
DEPARTMENT OF EDUCATION



**SPACE AND COST NORMS FOR BUILDINGS AND OTHER LAND
IMPROVEMENTS AT HIGHER EDUCATION INSTITUTIONS**

APRIL 2009

PREFACE

The first set of space and cost norms for the so-called Post Secondary Education (PSE) sector was determined by the former Department of National Education in 1982. It is set out in the manual SAPSE 101 titled *Nation-wide space and cost norms for buildings and land improvements other than buildings*. This manual included norms for Residential Universities, Non-residential Universities, Residential Technikons, Non-residential Technikons, Teachers' Training Colleges, Colleges of Nursing and Technical Colleges/Institutes. The norms were established after a thorough evaluation of similar systems in other countries. On the basis of this evaluation, an extensive study of all facets of South African PSE was made and norms applicable to the South African situation were established.

In the mid-1980s, a review of the space and cost norms was undertaken by a working group of the Universities and Technikons Advisory Council (AUT). The AUT accepted the proposals of the working group, and recommended to the Ministers of Education and of Finance that they be applied as national policy with effect from 1 January 1997. After approval by the two Ministers, the space and cost norms for universities and technikons were published in November 1996 by the Department of Education.

A new space reporting module has been introduced in 2007 as part of the higher education management information system (HEMIS). Because this module has amended the 1982 space classification and coding system, changes have had to be made to the space and cost norms approved in 1996. This manual incorporates all these changes.

The norms in this new manual will need to be updated and revised on a regular basis. Changes in, for example, the Classification of Educational Subject Matter (CESM), and the implementation of the new Higher Education Qualification Framework (HEQF) could require further changes to be made to the norms. The norms would also need to be reconsidered when sufficient space data has been accumulated on HEMIS.

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CHAPTER 1: INTRODUCTION

This manual describes a comprehensive system of space and cost norms, based on full-time equivalent (FTE) student numbers, for the provision of buildings and other land improvements in higher education institutions.

The main characteristics of these space and cost norms can be summarised as follows:

- They are tailored to the South African situation.
- They accommodate students making use of both contact and distance tuition at institutions with or without hostel facilities.
- They provide a broad framework within which institutions, with proper planning, have ample room to creatively erect suitable, quality buildings.
- They are based on what is at present regarded as attainable, rather than on what has been attained in the past. For example, it is proposed that the provision of classroom facilities be made dependent on realistic figures for the utilisation of classroom facilities, student contact hours and mean classroom surface area per student.
- They are based on a few well-defined data parameters, which have been selected so as to form the basis of a reliable estimate of the total space and cost requirements of buildings and other land improvements from a national perspective. These parameters are also very useful for the purposes of individual institutions' internal planning.
- They are sufficiently detailed to allow for legitimate differences between the needs of different higher education institutions, but do not duplicate the detailed unique internal space allocation processes of individual institutions.
- They are applied to the overall space and cost of a building only. This allows institutional planners to allocate space differently from that implied by the present set of space norms. The system thus rewards the economic use of space by allowing "saved" space to be used to supplement space where it is needed.

CHAPTER 2: A GENERAL FRAMEWORK FOR SPACE NORMS FOR BUILDINGS

2.1 Background

This chapter provides a framework for the provision of space norms for buildings for higher education institutions. The general framework is compiled according to two classification fields: space use and space function (or programme). Whereas space use is the basic element, the inclusion of a programme creates an array of space provisions which can incidentally serve as a checklist to ensure that all building space is included. Definitions used in this manual are described in more detail in the following supporting documents:

- Space use categorization - See *Building Facilities Inventory and Classification Manual* (in short the *BFIC Manual*)
- Space programme categorisation (staff programme) – See *SAPSE 002: Programme Classification Structure manual*
- Full-time equivalent enrolled student (FTE) – See HEMIS definitions
- Classification of educational subject matter (CESM) – See *SAPSE 003: Classification of Education Subject Matter* and HEMIS definitions
- Assignable square metres (ASM) – See *BFIC Manual*
- Course level - See HEMIS definitions
- Land improvements other than buildings – See *SAPSE 008: Fixed Assets manual*

Table 2.1 is an array of space uses and space functions. It serves to describe the basic interrelationship between space uses and programmes, and indicates which combinations are specifically provided for in this manual.

In the following sections of this chapter, the framework to provide space norms for each space-use category and programme (entries "A" in Table 2.1) will be discussed.

It should be noted that a general shortage of funds for buildings and land improvements may compel higher education institutions to utilise new and existing buildings more effectively in future. Some of the suggestions that could be considered to increase the effective utilisation of space within buildings, are also briefly mentioned in this chapter at the appropriate place. Many of these suggestions if implemented, may reduce the numerical values of the space norms substantially, but they have not been taken into account in the determination of the present space norms. Although space norms are structured to encourage the effective use of space, it should also be noted that they do not take into consideration duplication of classes in the same subject offered at the different higher education institutions to accommodate students with specific language, religious or other preferences.

TABLE 2.1: Interrelationship between space use categories and programmes, and the scope of this manual

Space-use category Programmes	Classroom Facilities	Class/Open Laboratory Facilities	Res/Non-class Laboratory Facilities	Office Facilities	Study Facilities	Special-use Gen-use & Sup. fac.	Health-care Facilities	Residential Facilities
1.0 Instruction	A	A	B	A	B	B	B	B
2.0 Research	B	B	A	B	B	B	B	B
3.0 Public Service	B	B	B	B	B	B	B	B
4.0 Academic Support	B	B	B	A	A	A	B	B
5.0 Student Service	B	B	B	A	B	A	A	B
6.0 Institutional Support	B	B	B	A	B	A	B	B
7.0 Op. & Maint. of Plant	B	B	B	A	B	A	B	B
8.0 Bursaries	B	B	B	B	B	B	B	B
9.0 Auxilliary Enterprises	B	B	B	A	B	A	B	A
10.0 Hospitals	C	C	C	C	C	C	C	C
11.0 Ind. Operations	B	B	B	B	B	B	B	B

Key: A = This is a primary relationship for which space and cost norms are provided
 B = No provision is made for space within this programme and space facility
 C = This manual does not cover this programme. The reason for this is that teaching hospitals are established by provincial governments, while the space provision of the animal hospital of the University of Pretoria is being determined in an ad hoc way.

2.2 Classroom Facilities (1100)

According to Table 2.1, classroom facilities are provided for the Instruction (1.0) programme, and more specifically, for the Formal Instruction (1.1) subprogramme only.

As indicated in the *BFIC manual* a classroom facility could be classified as Classroom (1110) or Classroom Service (1115).

For the provision of classroom facilities within the Formal Instruction (1.1) subprogramme, it is suggested that the

ASM classroom facilities' space per FTE enrolled student of a particular CESM category and aggregate of course levels

be used as the standard space norm for classroom facilities. The aggregate course levels are the non-research levels, namely 1-6 and 8. This means that classroom facilities are only provided for the non-research FTE enrolled students¹. FTE experiential learning students are also excluded. It is proposed that the standard space norm depends on the three quantities listed below. The numerical values of these quantities vary, within limits, from institution to institution and even within CESM categories and aggregates of course levels.

¹ The BFIC Manual stipulates that classroom facilities are also available for scheduled use by research FTE students (course levels 7 and 9). The next revision of the space norms will be brought in line with this stipulation.

ASM Classroom facilities' space per Classroom station (A)

A careful consideration of modern classroom layout and design suggests that the A value of 1.5 listed in Table A.1 is reasonable. In practice classrooms with fewer stations require more floor area because the circulation space is proportionally larger and vice versa. Accordingly, institutions with classrooms averaging fewer stations (usually the smaller institutions) will have a larger average station area than institutions with classrooms having a larger number of stations (usually the larger institutions). Note that continuous wooden benches can accommodate twice as many students as swivel type seats thus generating A values far below 1.0, but restrict the free movement of students.

Annual utilisation hours per Classroom station (U)

This theoretical quantity measures the number of hours per year that a seat in a classroom can be realistically utilised. This not only depends on the number of hours per year that a classroom can reasonably be scheduled, but also on the percentage of seats that are occupied during scheduled classroom use. The U-values of 540 and 600 in Table A.1 for contact and distance education respectively, take these factors into account. As an example, in order to obtain $U = 600$ hours per station it could be assumed that, of 1200 class hours per annum (30 weeks per year times 40 hours per week), each seat is occupied for 50% of the time. These numerical values vary, within limits, from institution to institution.

There are various ways to use facilities more effectively and thus to obtain larger U values, such as:

- phasing out any department's claim that classroom space in its building is for that department's use only.
- central bookings of classrooms in order to optimise the use of classrooms and to determine future needs for additional classrooms to be erected.
- renting out classrooms to academic departments via centrally controlled systems within institutions.
- increasing the number of weeks of formal instruction in a year and/or decreasing the intensity of face to face instruction.
- erecting multi-purpose lecturing complexes, where, for example, a large assembly hall has the capacity to be effectively subdivided and transformed into smaller lecture rooms as and when needed.
- scheduling the use of classrooms in the mornings, afternoons and evenings.

Annual student Classroom contact hours per FTE non-research student of a particular CESH category (C)

The value of this quantity varies between CESH categories, the higher values being associated with those categories in which more intensive classroom instruction is normally regarded as necessary. Reasonable C values can be found in Table A.1 of Annexure A.

The relationship between the quantities A, U and C, and the standard space norm for classroom facilities within the Formal Instruction (1.1) subprogramme for each CESH category, can mathematically be defined by the following equation:

$$\text{ASM classroom space per FTE student of a particular CESH category and aggregate of course levels} = Ax C/U$$

By using the values of A, U and C as listed in Table A.1 and the above formula, it is possible to calculate the standard space norms for classroom facilities provided in Table A.2 of Annexure A. For example, take the values of A = 1.5 and C = 500 for contact tuition for the CESH 16: Mathematical Sciences in Table A.1, which when multiplied by each other and divided by the corresponding U = 540, yield the standard space norm of 1.389 ASM per FTE non-research student in Mathematical sciences in Table A.2.

2.3 Class Laboratory and Open Laboratory Facilities

According to Table 2.1 class laboratory and open laboratory facilities is provided for the Instruction (1.0) programme, and more specifically for the Formal Instruction (1.1) subprogramme only. Other subprogrammes within the Instruction (1.0) programme are not provided for.

According to the *BFIC Manual*, laboratory facilities include 6 types of spaces, namely 1210, 1215, 1220, 1225, 1250 and 1255. Research/Non-class Laboratory (1250) and Research/Non-class Laboratory Service (1255) will not be considered here since these are provided only for the Research Programme (2.0).

For the provision of laboratory facilities within the Formal Instruction (1.1) subprogramme, it is suggested that the

$$\text{ASM class laboratory and open laboratory facilities' space per FTE enrolled student of a particular CESH category and aggregate of course levels}$$

be used as the standard space norm for class/open laboratory facilities. In the case of non-research contact education students the standard space norm distinguishes between course levels 1-4/21-24, 26 (undergraduate, pre-diplomate, preparatory post-graduate and preparatory post-diplomate) and

course levels 5, 6 and 8/25, 27, 29, 31, 33 (other non-research postgraduate/post-diplomate)². No such distinction is, however, made for non-research distance education students.

As in the case of classroom facilities the standard space norm is also found to depend on the three quantities listed below. The numerical values of these quantities again vary from institution to institution, and even within CESH categories and aggregates of course levels.

ASM Class Laboratory and Open Laboratory space per laboratory station (A)

Class laboratory and open laboratory station areas depend primarily on the nature of the laboratory furniture and equipment. Small A values are usually associated with seminar room type facilities and large A values with laboratories where large pieces of equipment are required. The A values per CESH category for the different aggregates of course levels are shown in Table A.1. The standard provision of class laboratory and open laboratory facilities' space is sufficient to allow for laboratory service areas such as preparation and storage rooms for chemicals and apparatus.

Annual utilisation hours per Class Laboratory and Open Laboratory station (U)

This theoretical quantity measures the number of hours per year that a laboratory station can reasonably be utilised. This again depends on the number of hours per year that a laboratory can reasonably be scheduled, and also on the percentage of seats (stations) that are occupied during scheduled laboratory use. A value of $U = 600$ for all CESH categories and aggregates of course levels are provided in Table A.1.

There are various ways to optimise the use of class laboratory facilities and thus obtain larger U values, such as:

- sharing of laboratories where possible, especially between different course levels and modules within CESH categories.
- central bookings of laboratories at an institution.
- increasing the number of weeks of formal instruction in a year.
- scheduling the use of laboratories in the mornings, afternoons and evenings.

² The BFIC Manual stipulates that laboratory facilities are also available for scheduled use by research FTE students (course levels 7 and 9/28, 30, 32 and 34). The next revision of the space norms will be brought in line with this stipulation.

Annual student Class Laboratory and Open Laboratory contact hours per FTE enrolled student of a particular CESH category and aggregate of course levels (C)

This quantity varies between CESH categories and aggregates of course levels, the higher values being associated with those categories in which more intensive laboratory instruction is normally regarded as necessary. Reasonable C values can be found in Table A.1.

The relationship between the quantities A, U and C, and the standard space norm for class laboratory and open laboratory space within the Formal Instruction (1.1) subprogramme for each CESH category and aggregate of course levels, can mathematically be defined by the following equation:

$$\text{ASM class/open laboratory facilities' space per FTE student of a particular CESH category and aggregate of course levels} = Ax C/U$$

By using the values of A, U and C as listed in Table A.1 and the above formula, it is possible to calculate the standard space norms for class/open laboratory facilities indicated in Table A.2. For example, take the values of A = 3.5 and C = 150 for course levels 1-4/21-24, 26 of contact tuition for the CESH 07: Education in Table A.1, which, when multiplied and divided by U = 600, yields the standard space norm of 0.875 in Table A.2.

2.4 Research/Non-class Laboratory Facilities (1250, 1255)

The general trend at institutions is to classify Research/Non-class Laboratories (1250) and Research/Non-class Laboratories Service (1255) only under the Research (2.0) programme. Research/Non-class laboratory facilities in programmes 1.0 and 2.0 are, therefore, combined and only provided in the Research (2.0) programme as indicated in Table 2.1.

Research/Non-class Laboratory Facilities within the Research (2.0) programme is provided for the research activities of both personnel (mostly instruction/research personnel) and post-graduate (research) students enrolled in course levels 7 and 9/28, 30, 32, 34³. It is suggested that the

$$\text{ASM research/non-class laboratory facilities' space per FTE enrolled student of the institution}$$

be used as the standard space norm for research/non-class laboratory facilities. Note that all FTE students of the institution are taken into account when applying this norm to generate research/non-class laboratory space. Also note that research/non-class laboratory facilities thus provided, need not necessarily be in the form of conventional research/non-class laboratories facilities. In many research fields, research/non-class laboratory requirements may be for offices and, although the

³ The BFIC Manual stipulates that research/non-class laboratory facilities are only available for staff (mostly instruction/research staff). The next revision of the space norms will be brought in line with this stipulation

term research/non-class laboratory facilities is used, there is absolutely no reason for restricting staff research activities to conventional research/non-class laboratory facilities⁴. Standard space norms for research/non-class laboratory space within the Research (2.0) programme are indicated in Table A.4 of Annexure A.

2.5 Office Facilities (1300)

According to the *BFIC Manual* the following types of facilities are included: Office (1310), Office Service (1315), Conference Room (1350) and Conference Room Service (1355). In Table 2.1, office facilities are provided for the Instruction (1.0) programme or more specifically, for the Formal Instruction (1.1) subprogramme, and for other non-instructional programmes, namely Academic Support (4.0), Student Services (5.0), Institutional Support (6.0), Operation and Maintenance of Plant (7.0) and Auxiliary Enterprises (9.0).

2.5.1 Office facilities for the Formal Instruction (1.1) subprogramme

For the provision of Office facilities within this subprogramme, it is suggested that the

ASM office facilities' space per FTE enrolled student of a particular CESM category

be used as the standard space norm for office facilities. The standard space norm actually depends on two other important quantities listed below:

ASM Office facilities' space per FTE staff member (B)

In practice, the numerical values of B vary from institution to institution. In general, the more complex the institution and the more varied the instruction/research personnel's activities, the greater the requirements for office space. The B value of 15 ASM listed in Table A.1 represents a reasonable provision for office facilities' space per FTE academic staff member. Remember that the average of 15 ASM also include Office Service (1315) space such as file rooms, duplicating rooms, vaults and waiting rooms, as well as small Conference Room (1355) areas not used for scheduled classes, together with any Conference Room Service areas.

Number of FTE students per FTE instruction/research personnel member of the same CESM category (R)

The numerical values of R vary from institution to institution, and within CESM categories and aggregates of course levels. Clearly huge differences in R exist between contact and distance

⁴ This interpretation is not completely in line with the BFIC Manual's description of Research/Non-class Laboratories (1250). The next revision of the space norms will be brought more in line with the BFIC Manual's description

education. Reasonable student-staff ratios, which only distinguish between CESM categories and modes of instruction can be found in Table A.1. Developments in information technology could in future assist in obtaining larger student-staff ratios.

The relationship between the quantities B and R, and the standard space norm for office facilities within the Formal Instruction (1.1) subprogramme for each CESM category and mode of instruction, can mathematically be defined by the following equation:

$$\text{ASM office facilities' space per FTE student of a particular CESM category and mode of instruction} = B/R$$

By using the values of B and R in Table A.1, and the above formula, it is possible to calculate the standard space norms for office facilities as are indicated in Table A.2.

2.5.2 Office facilities for Non-instructional subprogrammes (4.0 - 9.0)

As regards the general provision of space for all non-instructional subprogrammes, it is necessary to distinguish between subprogrammes like 9.1, 9.2 and 9.6, which could evidently only be based on all FTE enrolled students using institutional housing, subprogramme 9.4 based on FTE enrolled students not using institutional housing, and all other subprogrammes obviously based on the total FTE enrolled students. For this reason, it is necessary to introduce the following definition for a FTE student using institutional housing:

A student occupying a residence place for the entire academic year is regarded as one FTE student using institutional housing. If the same residence place is used by more than one student during a particular year, the FTE student using institutional housing is equal to that fraction of the academic year for which the student occupies a residential place.

By using this definition, it is possible to define the number of FTE students not using institutional housing in terms of the conventional FTE enrolled students of the institution:

The number of FTE students not using institutional housing is equal to the difference between the total number of FTE enrolled students and the number of FTE students using institutional housing. If this difference is negative, the number of FTE students not using institutional housing is taken to be zero.

Note that there is no relationship between the number of FTE students using institutional housing and the number of FTE enrolled students, since the former depends on the utilisation of residential facilities and the latter on academic load. According to the latter definition above, the number of FTE students not using institutional housing in the case of institutions that only provide distance tuition, is equal to the number of FTE enrolled students.

For the provision of space for office facilities within the Non-instructional subprogrammes (4.0 - 9.0), it is therefore suggested that the

ASM office facilities' space per FTE student of a certain group

be used as the standard space norm for office facilities. The word "group" in this context nearly always refers to the group of FTE enrolled students of the institution, but only in the case of subprogramme 9.6 (Operation and Maintenance of Plant for Auxiliary Enterprises), "group" refers to FTE students using institutional housing.

The standard space norm for office facilities for the non-instructional subprogrammes depends on two quantities:

ASM Office space per FTE staff member associated with a particular programme/subprogramme and group of students (B)

In practice, the numerical values of B, as in the case of instruction/research personnel, vary from institution to institution, and the same B value of 15 will be assumed for the non-academic staff of a particular institution, as indicated in Table A.3 of Annexure A. While non-academic sections usually require more file storage space, waiting rooms and other Office Service (1315) areas, academic departments, on the other hand, require more space for Conference Rooms (1350) and Conference Room Service (1355). This usually leads to slightly larger offices in non-academic sections. The overall factors thus tend to even out.

Taking into consideration a general shortage of funds for new buildings, the implementation of practical open plan office layouts for Programmes/subprogrammes 4.0 – 9.0 could accommodate twice as many staff members and provide more amenities compared to the traditional office layout of one person per office. B values lower than 10 are therefore possible at higher education institutions. Physical storage needs has also decreased substantially as a result of the greater utilisation of electronic filing.

Number of FTE students of a certain group per FTE non-academic personnel member associated with a particular programme/subprogramme and group of students (R)

The numerical values of R for various programmes/subprogrammes are shown in Table A.3.

Developments in information technology could in future assist in obtaining larger student-staff ratios. A good example of this is the electronic registration of students.

The relationship between the quantities B and R, and the standard space norm for office facilities within non-instructional programmes/subprogrammes, can mathematically be defined by the following equation:

$$\text{ASM space for office facilities per FTE student of a certain group} = B/R$$

By using the values of B and R as indicated in Table A.3, and the above formula, it is possible to calculate standard space norms for Office facilities within the non-instructional programmes/subprogrammes, as are indicated in Table A.4.

2.6 Study facilities (1400)

According to the *BIFC Manual* study facilities comprise Study Space (1410), Stack (1420), Open-stack Study Space (1430), Processing Space (1440) and Study Service (1455). Traditionally all study facilities formed part of the institutional library, but the modern trend is to also provide Study Space (1430) for students outside libraries in the form of large rooms equipped with computer stations. According to Table 2.1, study facilities are provided for the Academic Support (4.0) programme and more specifically (see Table 4.4), for the Library Service (4.1) subprogramme only.

For the provision of study space within this subprogramme, it is suggested that the

$$\text{ASM study facilities' space per FTE enrolled student}$$

be used as the standard space norm for study facilities. The space norm includes reading space, stack space and processing space, as well as additional study space for those students who do not have appropriate study space or access to computers at their places of residence and wish to utilize such space at institutions. Note also that study space includes all space (excluding office space) related to the proper functioning of a library (central or decentralised) or resource centre.

It is noted that undergraduate students mostly do not use the library as extensively as postgraduate students. However, the impact that advances in information and communication technology has had and will have on libraries, makes it very difficult to provide norms for the Library Services (4.1) subprogramme according to course level. For example, advances in computer (information) technology and the shift to electronic journals nullify the assumption that postgraduates require more bound (book and journal) volumes space per FTE student than undergraduates. Furthermore, networking among South African libraries and abroad is rationalising the purchasing of bound volumes considerably, resulting in less duplication of information resources in the traditional Stack (1420) space and less stack space requirements.

Space norms for study facilities within the Library Services (4.1) subprogramme are indicated in Table A.4.

2.7 Special use, General use and Supporting facilities (1500, 1600 and 1700)

According to the *BFIC Manual* a large number of different types of facilities are included within the three broad categories listed (and merged) above. These specific types will not be repeated here. With regard to any single space use in this merged category, there is a great deal of variation from institution to institution. There is, however, relatively little variation from institution to institution if these three broad types of facilities are merged and considered as a single category.

According to Table 2.1, Special use (1500), General use (1600) and Supporting (1700) facilities are provided for non-instructional programmes/subprogrammes within the Academic Support (4.0), Student Services (5.0), Institutional Support (6.0), Operation and Maintenance of Plant (7.0) and Auxiliary Enterprises (9.0) programmes.

For the provision of Special use, General use and Supporting facilities within the non-instructional programmes/subprogrammes listed above, it is suggested that the

ASM special use, general use and supporting facilities' space per FTE student of a certain group and mode of instruction be used as the standard space norm for this category of facilities

The word "group" here nearly always refers to the group of total FTE enrolled students of the institution. In the case of Student Housing Services (9.1), Student Food Services (9.2) and Operation and Maintenance of Plant for Auxiliary Enterprises (9.6) subprogrammes, the word "group" refers to FTE students using institutional housing, and in the case of the Other Food Services (9.4) subprogramme, to FTE students not using institutional housing. Facilities for Subprogramme (9.4) are mainly provided for cafeteria facilities outside institutional student residences.

A general trend that has been observed at institutions is the scaling down on student food services at student residences and the erection of centralised cafeterias where bookings for food need to be made beforehand via computer. The result is considerable savings, not only on expenditure on buildings, but also on current expenditure.

Standard space norms for special use, general use and supporting facilities within the non-instructional programmes/subprogrammes are indicated in Table A.4.

2.8 Health Care facilities (1800)

In the *BFIC Manual* seven different types of Health Care facilities (1800) are defined. These facilities are associated primarily with the Hospitals (10.0) programme, which is not covered by the present manual. According to Table 2.1, however, facilities for basic health and first-aid facilities within the Student Health Services (5.4) subprogramme is provided on campus.

It is suggested that

ASM health care facilities' space per FTE student

be used as standard space norm for health care facilities in the case of contact tuition. This norm is indicated in Table A.4.

2.9 Residential Facilities (1900)

Seven different types of residential facilities are defined in the *BFIC Manual*. These facilities are only associated with the Student Housing Services (9.1) and Staff Housing Services (9.3) subprogrammes.

For the provision of residential facilities within this programme, it is suggested that the

ASM residential facilities' space per FTE student of a certain group

be used as the standard space norm for this category of facilities. In the case of the Staff Housing Services (9.3) subprogramme, the word "group" refers to all FTE enrolled students of the institution, whereas in the case of the Student Housing Services (9.1) subprogramme "group" refers only to FTE students using institutional housing. Standard space norms for these two subprogrammes are shown in Table A.4.

CHAPTER 3: A FRAMEWORK FOR COST NORMS FOR BUILDINGS AND LAND IMPROVEMENTS OTHER THAN BUILDINGS

3.1 The Definition of a Building Cost Unit

Having developed guidelines for the provision of space for various types of facilities as a function of different groups of FTE students, it is necessary to obtain realistic estimates for building costs, as well as costs of land improvements other than buildings. For this purpose, a framework for standard cost norms is introduced in this chapter and defined in terms of a fictitious monetary unit, the so-called building cost unit:

The cost unit is defined annually to be the current rand equivalent of R3 065 on 15 June 1995, the latter amount being escalated by the BER Building Cost Index in the Report on Building Costs published quarterly by the Bureau for Economic Research (BER), University of Stellenbosch. The Building Cost Index on 15 June 1995 is taken to be 152.4 using base year 1990⁵.

An annual value of the cost unit is provided by the Department of Education each year.

3.2 Standard Cost Norm for Buildings

In this section a set of cost norms for building facilities will be introduced to quantify the financial implication of the provision of building facilities. It is suggested that the

cost units for building facilities of a particular category per FTE student of a particular type or group

be used as the prototype definition of the standard cost norm for various space use facilities and different types (defined by CESM categories, course levels and mode of instruction) or groups of students as defined in Chapter 2.

Standard cost norms for building facilities can be derived, although somewhat artificially, along the same lines as standard space norms for building space in the previous chapter, the only difference being the fact that surface areas or ASM are to be replaced everywhere by monetary units or cost units. Rather than repeat this procedure for each of the space use facilities and programmes/subprogrammes considered in Chapter 2, it is suggested that standard cost norms be derived from the standard space norms simply by converting ASM to cost units by means of suitable tables of

⁵ The most recent published value of the BER Building Cost Index (30 September 2006) as on 15 June 2006 is 400.4, meaning that the value of the building cost unit for 2006 is R8 053

conversion factors. These conversion factors, which are also known as the standard values of the cost units per ASM, are given in Table A.5 of Annexure A for the space-use facilities and CESM categories within the Formal Instruction (1.1) subprogramme, and in Table A.6 of Annexure A for the space use facilities and non-instructional programmes/subprogrammes. Obviously, the conversion factor tables are expressing the building cost in cost units to provide one ASM building space within a particular space use facility, CESM category or programme/subprogramme.

The procedure for converting standard space norms to standard cost norms can be summarised by the equation below:

$$\begin{array}{l} \textit{Standard} \\ \textit{Cost Norm} \end{array} = \begin{array}{l} \textit{Standard value of the} \\ \textit{Cost Units per ASM} \end{array} \times \begin{array}{l} \textit{Standard} \\ \textit{Space norm} \end{array}$$

The standard cost norms thus calculated, are given in Table A.7 of Annexure A for the Formal Instruction (1.1) subprogramme and in Table A.8 of Annexure A for all the other programmes/ subprogrammes.

As an example of the conversion of space norms to cost norms, consider the standard space norm in Table A.2 of 0.550 for class/open laboratory facilities, contact tuition, course levels 1-4, within the CESM 05: Communication. Multiplying 0.550 by 1.05, the standard value of the cost units per ASM class laboratory facilities within the same CESM category given in Table A.5, produces the corresponding standard cost norm of 0.578 in Table A.7. Similarly, multiplying each space norm for the non-instructional subprogrammes in Table A.4 by the corresponding conversion factors in Table A.6, produces the table of standard cost norms in Table A.8

It should be emphasised that the set of conversion factors (Tables A.5 and A.6) represents a conservative but nevertheless realistic all-inclusive estimate of the building cost in cost units of one ASM building facilities' space within a particular space use category, CESM category or programme/ subprogramme. Also included in this estimate are air-conditioning where necessary, a 2% cost escalation due to possible adverse physical conditions on the building site, and a 1 % allowance for site improvement in the immediate vicinity of the building. Building costs are also assumed to include value-added tax, such items as fees of professionals and other costs directly attributable to the building project such as the salaries of clerks of works and fees paid to local authorities for the approval of plans.

3.3 Standard Cost Norm for Land Improvements other than buildings

According to the SAPSE 008 Manual, land improvements other than buildings comprise:

- Streets, roads and bridges
- Landscaping
- Open-air parking areas

-
- Open-air recreational areas
 - Utility distribution systems

Obviously, space norms have no meaning in these cases and cost units for land improvement other than buildings will usually be supplied for a completely new building. It is suggested that

13% of the total cost units for new buildings

be provided for the associated land improvement other than buildings.

CHAPTER 4: A MODEL CALCULATION IN USING THE NORMS

Consider a fictitious higher education institution, having 16 991.6 FTE students distributed across the various modes of instruction, CESM categories and course levels as indicated in Tabel 4.1. The number of FTE students using institutional housing is also indicated in Table 4.1.

TABLE 4.1: FTE students for a fictitious higher education institution according to CESM category, course level, mode of instruction, and residential status.

Mode of Instruction		Contact					Distance		
CESM category	Course level	1-4	5, 6, 8	1-6, 8	7,9	1-9	1-6, 8	7,9	1-9
01	Agriculture and Renewable Natural Resources	325.2	0.5	325.7	15.1	340.8	0.0	0.0	0.0
02	Architecture and Environmental Design	560.4	53.8	614.1	19.1	633.2	0.0	0.0	0.0
03	Arts, Visual and Performing								
	3A Music	121.6	4.4	125.9	2.4	128.4	388	0.0	38.8
	3B History of Visual Arts	170.9	0.0	170.9	0.7	171.6	0.0	0.0	0.0
	3C All other Arts, Visual and Performing	33.9	0.0	33.9	0.0	33.9	0.0	0.0	0.0
04	Business, Commerce and Management Science	3597.7	150.2	3747.9	34.1	3782.0	2.2	0.0	2.2
05	Communication	279.2	1.3	280.4	4.1	284.5	0.0	0.0	0.0
06	Computer Science and Data Processing	1133.8	37.0	1170.8	25.8	1196.6	6.6	0.0	6.6
07	Education	605.9	70.4	676.3	37.5	713.8	1759.1	0.0	1759.1
08	Engineering and Engineering Techology	747.3	0.0	747.3	12.9	760.2	0.0	0.0	0.0
09	Health Care and Health Science								
	09A Nursing, Rehabilitation and Therapym tec;	232.7	39.1	271.8	17.8	289.6	10.9	0.0	10.9
	09B All other Health Care and Health Sciences	405.5	7.1	412.6	10.2	422.8	1.5	0.0	1.5
10	Home Economics	45.3	0.0	45.3	0.0	45.3	0.0	0.0	0.0
11	Industrial Arts, Trades and Technology	81.0	0.0	81.0	0.0	81.0	21.5	0.0	21.5
12	Languages, Linguistics abd Literal	755.3	44.7	800.0	25.8	825.8	0.0	0.0	0.0
13	Law	1393.8	13.9	1407.6	13.3	1421.0	0.0	0.0	0.0
14	Libaries and Museums	2.8	0.0	2.8	0.3	3.0	0.0	0.0	0.0
15	Life Sciences and Physical Science	594.1	39.9	634.0	56.6	690.6	9.3	0.0	9.3
16	Mathematical Sciences	704.1	10.9	715.1	3.9	718.9	32.0	0.0	32.0
17	Military Sciences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Philosophy, Religion and Theology	41.5	9.5	51.0	1.7	52.7	0.0	0.0	0.0
19	Physical Education, Health Education and Leisure	94.8	20.0	114.8	6.2	121.1	0.0	0.0	0.0
20	Psychology	518.3	77.1	595.4	25.9	621.4	0.0	0.0	0.0
21	Public Administration and Social Services	428.5	46.7	475.2	16.1	491.3	0.2	0.0	0.2
22	Social Science and Social Studies	1059.9	165.1	1225.1	49.9	1275.0	5.0	0.0	5.0
TOTAL		13933.4	791.6	14725.1	379.5	15104.6	1887.0	0.0	1887.0
FTE students using institutional housing						2565.5			0.0
FTE students not using Institutional housing						12539.1			1887.0

The total space and cost provision for buildings and land improvements other than buildings will now be calculated for this institution.

Space and cost unit provision for the Formal Instruction (1.1) programme

Table 4.2 shows the calculated space and cost provision for this subprogramme. The space provision calculated for CESM 01 (for example) is derived by first calculating the classroom provision for contact students, then the laboratory provision for contact students and finally the office provision for contact students. The classroom provision is calculated by using the ASM per FTE contact student in course levels 1-6 and 8 in Table A.2, namely 1.028 and multiply this value by the total FTE students in course levels 1-6 and 8, namely 325.7 (See Table 4.1). The provision for CESM 01 for classroom space for contact students is therefore 334.8 ASM. In the calculation of class/open laboratory space provision

a distinction is made between course levels 1-4 and levels 5, 6 and 8. Separate calculations for these two categories, once again using Tables A.2 and 4.1 lead to a provision of respectively 975.6 ASM and 2.4 ASM for contact students for these two course level categories. Finally the office provision for the FTE contact students enrolled in CESM 01 is calculated by multiplying the norm provision of 1.500 in Table A.2 by the FTE contact students of 340.8, leading to a space provision of 511.2 ASM. Similar space calculations can be made for distance tuition students. However, since there are no such students enrolled in CESM 01 in the institution considered, the total space provision for Formal Instruction (1.1) subprogramme in CESM 01 is the sum of 334.8, 975.6, 2.4 and 511.2, namely 1824.0 ASM as indicated in Table 4.2.

By using the cost norm Table A.7 and Table 4.1 similar calculations as described above can be done to determine the total cost units provided by the norms for each CESM category. Using once again CESM 01 as an example, it is calculated that 502.2 (classrooms), 1707.3 (class/open laboratories for course levels 1-4), 4.2 (laboratories for course level 5, 6 and 8) and 511.2 (offices), in total 2724.9 cost units, are generated for CESM 01 as indicated in Table 4.2.

TABLE 4.2: Total building space and building cost provisions for a fictitious higher education institution within the Formal Instruction (1.1) subprogramme

CESM category	Total ASM	Total cost Units
01 Agriculture and Renewable Natural Resources	1824	2725
02 Architecture and Environmental Design	4386	4761
03 Arts, Visual and Performing		
3A Music	912	1432
3B History of Visual Arts	371	428
3C All other Arts, Visual and Performing	235	263
04 Business, Commerce and Management Sciences	8298	10435
05 Communication	622	755
06 Computer Sciences and Data Processing	5056	5897
07 Education	2329	2781
08 Engineering and Engineering Technology	5702	6622
09 Health Care and Health Sciences		
09A Nursing, Rehabilitation and Therapy, etc.	1306	1523
09B All other Health Care and Health Sciences	2473	3728
10 Home Economics	276	339
11 Industrial Arts, Trades and Technology	759	732
12 Languages, Linguistics and Literature	2008	2428
13 Law	3149	3989
14 Libraries and Museums	7	8
15 Life Sciences and Physical Sciences	3993	6149
16 Mathematical Sciences	1809	2307
17 Military Sciences	0	0
18 Philosophy, Religion and Theology	116	141
19 Physical Education, Health Education and Leisure	652	751
20 Psychology	1571	1933
21 Public Administration and Social Services	911	1095
22 Social Sciences and Social Studies	3348	3995
TOTAL	52112	65217

Space and cost unit provision for programmes/subprogrammes 2.0 - 9.0

Table 4.3 shows the calculated space and cost unit provision for all programmes/subprogramme. The total calculated space and cost unit provision for the Formal Instruction (1.1) subprogramme were transferred from Table 4.2 and are also shown in Table 4.3. The space provision for all the other programmes/subprogrammes are calculated by using the respective norms in Table A.4 and the groups of FTE enrolled students in Table 4.1. The provision of cost units for the respective programmes/ subprogrammes are calculated by using the norms in Table A.8 and the groups of FTE enrolled students in Table 4.1. We illustrate this calculation for the Student Health Services (5.4) subprogramme. According to Table A.4 the space norm for health care facilities is 0.016 ASM per FTE student. Multiplying this value with the total FTE enrolled contact students of 15104.6 (as indicated in Table 4.1) the space provision of 241.7 ASM is derived. Since the subprogramme 5.4 only provide health care facilities' space and only to contact tuition students, this provision of 241.7 is the total space provided for subprogramme 5.4 as indicated in Table 4.3. A similar calculation (using Tables A.8 and 4.1) lead to the total cost unit provision of 241.7 for the same subprogramme 5.4 as also indicated in Table 4.3.

In the calculation of space and cost units for the Auxiliary Enterprises (9.0) programme it is important to note the footnotes at Tables A.4 and A.8 indicating the respective FTE student group to be used in the calculation of space and cost units for subprogrammes 9.1, 9.2, 9.4 and 9.6.

In the second last row of Table 4.3 the 13% additional cost units to provide for land improvements other than buildings are indicated. The total space (ASM) and cost units provided to this fictitious institution by the space and cost norms, as described in Chapters 2 and 3, are therefore respectively 185 199 ASM and 235 237.

TABLE 4.3: Total space and cost provision for a fictitious higher education institution according to programme/subprogramme

Programme / subprogramme	Total ASM	Total cost Units
1.0 Instruction (Transferred from Table 4.2)	52112	65217
2.0 Research	12140	20638
4.0 Academic Support		
4.1 Library Services	24261	26527
4.2 Museum Services	1189	1189
4.3 Educational Media Services	1286	1453
4.4 Academic Computing Support	1029	1527
4.5 Ancillary Support	7690	7690
4.6 Academic Administration	1605	1605
4.7 Course and Curriculum Development	76	76
4.8 Academic Personnel Development	76	76
5.0 Student Services		
5.1 Student Services Administration	121	121
5.2 Social and Cultural Development	14946	14946
5.3 Counselling and Career Guidance	302	302
5.4 Student Health Services	242	242
6.0 Institutional Support		
6.1 Executive Management	967	1128
6.2 Financial Administration	814	814
6.3 Financial Aids Administration	302	302
6.4 General Administration and Logistical Services	9457	7333
6.5 Student Admissions, Records and Examination	491	491
6.6 Administrative Computing Support	729	949
6.7 Public Relations / Fund-Raising	510	510
6.8 Staff Social and Cultural Development	227	227
7.0 Operation and Maintenance of Plant	4654	4025
9.0 Auxiliary Enterprises		
9.1 Student Housing Services	35670	36914
9.2 Student Food Services	4333	4116
9.3 Staff Housing Services	3059	3212
9.4 Other Food Services	5869	5575
9.5 Other Auxiliary Enterprises	693	659
9.6 Operation and Maintenance of Plant for Aux. Ent.	351	310
TOTAL FOR BUILDINGS	185199	208174
Land improvement other than buildings		27063
ALL LAND IMPROVEMENTS	185199	235237

ANNEXURE A

TABLE A.1: BUILDING SPACE USE FOR CONTACT AND DISTANCE TUITION IN THE FORMAL INSTRUCTION (1.1) SUBPROGRAMME AT HIGHER EDUCATION INSTITUTIONS ACCORDING TO CESM CATEGORY, COURSE LEVEL AND SPACE USE CATEGORY

CESM category Course level(1)	Classroom Facilities (1100)						Class/Open Laboratory Facilities (1210, 1215, 1220, 1225)						Office Facilities (1300)		
	A (ASM)	U (HOURS)		C (HOURS)		A (ASM)	U (HOURS)		C (HOURS)		B (ASM)	R			
		Contact	Distance	Contact	Distance		Contact	Distance	Contact	Distance		Contact	Distance		
				1-6,8					1-4	5,6,8	1-6,8			1-9	
01 Agriculture and Renewable Natural Resources	1.5	540	600	370	22	5.0	600	360	580	12.5	15.0	10	40		
02 Architecture and Environmental Design	1.5	540	600	440	22	6.5	600	380	650	13.7	15.0	10	40		
03 Arts, Visual and Performing 3A Music	1.5	540	600	240	38	6.0	600	500	500	13.3	15.0	12	20		
3B History of Visual Arts	1.5	540	600	240	33		600				15.0	10	40		
3C All other Arts, Visual and Performing	1.5	540	600	240	44	6.0	600	500	500	120.0	15.0	12	40		
04 Business, Commerce and Management Sciences	1.5	540	600	410	49	1.5	600	120	300	5.6	15.0	20	80		
05 Communication	1.5	540	600	320	22	3.0	600	110	950	14.1	15.0	20	80		
06 Computer Science and Data Processing	1.5	540	600	350	16	4.0	600	350	300	5.0	15.0	15	70		
07 Education	1.5	540	600	360	22	3.5	600	150	170	4.3	15.0	20	70		
08 Engineering and Engineering Technology	1.5	540	600	560	22	7.0	600	390	480	11.6	15.0	10	40		
09 Health Care and Health Sciences															
09A Nursing, Rehabilitation and Therapy, etc	1.5	540	600	430	22	3.0	600	400	400	10.0	15.0	10	70		
09B All other Health Care and Health Sciences	1.5	540	600	430	16	5.0	600	390	460	11.3	15.0	10	70		
10 Home Economics	1.5	540	600	330	16	6.5	600	340	620	12.8	15.0	10	40		
11 Industrial Arts, Trades and Technology	1.5	540	600	260	16	6.0	600	700	700	18.6	15.0	10	40		
12 Languages, Linguistics and Literature	1.5	540	600	350	33	3.0	600	150	200	4.7	15.0	20	50		
13 Law	1.5	540	600	430	22	1.5	600	110	550	8.8	15.0	20	80		
14 Libraries and Museums	1.5	540	600	330	16	3.0	600	140	230	4.9	15.0	20	40		
15 Life Sciences and Physical Sciences	1.5	540	600	430	16	5.0	600	430	720	15.0	15.0	12	40		
16 Mathematical Sciences	1.5	540	600	500	16	1.5	600	150	120	3.6	15.0	20	60		
17 Military Sciences	1.5	540	600	340	16	3.5	600	110	250	4.8	15.0	15	60		
18 Philosophy, Religion and Theology	1.5	540	600	350	27	1.5	600	120	610	9.7	15.0	20	50		
19 Physical Education, Health Education and Leisure	1.5	540	600	360	16	6.0	600	350	420	10.2	15.0	15	60		
20 Psychology	1.5	540	600	340	22	3.5	600	120	400	5.0	15.0	20	80		
21 Public Administration and Social Services	1.5	540	600	280	38	1.5	600	150	100	10.0	15.0	20	80		
22 Social Sciences and Social Studies	1.5	540	600	380	22	3.0	600	140	430	7.6	15.0	20	80		

1) Course level key: 1 Lower undergraduate/Lower pre-diplomate; 2 Intermediate undergraduate/Intermediate pre-diplomate; 3 Higher undergraduate; 4 Preparatory post-graduate/Preparatory post-diplomate; 5 Lower post-graduate/Lower post-diplomate;

6 Intermediate post-graduate (Non-research)/Intermediate post-diplomate (Non-research); 7 Intermediate post-graduate (Research)/Intermediate post-diplomate (Research);

8 Higher post-graduate (Non-research)/Higher post-diplomate (Non-research); 9 Higher Post-graduate (Research)/Higher post-diplomate (Research)

Key for other symbols: A is the ASM per station, U is the annual utilisation hours per station, C is the annual student contact hours per FTE student, B is the ASM per FTE academic personnel member and R is the FTE students per FTE academic personnel member

Note: Highlighted values were added to the C and R values as determined in 1996. Additions are based on existing average ratios between parameter values for contact tuition and distance tuition

TABLE A.2: BUILDING SPACE NORMS PER FTE STUDENT FOR CONTACT AND DISTANCE TUITION IN THE FORMAL INSTRUCTION (1.1) SUBPROGRAMME AT HIGHER EDUCATION INSTITUTIONS ACCORDING TO CESM CATEGORY, COURSE LEVEL AND SPACE USE CATEGORY

Space use Category	Classroom Facilities1)		Class/Open Laboratory Facilities1)			Office Facilities2)	
	(1100)		(1210, 1215, 1220, 1225)			(1300)	
	Contact	Distance	Contact	Distance	Contact	Distance	
CESM category	1-6,8		1-4	5,6,8	1-6,8	1-9	
Course level3)							
01 Agriculture and Renewable Natural Resources	1.028	0.055	3.000	4.833	0.104	1.500	0.370
02 Architecture and Environmental Design	1.222	0.055	4.117	7.042	0.148	1.500	0.370
03 Arts, Visual and Performing							
3A Music	0.667	0.095	5.000	5.000	0.133	1.250	0.750
3B History of Visual Arts	0.667	0.083			0.000	1.500	0.370
3C All other Arts, Visual and Performing	0.667	0.110	5.000	5.000	1.200	1.250	0.370
04 Business, Commerce and Management Sciences	1.139	0.123	0.300	0.750	0.014	0.750	0.188
05 Communication	0.888	0.055	0.550	4.750	0.070	0.750	0.188
06 Computer Science and Data Processing	0.972	0.040	2.333	2.000	0.033	1.000	0.214
07 Education	1.000	0.055	0.875	0.992	0.025	0.750	0.214
08 Engineering and Engineering Technology	1.554	0.055	4.550	5.600	0.135	1.500	0.370
09 Health Care and Health Sciences							
09A Nursing, Rehabilitation and Therapy, etc.	1.194	0.055	2.000	2.000	0.050	1.500	0.214
09B All other Health Care and Health Sciences	1.194	0.040	3.250	3.833	0.094	1.500	0.214
10 Home Economics	0.917	0.040	3.683	6.717	0.138	1.500	0.375
11 Industrial Arts, Trades and Technology	0.722	0.040	7.000	7.000	0.186	1.500	0.370
12 Languages, Linguistics and Literature	0.972	0.083	0.750	1.000	0.023	0.750	0.300
13 Law	1.194	0.055	0.275	1.375	0.022	0.750	0.188
14 Libraries and Museums	0.917	0.040	0.700	1.150	0.025	0.750	0.370
15 Life Sciences and Physical Sciences	1.194	0.040	3.583	6.000	0.125	1.250	0.370
16 Mathematical Sciences	1.389	0.040	0.375	0.300	0.009	0.750	0.250
17 Military Sciences	0.946	0.040	0.642	1.458	0.028	1.000	0.250
18 Philosophy, Religion and Theology	0.972	0.068	0.300	1.525	0.024	0.750	0.300
19 Physical Education, Health Education and Leisure	1.000	0.040	3.500	4.200	0.102	1.000	0.250
20 Psychology	0.944	0.055	0.700	2.333	0.029	0.750	0.188
21 Public Administration and Social Services	0.778	0.095	0.375	0.250	0.025	0.750	0.188
22 Social Sciences and Social Studies	1.056	0.055	0.700	2.150	0.038	0.750	0.188

1) Calculated according to the formula AxC/U.

2) Calculated according to the formula B/R.

3) Course level key: 1 Lower undergraduate/Lower pre-diplomate; 2 Intermediate undergraduate/intermediate pre-diplomate; 3 Higher undergraduate; 4 Preparatory post-graduate/Preparatory post-diplomate; 5 Lower post-graduate/Lower post-diplomate;

6 Intermediate post-graduate (Non-research)/Intermediate post-diplomate (Non-research); 7 Intermediate post-graduate (Research)/Intermediate post-diplomate (Research);

8 Higher post-graduate (Non-research)/Higher post-diplomate (Non-research); 9 Higher Post-graduate (Research)/Higher post-diplomate (Research)

Note: Space norms highlighted were added to the 1996 norms

TABLE A.3: BUILDING SPACE USE FOR OFFICE FACILITIES FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR NON-INSTRUCTIONAL SUBPROGRAMMES ACCORDING TO PROGRAMME/SUBPROGRAMME

Space use Category	Office Facilities (1300)		
	B	R	
	(ASM)	Contact	Distance
Programme/subprogramme1)			
4.0 Academic Support			
4.1 Library Services	15	150	300
4.2 Museum Services			
4.3 Educational Media Services	15	1500	1500
4.4 Academic Computing Support	15	750	2000
4.5 Ancillary Support	15	200	400
4.6 Academic Administration	15	150	300
4.7 Course and Curriculum Development	15	3000	
4.8 Academic Personnel Development	15	3000	
5.0 Student Services			
5.1 Student Services Administration	15	2000	
5.2 Social and Cultural Development	15	250	
5.3 Counseling and Career Guidance	15	750	
5.4 Student Health Services			
6.0 Institutional Support			
6.1 Executive Management	15	750	1500
6.2 Financial Administration	15	300	600
6.3 Financial Aid Administration	15	750	
6.4 General Administration and Logistical Services	15	250	500
6.5 Student Admissions, Records and Examination	15	500	750
6.6 Administrative Computing Support	15	600	800
6.7 Public Relations/Fund- Raising	15	500	500
6.8 Staff Social and Cultural Development	15	1000	
7.0 Operation and Maintenance of Plant	15	500	3000
9.0 Auxiliary Enterprises			
9.1 Student Housing Services			
9.2 Student Food Services			
9.3 Staff Housing Services			
9.4 Other Food Services			
9.5 Other Auxiliary Enterprises	15		1500
9.6 Operation and Maintenance of Plant for Aux. Ent.2)	15	500	

1) All students of course levels 1 to 9 apply to programmes 4 to 7, as well as to subprogramme 9.5

2) Subprogramme 9.6 applies to FTE students using institutional housing

Key for symbols: B is the ASM office facilities per non-academic personnel member and R is the FTE students per FTE non-academic personnel member.

TABLE A.4: BUILDING SPACE NORMS PER FTE STUDENT FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR THE NON-INSTRUCTIONAL PROGRAMMES/SUBPROGRAMMES ACCORDING TO SPACE USE CATEGORY

Space use Category (ASM PER FTE STUDENT ENROLLED AT AN INSTITUTION)	Research/Non-class Laboratory Facilities (1250, 1255)		Office Facilities (1300)		Study Facilities(1400)		Special Use, General Use & Supporting Facilities (1500, 1600, 1700)		Health Care Facilities (1800)		Residential Facilities (1900)		TOTAL	
	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance
2.0 Research	0.800	0.030											0.800	0.030
4.0 Academic Support														
4.1 Library Services			0.100	0.050	1.450	0.400	0.075	0.030					1.550	0.450
4.2 Museum Services							0.072	0.015					0.075	0.030
4.3 Educational Media Services			0.010	0.010			0.047	0.001					0.082	0.025
4.4 Academic Computing Support			0.020	0.008			0.425	0.035					0.067	0.009
4.5 Ancillary Support			0.075	0.038									0.500	0.073
4.6 Academic Administration			0.100	0.050									0.100	0.050
4.7 Course and Curriculum Development			0.005										0.005	
4.8 Academic Personnel Development			0.005										0.005	
5.0 Student Services														
5.1 Student Services Administration			0.008										0.008	
5.2 Social and Cultural Development			0.060				0.927	0.020					0.987	0.020
5.3 Counseling and Career Guidance			0.020										0.020	
5.4 Student Health Services									0.016				0.016	
6.0 Institutional Support														
6.1 Executive Management			0.020	0.010			0.042	0.006					0.062	0.016
6.2 Financial Administration			0.050	0.025				0.006					0.050	0.031
6.3 Financial Aid Administration			0.020										0.020	
6.4 General Administration and Logistical Services			0.060	0.030			0.516	0.371					0.576	0.401
6.5 Student Admissions, Records and Examination			0.030	0.020									0.030	0.020
6.6 Administrative Computing Support			0.025	0.019			0.019	0.015					0.044	0.034
6.7 Public Relations/Fund- Raising			0.030	0.030									0.030	0.030
6.8 Staff Social and Cultural Development			0.015										0.015	
7.0 Operation and Maintenance of Plant			0.030	0.005			0.270	0.060					0.300	0.065
9.0 Auxiliary Enterprises														
9.1 Student Housing Services1)							2.104				11.800		13.904	
9.2 Student Food Services1)							1.689				0.200	0.020	1.889	
9.3 Staff Housing Services													0.200	0.020
9.4 Other Food Services1)							0.462	0.040					0.462	0.040
9.5 Other Auxiliary Enterprises				0.010			0.044	0.005					0.044	0.015
9.6 Operation and Maintenance of Plant for Aux. Ent.1)			0.030				0.107						0.137	

1) Subprogramme 9.1, 9.2 and 9.6 apply to FTE students using institutional housing and subprogramme 9.4 to FTE students not using institutional housing. Total FTE students (course levels 1-9) apply to all other programmes/subprogrammes

TABLE A.5: BUILDING COST UNITS PER ASM FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR THE FORMAL INSTRUCTION (1.1) SUBPROGRAMME ACCORDING TO CESM CATEGORY AND SPACE USE CATEGORY

Space use Category (BUILDING COST UNITS PER ASM)	Classroom Facilities (1100)	Class/Open Labo- ratory Facilities (1210, 1215, 1220, 1225)	Office Facilities (1300)
CESM category			
01 Agriculture and Renewable Natural Resources	1.5	1.75	1.00
02 Architecture and Environmental Design	1.5	1.00	1.00
03 Arts, Visual and Performing			
3A Music	1.5	1.75	1.00
3B History of Visual Arts	1.5		1.00
3C All other Arts, Visual and Performing	1.5	1.10	1.00
04 Business, Commerce and Management Sciences	1.5	1.00	1.00
05 Communication	1.5	1.05	1.00
06 Computer Science and Data Processing	1.5	1.10	1.00
07 Education	1.5	1.10	1.00
08 Engineering and Engineering Technology	1.5	1.10	1.00
09 Health Care and Health Sciences			
09A Nursing, Rehabilitation and Therapy, etc	1.5	1.10	1.00
09B All other Health Care and Health Sciences	1.5	1.75	1.00
10 Home Economics	1.5	1.25	1.00
11 Industrial Arts, Trades and Technology	1.5	0.90	1.00
12 Languages, Linguistics and Literature	1.5	1.05	1.00
13 Law	1.5	1.00	1.00
14 Libraries and Museums	1.5	1.00	1.00
15 Life Sciences and Physical Sciences	1.5	1.75	1.00
16 Mathematical Sciences	1.5	1.00	1.00
17 Military Sciences	1.5	1.00	1.00
18 Philosophy, Religion and Theology	1.5	1.00	1.00
19 Physical Education, Health Education and Leisure	1.5	1.10	1.00
20 Psychology	1.5	1.15	1.00
21 Public Administration and Social Services	1.5	1.00	1.00
22 Social Sciences and Social Studies	1.5	1.00	1.00

**TABLE A.6: BUILDING COST UNITS PER ASM FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR NON-INSTRUCTIONAL PROGRAMMES/
SUBPROGRAMMES ACCORDING TO SPACE USE CATEGORY**

Space use Category (BUILDING COST UNITS PER ASM) CESM category	Res/Non-class Laboratory Facilities (1250,1255)	Office Facilities (1300)	Study Facilities (1400)	Special use General Use and Supporting Facilities (1500, 1600, 1700)	Health Care Facilities (1800)	Residential Facilities (1900)
2.0 Research	1.700					
4.0 Academic Support						
4.1 Library Services		1.000	1.100			
4.2 Museum Services				1.000		
4.3 Educational Media Services		1.000		1.150		
4.4 Academic Computing Support		1.000		1.700		
4.5 Ancillary Support		1.000		1.000		
4.6 Academic Administration		1.000				
4.7 Course and Curriculum Development		1.000				
4.8 Academic Personnel Development		1.000				
5.0 Student Services						
5.1 Student Services Administration		1.000				
5.2 Social and Cultural Development		1.000		1.000		
5.3 Counseling and Career Guidance		1.000				
5.4 Student Health Services					1.000	
6.0 Institutional Support						
6.1 Executive Management		1.000		1.250		
6.2 Financial Administration		1.000		1.000		
6.3 Financial Aid Administration		1.000				
6.4 General Administration and Logistical Services		1.000		0.750		
6.5 Student Admissions, Records and Examination		1.000				
6.6 Administrative Computing Support		1.000		1.700		
6.7 Public Relations/Fund- Raising		1.000				
6.8 Staff Social and Cultural Development		1.000				
7.0 Operation and Maintenance of Plant		1.000		0.850		
9.0 Auxiliary Enterprises						
9.1 Student Housing Services				0.950		1.050
9.2 Student Food Services				0.950		
9.3 Staff Housing Services						1.050
9.4 Other Food Services				0.950		
9.5 Other Auxiliary Enterprises		1.000		0.950		
9.6 Operation and Maintenance of Plant for Aux. Ent.		1.000		0.850		

TABLE A.7: BUILDING COST NORMS¹⁾ PER FTE STUDENT FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR THE FORMAL INSTRUCTION (1.1) SUBPROGRAMME ACCORDING TO CESM CATEGORY, COURSE LEVEL AND SPACE USE CATEGORY

Space use Category (BUILDING COST UNITS PER FTE STUDENT OF A PARTICULAR CESM CATEGORY)	Classroom Facilities (1100)		Class/Open Laboratory Facilities (1210, 1215,1220, 1225)		Office Facilities (1300)					
	Contact	Distance	Contact	Distance	Contact	Distance				
	1-6,8		1-4		5,6,8		1-6,8		1-9	
CESM Category	Course Level ²⁾									
01 Agriculture and Renewable Natural Resources	1.542	0.083	5.250	8.458	0.182	1.500	0.370			
02 Architecture and Environmental Design	1.833	0.083	4.117	7.042	0.148	1.500	0.370			
03 Arts, Visual and Performing										
3A Music	1.001	0.143	8.750	8.750	0.233	1.250	0.750			
3B History of Visual Arts	1.001	0.125				1.500	0.370			
3C All other Arts, Visual and Performing	1.001	0.165	5.500	5.500	1.320	1.250	0.370			
04 Business, Commerce and Management Sciences	1.709	0.185	0.300	0.750	0.014	0.750	0.188			
05 Communication	1.332	0.083	0.578	4.988	0.074	0.750	0.188			
06 Computer Science and Data Processing	1.458	0.060	2.566	2.200	0.036	1.000	0.214			
07 Education	1.500	0.083	0.963	1.091	0.027	0.750	0.214			
08 Engineering and Engineering Technology	2.331	0.083	5.005	6.160	0.148	1.500	0.370			
09 Health Care and Health Sciences										
09A Nursing, Rehabilitation and Therapy, etc ¹⁾	1.791	0.083	2.200	2.200	0.055	1.500	0.214			
09B All other Health Care and Health Sciences	1.791	0.060	5.688	6.708	0.165	1.500	0.214			
10 Home Economics	1.376	0.060	4.604	8.396	0.173	1.500	0.375			
11 Industrial Arts, Trades and Technology	1.083	0.060	6.300	6.300	0.168	1.500	0.370			
12 Languages, Linguistics and Literature	1.458	0.125	0.788	1.050	0.024	0.750	0.300			
13 Law	1.791	0.083	0.275	1.375	0.022	0.750	0.188			
14 Libraries and Museums	1.376	0.060	0.700	1.150	0.025	0.750	0.370			
15 Life Sciences and Physical Sciences	1.791	0.060	6.270	10.500	0.219	1.250	0.370			
16 Mathematical Sciences	2.084	0.060	0.375	0.300	0.009	0.750	0.250			
17 Military Sciences	1.419	0.060	0.642	1.458	0.028	1.000	0.250			
18 Philosophy, Religion and Theology	1.458	0.102	0.300	1.525	0.024	0.750	0.300			
19 Physical Education, Health Education and Leisure	1.500	0.060	3.850	4.620	0.113	1.000	0.250			
20 Psychology	1.416	0.083	0.805	2.683	0.033	0.750	0.188			
21 Public Administration and Social Services	1.167	0.143	0.375	0.250	0.025	0.750	0.188			
22 Social Sciences and Social Studies	1.584	0.083	0.700	2.150	0.038	0.750	0.188			

1) Calculations were made by multiplying the values of the cost units in Table A.5 with the space norms in Table A.2.

2) Course level key: 1 Lower undergraduate/Lower pre-diplomate; 2 Intermediate undergraduate/Intermediate pre-diplomate; 3 Higher undergraduate; 4 Preparatory post-graduate/Preparatory post-diplomate; 5 Lower post-graduate/Lower post-diplomate;

6 Intermediate post-graduate (Non-research)/Intermediate post-diplomate;

7 Higher post-graduate (Non-research)/Higher post-diplomate (Research);

8 Higher post-graduate (Non-research)/Higher post-diplomate (Research)

Note: Cost norms highlighted were added to the 1996 norms

TABLE A.8: BUILDING COST NORMS¹⁾ PER FTE STUDENT FOR CONTACT AND DISTANCE TUITION AT HIGHER EDUCATION INSTITUTIONS FOR NON-INSTRUCTIONAL PROGRAMMES/ SUBPROGRAMMES ACCORDING TO SPACE USE CATEGORY

Space use Category (COST UNITS PER FTE STUDENT ENROLLED AT AN INSTITUTION)	Research/Non-class Laboratory Facilities (1250, 1255)		Office Facilities (1300)		Study Facilities (1400)		Special Use, General Use & Supporting Facilities (1210, 1215, 1220, 1225)		Health Care Facilities (1800)		Residential Facilities (1900)		TOTAL	
	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance	Contact	Distance
Programme/subprogramme ²⁾														
2.0 Research	1.360	0.051											1.360	0.051
4.0 Academic Support														
4.1 Library Services			0.100	0.050	1.595	0.440							1.695	0.490
4.2 Museum Services							0.075	0.030					0.075	0.030
4.3 Educational Media Services			0.010	0.010			0.083	0.017					0.093	0.027
4.4 Academic Computing Support			0.020	0.008			0.080	0.002					0.100	0.010
4.5 Ancillary Support			0.075	0.038			0.425	0.035					0.500	0.073
4.6 Academic Administration			0.100	0.050									0.100	0.050
4.7 Course and Curriculum Development			0.005										0.005	
4.8 Academic Personnel Development			0.005										0.005	
5.0 Student Services														
5.1 Student Services Administration			0.008										0.008	
5.2 Social and Cultural Development			0.060				0.927	0.020					0.987	0.020
5.3 Counseling and Career Guidance			0.020										0.020	
5.4 Student Health Services									0.016				0.016	
6.0 Institutional Support														
6.1 Executive Management			0.020	0.010			0.053	0.008					0.073	0.018
6.2 Financial Administration			0.050	0.025				0.006					0.050	0.031
6.3 Financial Aid Administration			0.020										0.020	
6.4 General Administration and Logistical Services			0.060	0.030			0.387	0.278					0.447	0.308
6.5 Student Admissions, Records and Examination			0.030	0.020									0.030	0.020
6.6 Administrative Computing Support			0.025	0.019			0.032	0.026					0.057	0.045
6.7 Public Relations/Fund- Raising			0.030	0.030									0.030	0.030
6.8 Staff Social and Cultural Development			0.015										0.015	
7.0 Operation and Maintenance of Plant			0.030	0.005			0.230	0.051					0.260	0.056
9.0 Auxiliary Enterprises ²⁾														
9.1 Student Housing Services							1.999				12.390		14.389	
9.2 Student Food Services							1.605						1.605	
9.3 Staff Housing Services											0.210	0.021	0.210	0.021
9.4 Other Food Services							0.439	0.038					0.439	0.038
9.5 Other Auxiliary Enterprises							0.042	0.005					0.042	0.015
9.6 Operation and Maintenance of Plant for Aux. Ent.			0.030				0.091						0.121	

1) Calculations were made by multiplying the values of the cost units in Table A.6 with the space norms in Table A.4.

2) Subprogramme 9.1, 9.2 and 9.6 apply to FTE students using institutional housing and subprogramme 9.4 to FTE students not using institutional housing. Total FTE students (course levels 1-9) apply to all other programmes/subprogrammes