

THE SOUTH AFRICAN COUNCIL FOR QUANTITY SURVEYORS

Education Standards Committee and Education Advisory Committee

Outcomes of accredited tertiary educational programmes which meet the prerequisites for registration of graduates as quantity surveyors-in-training with the South African Council for Quantity Surveyors

Authorised by the Council

Document: SACQS 2

Revision – 1

Date: 25 September 1999

1. Introduction

This document defines the outcomes of quantity surveying tertiary educational programmes which meet the prerequisites for registration of candidates with the South African Council for Quantity Surveyors (SACQS) as quantity surveyors / quantity surveyors-in-training

Section 2 states the required outcomes of an accredited degree programme

Section 3 defines the minimum programme content by knowledge area

Required Outcomes

The required outcomes of an accredited quantity surveying tertiary educational programme are domiciled in five fundamental domains:

- **Science:** information systems, research, surveying, mathematics, statistics, physics
- **Technology:** the assembly process, quantification, visual media (interpretation, communication, application), elements, components and materials
- **Economics:** the enterprise as an economic entity, the national economy, the function of the construction industry within the national economy, the economics of construction and property, investment appraisal
- **Law:** relevant public and private law, law relating to the development and use of property, legal entities, legal frameworks governing the operation of the professions allied to the built environment, law relating to the production process, dispute resolution management
- **Management (humanities):** the environment and structure of business, business entrepreneurship, entrepreneurial management (management of the firm), human ecology, interpersonal communication, production process management, professional ethics and social responsibility

Within the foregoing five domains, the following general outcomes denote prerequisite, specialised competence leading to registration with the SACQS as a quantity surveyor or quantity surveyor-in-training:

- Analysis and problem-solving
- Commerce, entrepreneurship and management
- Communication
- Information Technology
- Interdisciplinary teamwork
- Law
- Numeracy
- Quantification
- Research
- Technology

3 Minimum programme content

Traditional 4-year professional degrees *currently* * designated at Level 7 (4) of the National Qualifications Framework (NQF) are allocated 480 credit units ie 4 800 notional hours of learning activity (equivalent to 600 total hours per semester for 8 semesters) by the South African Qualifications Authority (SAQA)

To satisfy the requirements of both SACQS and SAQA, a balanced programme should be structured by each individual tertiary institution. The “uniqueness” of respective programmes lies in a variety of course detail within each programme. This “uniqueness” is encouraged and supported by the SACQS

Refer to page 3, **Table 1: Skills and outcomes of an accredited quantity surveying tertiary educational programme**

* As at 25 September 1999, Levels are under debate at SAQA

Table 1: Skills and outcomes of an accredited quantity surveying tertiary educational programme

Skills	Description and definition	Outcomes
Analysis and problem-solving	<p>Investigation, problem-solving and analysis</p> <ol style="list-style-type: none"> 1 Clear identification of problems 2 Planning approaches to address problems 3 Clear identification of possible solutions and alternative solutions 4 Choice of optimal solution 5 Division of tasks into constituent parts to aid comprehension 6 Prioritising main points in a given task or question 7 Identification of logical structures / flaws in statements 8 Establishing reasons for / Evidence of the bases of Claims or statements 	<p>Creative and innovative identification, assessment, formulation and solving of convergent and divergent problems encountered in the day-to-day work of the quantity surveying profession; assessment of impacts, risks and benefits of design proposals; exercising of judgement commensurate with knowledge and experience; performance of management tasks including analysis, and evaluation of alternative solutions to problems or queries; identification and solution of open-ended quantity surveying problems; application of techniques and principles of quantity surveying analysis, financial management and risk management</p>
Commerce, entrepreneurship and management	<p>Commercial, business, entrepreneurial, professional and management practices</p> <ol style="list-style-type: none"> 1 Understanding management skills 2 Recognising the need for and applying <ul style="list-style-type: none"> ▪ Cost effective use of appropriate resources ▪ Processes of quality control and –assurance within relevant codes of certification / measures ▪ Health and safety regulations ▪ Processes to ensure that client needs are met and customers are delighted 3 Understanding environmental, social and community issues 4 Use of accounting principles, budgets and cashflows 5 Application of general economic principles 6 Initiation of development 7 Ethical business and professional practice 8 Applying micro- and macro economic and marketing skills 	<p>Working across quantity surveying, architectural / engineering design disciplinary boundaries through cross-disciplinary literacy and shared fundamental knowledge; identifying, evaluating and reporting on design problems to satisfy user-needs, value engineering, applicable standards, codes of practice and legislation; planning and managing project and construction processes while focussing on important issues of price, cost, time, value and quality and demonstrating the ability to recognise and deal with constraints; performing management tasks including analysis, quantitative modelling, optimisation of resources and evaluation of alternative solutions to problems; exercising judgement, testing implementability and sensitivity analyses; communicating project development logic and information; working effectively as an individual or as a team member; demonstrating initiative</p>

Skills	Description and definition	Outcomes
Communication	<p>Imparting knowledge, ideas or concepts by effective</p> <ol style="list-style-type: none"> 1 Writing and formatting of essays, letters and reports: excellence in spelling / grammar / use of vocabulary / citing and referencing sources 2 Speaking: excellence in language-use to inform / explain or present at meetings/ interviews / in negotiations / over the telephone / using other technologies 3 Listening: development of discernment through effective listening 4 Use and interpretation of basic techniques of graphical communication: plans / diagrammes / maps drawn to various scales / other visual aids 	<p>Conveying concepts, ideas and theories with the aid of descriptions, quantification, prices and financial reports; communicating effectively - both orally and in writing - with individuals and audiences allied to the construction industry and the community at large, using appropriate media; applying methods of providing information for use by others involved in property development schemes, including civil, structural, mechanical and electrical engineering projects; working effectively as an individual or as a team member while performing various roles (as a quantity surveyor) which are critical to the success of any project</p>
Information technology	<p>Ability to use information systems</p> <ol style="list-style-type: none"> 1 Use of <ul style="list-style-type: none"> ▪ Relevant systems ▪ Management packages ▪ General construction / design packages <p>Communication systems</p>	<p>Using specialised computer systems and packages, networks and information management infrastructure for accessing, processing, communicating, managing and storing information to enhance personal productivity and teamwork</p>
Interdisciplinary and interpersonal teamwork	<p>Participation in teamwork</p> <ol style="list-style-type: none"> 1 Recognising the roles, motives and viewpoints of team members 2 Developing leadership qualities 3 Organising, chairing and participating in meetings and discussions 4 Negotiating 5 Positive management of conflict 6 Effective use of techniques to elicit or obtain information 7 Listening and comprehension 	<p>Working effectively as a member of a team or in multi-disciplinary environments, demonstrating leadership, management skills and initiative while performing professional functions which are critical to the success of any project; demonstrating awareness of the interpersonal and personal needs in terms of investment, social, cultural values and other requirements of all those associated with the creation of the built environment</p>
Law	<p>Application of legal concepts and frameworks</p> <ol style="list-style-type: none"> 1 Applying relevant <ul style="list-style-type: none"> ▪ Public law ▪ Private law 	<p>Implementing knowledge of the law in day-to-day practice, employment, contract administration and management situations</p>

Skills	Description and definition	Outcomes
Numeracy	<p>Calculation and expression of numerical data and values</p> <ol style="list-style-type: none"> 1 Calculate, arrange, structure and format numerical data 2 Valid translation and interpretation of data, statistics, tables and graphs 3 Execute basic statistical descriptive procedures 4 Execute iterative statistical comparative procedures 	<p>Applying knowledge of arithmetic and applied mathematics; dealing with uncertainty and risk through the use of probability and statistics; price modelling, financial reporting, contract administration; use of electronic calculators</p>
Quantification	<p>Use of relevant mapping / measurement systems and methods</p> <ol style="list-style-type: none"> 1 Apply relevant <ul style="list-style-type: none"> ▪ Referencing systems ▪ Scales ▪ Linear accuracy ▪ Currency ▪ methods of measurement ▪ measurement instruments 2 Conduct spatial or data collection surveys using appropriate methods, systems and instruments 3 Appropriate analysis, synthesis and application of data 	<p>Applying fundamental and specialised knowledge of building, civil, electrical and mechanical construction, measurement, price-estimating techniques from first principles to solve quantity surveying problems; reasoning about and conceptualising construction and cost, price, worth and value associated with design and construction; evaluating alternatives in the interests of added value in project development</p>
Research	<p>Implementation of sound research techniques</p> <ol style="list-style-type: none"> 1 Identification of research problems 2 Formulation of <ul style="list-style-type: none"> ▪ Hypotheses ▪ Objectives ▪ Methodologies 3 Conducting research 4 Drawing conclusions 5 Making recommendations 6 Effective recording of information from documentary or other sources 7 Use of appropriate filing systems 8 Distinguishing between dependent and independent variables / systematic and random errors 	<p>Applying sound research methodology; planning and conducting accurate surveys, investigations and analyses using appropriate methods and equipment; deriving, analysing and accurately interpreting information from data; compiling appropriate research reports; developing an awareness of the need for and engaging in life-long learning and research</p>

Skills	Description and definition	Outcomes
Technology	<p>The construction assembly process</p> <p>1 Recognition and correct application of</p> <ul style="list-style-type: none"> ▪ design / buildability ▪ elements ▪ components ▪ materials ▪ techniques ▪ equipment <p>2 Interpretation of documentation</p> <p>3 Understanding the Performance potential of</p> <ul style="list-style-type: none"> ▪ materials ▪ components 	Using construction and environmental principles, domain knowledge and knowledge of the physical world as a foundation for decision-making and problem-solving in the built environment based on analysis and modelling of development problems, construction components, systems and processes; working across quantity surveying / architectural / engineering disciplinary boundaries and utilising cross-disciplinary literature and shared fundamental knowledge to enhance project value

Revision History

Version	Date	Revisions to be authorised by	Nature of revision
GLR 1 (first draft)	9 August 1999	ASAQS	
SACQS 2	25 September 1999		Comprehensive

Acknowledgement:

In drafting this document, reference has been made to various publications distributed by the

- Engineering Council of South Africa, Johannesburg, South Africa
- Royal Institution of Chartered Surveyors, London, England