



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

University of Wollongong  
**Research Online**

---

Wollongong University College Bulletin

Corporate Publications Archive

---

1973

# Assessment of professional courses

S E. Bonamy

---

## Recommended Citation

Bonamy, S E., "Assessment of professional courses" (1973). *Wollongong University College Bulletin*. 31.  
<http://ro.uow.edu.au/wucbull/31>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library:  
[research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

---

## Assessment of professional courses

02/579

BULLETIN No. 37

WOLLONGONG UNIVERSITY COLLEGE  
THE UNIVERSITY OF NEW SOUTH WALES



ASSESSMENT OF PROFESSIONAL  
COURSES

S. E. BONAMY

DEPARTMENT OF THERMAL ENGINEERING

December, 1973

Bulletin No. 37

ASSESSMENT OF PROFESSIONAL COURSES

S. E. Bonamy.

## ASSESSMENT OF PROFESSIONAL COURSES

by

S. E. BONAMY\*, BE Syd., MSc Birm., PhD N.S.W.  
ASTC, CEng, FIMechE, FIEAust

Many university courses throughout Australia are at present offered on a yearly basis. The subjects taken by a student in the one year are often unrelated, requiring concentrated efforts in diverse fields, and often assessment is made from a "one shot" examination at the end of the year's work. In other areas, subjects are offered in a number of sections, for example, Engineering I, which necessitates the weighting and averaging of the results of a number of examinations to determine a final grade.

The diversity and number of subjects is usually greater in the professional engineering degree courses than in others. With the exception of certain specialist options in the latter years, these are generally of a prescribed nature; in an academic year a full-time student may be required to take as many as ten different subjects with class contact time for each varying between two and six hours per week and a total contact time of around twenty-four hours per week. Subjects taken in one year may be as diverse as, for example, Thermodynamics, Theory of Structures and Applied Electricity.

The introduction of the two session year into The University of New South Wales has provided an opportune time for reviewing, not only the layout of degree courses, but also the method of assessment and rules

---

\* Associate Professor, Dept. of Thermal Engineering, Wollongong University College.

relating to other matters such as progression, exclusion and the award of honours.

Courses can now be offered on a session rather than on a yearly basis, reducing the number of subjects to be examined at the one time and reducing the number and diversity of the examinations. Courses operating on such a basis have recently been approved by the Professorial Board for the School of Engineering at Wollongong University College. However, along with such a proposal, consideration should be given to a revised method of grading and overall assessment.

The traditional methods of assessment, including continuous assessment, have never been really satisfactory. It is desirable, particularly in Engineering Courses, that the student be encouraged to read around his subject and this becomes possible only if the number of subjects taken concurrently is reduced. Reading in too many subject areas and subsequent over-examining encourages the use only of printed lecture notes or a prescribed text, a procedure which is more suited for the training of technicians than professional engineers. It is desirable, particularly in part-time courses, that the student be free to read and progress at his own pace rather than follow a prescribed pattern spread over a fixed number of years.

Further, in a degree course containing many subjects, for example the 45-50 (on a session basis) in Engineering at Wollongong, it is neither reasonable nor necessary to expect the average student to obtain passing grades in each subject. It is not meant for a student to excel in all sections of the course; for example, a prospective civil engineer

might score high grades in Structural Engineering and Design, but not perform so well in Thermodynamics. It is reasonable in such cases to consider the award of a low passing grade.

Problems such as those described above can be overcome by giving weightings to subjects by the introduction of units of credit and by varying the method of grading. Such a method has recently been introduced in Engineering at the University of Sydney. Also a system adopting units of credit has been in existence for some years in the Master of Engineering Science Courses at The University of New South Wales. These allow the application of a grade point system for assessment on a more realistic basis than that used at present. The method described below, which is similar to that used in American universities, could be applied to most courses, since it depends basically on the units of credit given to individual subjects.

#### Unit of Credit

Each subject is allocated a number of units of credit, each unit corresponding to one hour of class contact per week, requiring approximately two hours of outside preparation. In some Universities more credit is given for subjects containing formal lectures than for those involving laboratory, or Drawing Office work. This is not considered desirable in Engineering courses as it tends to make the student devote less effort to the practice type subjects which are of particular importance to the engineer. Also, because of the large number of credits required for an Engineering degree, it is doubtful whether such weighting would make significant difference to a student's overall average.

### Assessment and Grade Point Average

Final assessment in a particular subject is not decided on the basis of 50% as a pass, but at the discretion of the lecturer who is free to adjust the grades as he desires. Final grades are listed as A, B, C, D, E and F, where A = superior, B = good, C = above average, D = average, E = below average (lowest passing), and F = fail.

American Universities usually adopt only five grades rather than six with the lowest grade representing a fail. Six grades have been introduced here to allow the common scheme given below to apply. An A would be regarded as equivalent to High Distinction, B Distinction, C Credit, D Pass, E Terminating Pass and F Fail. It is not intended that an E be regarded as terminating pass in the new system, but students with such a grade would be permitted to repeat the subject in order to improve their grade. Nor is it intended that other grades should line up exactly with existing percentages, but it is expedient at the present time to allow this to be done, since recognition of courses by the professional Institutions is based on the existing pattern.

An A pass in a subject would count as 5 grade points for each unit of credit in that subject (e.g. an A in a subject containing 3 units of credit would count as 15 grade points), a B pass would count as 4 points, C as 3 points, D as 2 points, E as 1 point and F as 0 points. Students obtaining a grade of F must repeat the subject for credit, but both the F and the new grade remain as part of the student's permanent record and are averaged to obtain his standing in the subject. This would apply also for students who desired to repeat a subject after obtaining a grade of E.

A scholarship index or grade point average is obtained by dividing the total number of grade points earned by the number of units of credit taken. Thus a grade point average can be calculated for the session's work and a cumulative grade point average for the work completed in the course.

For example, suppose that a student has completed first session of Year II in a full time Bachelor of Engineering course with the following grades :

Mathematics II - C; Fluid Mechanics I - E;  
 Applied Electricity I - D; Strength of Materials - A;  
 Thermodynamics I - C; Applied Mechanics II - A;  
 General Studies - B;

At the beginning of first session as a result of work in his first year he had earned 156 grade points for a total of 48 units of credit. His grade point average for the first session of Year II would be calculated, as follows :

<u>Subject</u>	Units of Credit.	Grade Points (Grade) scored per unit of credit	Grade Points
Mathematics II	5	3 (C)	15
Fluid Mechanics I	3	1 (E)	3
Applied Elect. I	3	2 (D)	6
Strength of Matls.	3	5 (A)	15
Thermodynamics I	3	3 (C)	9
Applied Mechanics II	3	5 (A)	15
General Studies	<u>1</u>	4 (B)	<u>4</u>
	<u>21</u>		<u>67</u>

<u>Grade point average</u> for session	=	67 ÷ 21	=	3.19
Total grade points earned in course	=	156 + 67	=	223
Total units of credit taken in course	=	48 + 21	=	69
<u>Cumulative grade point average</u>	=	223 ÷ 69	=	3.23

The grade point system lends itself to the introduction of simple rules regarding requirements for completion of courses, the award of honours, restrictions on students re-enrolling, transfer between courses and other such matters if these are thought desirable. Some suggestions in this regard based on practices elsewhere, are as follows :

#### Restriction Upon Students Re-enrolling

A first year student who obtains a grade point average of less than 2.0 at the end of the first session would be sent a letter of warning. If, at the end of second session, his cumulative grade point average is less than 1.50, he shall show cause why he should be allowed to continue in the Course. If his grade point average is greater than 1.50 and less than 2.0 he shall be placed on academic probation; this is essentially a warning that he must show improvement if he is to remain within the University. He may be restricted not only with respect to courses, but also to extra curricular activities and outside employment. A student who has been placed on probation shall show cause why he should be allowed to continue in the course if (1) he fails to attain a grade point average of 2.0 for the following session's work or (11) he fails to attain a cumulative grade point average of 2.00 at the end of two subsequent sessions. He will be removed from probation once his cumulative grade point average is 2.00 or greater.

A student who is re-admitted to a course after exclusion is placed on probation and will not be allowed to continue unless his grade point average for the first session's work is 2.00 or greater. On attaining this average, he will be removed from probation.

#### Requirements for Graduation

A fixed number of units of credit must be completed for graduation with a minimum cumulative grade point average of 2.00 corresponding to a "D" average for the course. In the Engineering courses proposed, 170 units are required for the full-time Bachelor of Engineering degree and 138 units for the part-time Bachelor of Science (Engineering) degree. A final year student who has been placed on academic probation cannot graduate until he has been removed from probation.

#### Requirements for Honours and Admission to Post-Graduate Courses

In courses not requiring additional work for honours, the award of honours can be based directly on the cumulative grade point average. For example an average of 4.00 - 5.00 might be regarded as 1st class honours, 3.50 - 4.00 as 2nd class (Division 1) and 3.00 to 3.50 as 2nd class (Division 2). Such a grading system could also apply for courses requiring additional work for honours. Students in such courses who are not reading for honours but attain these averages could be regarded as having passed with High Distinction, Distinction or Credit.

The cumulative grade point average can also be used as a measure for admitting students to post-graduate courses. For example a minimum average of 3.00 might be required for admission to a formal Masters course.

Students with lower averages wanting to enter post graduate courses could be admitted on probation subject to rules similar to those proposed for undergraduate courses. Also it might be feasible to admit a student without penalty who has an overall grade point average less than 3.0, but has an average greater than 3.0 for the last two years of his course.

#### Advantages of the Grade Point System

Some of the many advantages of operating courses on a session basis, coupled with the grade point method of assessment are as follows :

- (1) Assessment of a student in a single subject is done on a more realistic basis by grading simply as A, B, C, D, E or F.
- (2) A fair weighting is given between various subjects depending on content by introducing the "unit of credit". This ensures that the work load for different subjects is kept within reasonable bounds.
- (3) The number of units of credit to be taken in a particular session gives the student a fair assessment of the work required and protects him from heavy loading. Provision is available for a student to take a loading depending on his capabilities.
- (4) Students obtain a clear picture of their standing in a course and are motivated to work harder in the earlier years of their course. High grades obtained early in a course provide some reserve towards a cumulative grade point average in case of poorer performance in later years.

- (5) The grade point average and cumulative grade point average provides a simple means of determining a student's performance in a particular session and in his course. This simplifies record keeping and streamlines committee work associated with individual cases during enrolment.
- (6) Comparison between student performance in disparate subjects and courses is possible, allowing interchangeability of units of credit between various courses.
- (7) Requirements for graduation, the award of honours, and admission to post-graduate courses, are prescribed relative to a fixed cumulative grade point average. If such a system were adopted for all undergraduate courses, honours gradings could be compared and fair assessment made in the award of post-graduate scholarships.
- (8) Regulations regarding exclusion from and readmission to courses are simplified by the introduction of "academic probation" based on minimum scholastic requirements.

The system described above is similar to that adopted by many Universities and even High Schools in the U.S.A.. The author has found from personal experience with such a system, during three semesters of teaching in the United States that it is one which proves most favourable to staff and students. If it were adopted throughout Universities in Australia it would ease the difficult problems concerning transfers between Universities and, in particular, comparison of honours degrees for the award of post-graduate scholarships.