in this regard.
- 8 Academics have “soft” jobs compared to other occupations. Not true — in order to excel in the areas of lecturing, research and services academics have to sacrifice some of their spare time.
- 9 Academic workload cannot be quantified. Not sure — although this paper is an attempt to do so, there is no guarantee that such an approach will result in improved academic productivity, quality and student throughput.

- 10 Workload models cannot be used for performance appraisal. Not sure — although workload models are less subjective than course and lecturer evaluations and are certainly more comprehensive, the numbers cannot be used in isolation for the purpose of staff appraisals.

5. Conclusion

The Wits Mining workload model has been successfully implemented over a period now exceeding five years and a number of lessons have been learnt from it by the school. However, some gaps still remain in the model.

First, the appropriateness of the Wits Mining workload model can be questioned as follows: who exactly are the wider community that academics serve, and do the three components of academic workload capture the expectations that the wider community and university managers have of academics?

A second criticism of the Wits Mining workload model is the historical nature of the model, meaning that numbers stated in the model are those of the preceding year. The next phase is now to investigate how the model can become more “forward-looking”, so that it can be established at the start of an academic year, used for planning the workloads of staff and reviewed at the end of the year for comparison between planned and actual workloads. The results may contribute to performance appraisal and planning workloads for the following year.

Workload models, such as the one for Wits Mining, should be used by academics to create a workload plan for each new academic year. This plan must then be negotiated with the HoS, who has to reconcile the planning of all staff to ensure that school lecturing commitments are met, while at the same time research output is increased. This strategy will mean that workload plans for individuals will become more variable than what is currently the case.

Appendix

Workload Model for 2006 academic year
(Admin and Services) Questionnaire

Lecturer name:

Student mentorship

Year mentored	No of groups mentored
1st years	
2nd years	

Networking with other universities

Name of university	Links established	Office hrs spent	After hrs contact

Association meetings (Professional institutions eg SAIMM, PLATO, WUMEA)

Name of association	No of meetings/ year	Average duration of meeting (hrs)	After hrs contact

Bursary meetings with Industry

Name of mining company	No of meetings/ year	Average duration of meeting (hrs)	After hrs contact

Training and development (eg CLTD courses)

Course attended (relevant to your lecture area)	Dates of attendance	After hrs contact (travel time, etc)

External/Off-campus committees (eg Mineral Rights, Careers in Mining)

Name of committee	No of meetings/ year	Average duration of meeting (hrs)	After hrs contact

Internal committees (ie university, faculty and school committees)

Name of committee	No of meetings/year	Average duration of meeting (hrs)

Cawood *et al*/A perspective on university academic workload

Mining tours/Camps

Student group (eg 1st years, 4th years)	Tour or survey camp?	Dates of tour or camp	After hrs contact

Conferences attended

Name of conference	Attendance status (eg. presenter, delegate, organiser)	Dates of conference	After hrs contact

Strategic planning committees (eg School Promotion and Marketing, Workload)

Name of strategic planning committee	No of meetings/year	Average duration of meeting (hrs)

Computer networking (specifically for Bekir)

Duration of networking duties (hrs/day)

Bibliography

GEVERS W R

1995. A model for measuring academic workload. *Proceedings of the Operations Research Society of South Africa (ORSSA) National Conference, Broederstroom*, 1995: 18-25.

KILEY M & G MULLINS (eds)

2002. Quality in postgraduate research: integrating perspectives. *Proceedings of the International Quality in Postgraduate Research Conference, Adelaide, Australia*, 18-19 April 2002.

KOEN C

2003. *Academica*. Ch 22 Human Resources Development Review: 500-21. Human Sciences Research Council.
<<http://hrdreview.hsrc.ac.za>>

LESSING N & A C LESSING

2004. The supervision of research for dissertations and theses. *Acta Commercii* 4: 73-87.

MELROSE M

2002. A university-wide workload policy for postgraduate supervisors. *Quality in postgraduate research: integrating perspectives*, Kiley & Mullins (eds) 2002: 89-94.

MINISTRY OF EDUCATION

2001. *National Plan for Higher Education in South Africa*.
<<http://www.education.gov.za/Documents/policies/NationalPlanHE2001.pdf>>

RUTH D

2001. Academic workload, performance appraisal and staff development: issues of quantification, criteria, perception and affect. *Acta Academica* 33(1): 194-216.

SHAROBEAM M H & K HOWARD

2002. Teaching demands, research productivity: faculty workload in predominantly undergraduate institutions. *Journal of College Science Teaching* 31(3): 436-41.

SOLIMAN I

1999. *The academic workload problematic*. Paper presented at the Higher Education Research and Development Society of Australia (HERDSA) Annual International Conference, Melbourne, 12-15 July 1999.
<<http://www.herdsa.org.au/wp-content/uploads/conference/1999/pdf/Owens.pdf>>

UNIVERSITY OF TASMANIA

2004. Academic Staff Workload Model. School of English, Journalism and European Languages, University of Tasmania (Australia).
<<http://www.utaz.au/ejel>>

WITS HRA

2003. Duties of academic staff. Human Resources Academic HRA/26 of August 2003.
<<http://www.intranet.wits.ac.za>>

WORKLOAD TASKFORCE, UNIVERSITY OF MINNESOTA

2004. Overview of research on methods of workload measurement and allocation. Preliminary Report, July 2004.
<<http://www1.umn.edu/usenate/reports/facworkload.html>>