# Quantity Survey - Higher National Diploma (HND)

Curriculum and Course Specifications

NATIONAL BOARD FOR TECHNICAL EDUCATION

2001

PLOT B, BIDA ROAD, P.M.B. 2239 KADUNA - NIGERIA

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# General Information

## 1.0 CERTIFICATION AND TITLE OF THE PROGRAMME

The certificate to be awarded and programme title shall read:

HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEYING.

A transcript showing all the courses taken and grades obtained shall be issued on demand.

## 2.0 GOAL AND OBJECTIVES:

The Higher National Diploma in Quantity Surveying Programme is designed to produce Higher Technicians in the Building Industry.

On the completion of this programme, the diplomates should be able to:

1. Measure and prepare bills of quantities and contract documents for construction works,
2. Prepare final accounts for construction project s.
3. Measure as constructed works.
4. Extract and compile schedule of materials required for construction.
5. Interpret contract documents of all types of construction.
6. Prepare estimates for construction projects.
7. Undertake feasibility studies for construction projects.
8. Assist in valuing existing landed properties.
9. Give cost advice to the designer/supervisor from inception to completion.
10. Prepare budget and cash-flow for construction projects.
11. Use computer for cost-related aspects of construction works.

## 3.0 ENTRY REQUIREMENTS

Applicants with all the following qualifications may be considered for admission into the Higher National Diploma Programme by direct entry;

1. The entry requirement for the National Diploma Programme in Building and Quantity Surveying.
2. National Diploma in Building and Quantity Surveying with a minimum of lower credit pass; and

3. A minimum of one year post-National Diploma cognate work experience in the Construction Industry.

## 4.0 CURRICULUM

4.1 The curriculum of all HND programmes consists of three main components. These are:

a. General Studies/Education
b. Foundation Courses
c. Professional Courses

4.2. The General Education component shall include courses in Art and Humanities-English Language, Communication, History. These are compulsory: Mathematics and Science (for non-science based programmes) Social Studies- Citizenship (the Nigerian constitution) Political Science, Sociology, Philosophy of Science and Sociology are compulsory.

4.3 The General Education component shall account for not more than 15% of total contact hours for the Programme.

4.4 Foundation Courses include courses in Economics, Mathematics, Pure Sciences, Technical Drawing Descriptive Geometry, Statistics, etc. The number of hours will vary with programme and may account for about 10-15% of the total contact hours.

4.5 Professional Courses are course which give the student the theory and practical skills he needs to practice his field of calling at the technician/technologist level. These may account for between 60-70% of the contact hours depending on programme.

## 5.0 CURRICULUM STRUCTURE OF THE HND PROGRAMME

The structure of the HND programme consists of four semesters of classroom, laboratory and workshop activities in the college. Each semester shall be of 17 weeks duration made up as follows: 15 contact weeks of teaching, i.e. lecture, recitation, and practical exercises, etc and 2 weeks for tests, quizzes, examinations and registration.

## 6.0 ACCREDITATION

Each programme offered at the HND level shall be accredited by the NBTE before the diplomates can be awarded the diploma certificates. Details about the process of accrediting a programme for the award of HND are available from the Executive Secretary at the Programmes Department, National Board for Technical Education, Plot B, Bida Road, P.M.B. 2239, Kaduna, Nigeria.

## 7.0 CONDITION FOR THE AWARD OF THE HND

Institutions offering accredited programmes will award the Higher National Diploma to candidates who successfully completed the programme after passing prescribed coursework, examinations, and diploma project. Such candidates should have completed a minimum of between 72 and 80 semester credit units depending on the programme.

## 8.0 GUIDANCE NOTES FOR TEACHERS TEACHING THE PROGRAMME

8.1 The new curriculum is drawn in unit courses. This is in Keeping with the provisions of the National Policy on Education which stress the need to introduce the semester credit units which will enable a student who so wish to transfer the units already completed to an institution of similar standard from which he is transferring.

8.2 In designing the units, the principle of the modular system by product has been adopted; thus making each of the professional modules, when completed provides the student with technician operative skills, which can be used for employment purposes.

8.3 As the success of the credit unit system depends on the articulation of programmes between the institutions and industry, the curriculum content has been written in behavioural objectives, so that it is clear to all, the expected performance of the student who successfully completed some of the courses or thee diplomats of the programme.

8.4 There is a slight departure in the presentation of the performance based curriculum which requires the conditions under which the performance are expected to be carried out and the criterial for the for the acceptable levels of performance. It is a deliberate attempt to further involve the staff of the department teaching the programme to write their own curriculum stating the conditions existing in their institution under which the performance can take place and to follow that with the criteria for determining an acceptable level of performance. Departmental submission on the final curriculum may be vetted by the Academic Board of the institution. Our aim is to continue to see to it that a solid internal evaluation system exists in each institution for ensuring minimum standard and quality of education in the programmes offered throughout the polytechnic system.

8.5 The teaching of the theory and practical work should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory. For each course, there should be a balance of theory to practice in the ratio of 50:50 or 60:40 or the reverse.

# Curriculum Table

PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEYING

YEAR OF STUDY: ONE

SEMESTER: ONE

| COURSES CODE | COURSE TITLE | L | T | P | CU | CH | Pre-Req |
|---|---|---|---|---|---|---|---|
| QUS 301 | Advanced Measurement of Construction Works I | 2 | - | 2 | 3 | 4 | QUS201 |
| QUS 303 | Construction Economics I | 2 | - | - | 2 | 2 | QUS208 |
| QUS 305 | Construction Management I | 2 | - | - | 2 | 2 | QUS204 |
| QUS 307 | Construction Technology I | 2 | 1 | 0 | 3 | 3 | BLD215 |
| QUS 309 | Tendering and Estimating I | 1 | 1 | 0 | 2 | 2 | QUS210 |
| QUS 311 | Services I | 1 | - | 2 | 2 | 3 | QUS206 |
| QUS 313 | Contract Law and Arbitration | 2 | - | - | 2 | 2 | QUS110 |
| QUS 315 | Architectural Design and Drawing | 1 | - | 3 | 2 | 4 | QUS213 |
| GNS 321 | General Studies - International Relations | 2 | - | - | 2 | 2 | |
| | **TOTAL** | **15** | **2** | **7** | **20** | **24** | |

SEMESTER TWO

| COURSE CODE | COURSE TITLE | L | T | P | CU | CH | Pre-Req |
|---|---|---|---|---|---|---|---|
| QUS 302 | Advanced Measurement of Construction Works II | 2 | - | 2 | 3 | 4 | QUS301 |
| QUS 304 | Construction Economic II | 2 | - | - | 2 | 2 | QUS303 |
| QUS 306 | Construction Management II | 2 | - | - | 2 | 2 | QUS305 |
| QUS 308 | Construction Technology II | 2 | 1 | 0 | 3 | 3 | QUS307 |
| QUS 310 | Tendering and Estimating II | 1 | 1 | 0 | 2 | 2 | QUS309 |
| QUS 312 | Services II | 1 | - | 2 | 2 | 3 | QUS311 |
| QUS 314 | Conditions of Contract | 1 | 1 | - | 2 | 2 | - |
| QUS 316 | Measurement of Civil Engineering Works I | 1 | - | 3 | 2 | 4 | - |
| QSC 301 | Computer Application in Project Management | 0 | 0 | 3 | 2 | 3 | ICT102 |
| BLD 312 | Technical Report Writing | 2 | - | - | 2 | 2 | - |
| | **TOTAL** | **14** | **3** | **10** | **22** | **27** | |

YEAR OF STUDY: YEAR TWO

SEMESTER: ONE

| COURSE CODE | COURSE TITLE | L | T | P | CU | CH | Pre-Req |
|---|---|---|---|---|---|---|---|
| QUS 401 | Advanced Measurement of Construction Works III | 2 | - | 2 | 3 | 4 | QUS302 |
| QUS 403 | Construction Economics III | 2 | - | - | 2 | 2 | QUS304 |
| QUS 405 | Financial Management I | 2 | - | - | 2 | 2 | QUS204 |
| QUS 407 | Construction Technology III | 2 | 1 | 0 | 3 | 3 | QUS308 |
| QUS 409 | Tendering and Estimating III | 1 | 1 | 0 | 2 | 2 | QUS310 |
| QUS 411 | Professional Practice and Procedures I | 2 | - | - | 2 | 2 | - |
| QUS 413 | Valuation and Final Accounts Procedures I | 2 | 1 | - | 3 | 3 | - |
| QUS 415 | Measurement of Civil Engineering Works II | 1 | - | 3 | 2 | 4 | QUS316 |
| QUS 417 | Maintenance Technology and Management | 1 | - | 3 | 2 | 4 | QUS212 |
| QUS 419 | Research Methodology | 1 | - | - | 1 | 1 | QUS312 |
| | **TOTAL** | **16** | **2** | **8** | **22** | **27** | |

SEMESTER TWO

| COURSE CODE | COURSE TITLE | L | T | P | CU | CH | Pre-Req |
|---|---|---|---|---|---|---|---|
| QUS 402 | Advanced Measurement of Construction Works IV | 2 | - | 2 | 3 | 4 | QUS401 |
| QUS 404 | Measurement of Heavy Engineering Works | 1 | - | 2 | 2 | 3 | QUS415 |
| QUS 406 | Marketing | 2 | - | - | 2 | 2 | - |
| QUS 408 | Construction Technology IV | 1 | 1 | - | 2 | 2 | QUS407 |
| QUS 410 | Tendering and Estimating IV | 1 | 1 | - | 2 | 2 | QUS409 |
| QUS 412 | Professional Practices and Procedures II | 2 | - | - | 2 | 2 | QUS411 |
| QUS 414 | Valuation and Final Accounts Procedures II | 2 | 1 | - | 3 | 3 | QUS413 |
| QUS 416 | Estate Management and Valuation | 1 | 1 | - | 2 | 2 | - |
| QUS 418 | Project | 1 | 1 | 4 | 3 | 6 | QUS419 |
| | **TOTAL** | **13** | **5** | **8** | **21** | **26** | |

# Architectural Courses

## Architectural Design and Drawing

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Architectural Design and Drawing** | | **Course Code: QUS 315** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0: Know how to draw and interpret drawings.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1 | 1.1 State the hierarchical order of the various spaces for a given Building type.<br>1.2 Explain the factors affecting the arrangement of these spaces.<br>1.3 Determine the sizes of the spaces. | • Explain with examples<br>• Make good use of the locality | • Chalkboard, chalk, duster, pair of compass, divider, protractor, projectors |
| | **General Objective 2.0: Know how to prepare design briefs.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 2-3 | 2.1 Enumerate the key ingredients of a good design brief.<br>2.2 Describe the process of gathering information for design brief preparation.<br>2.3 Articulate a proper presentation format for a good design brief.<br>2.4 Prepare a design brief for a given project.<br>2.5 Appraise a given design brief in respect of an existing building. in relation to the executed project particularly in relation to cost benefit analysis. | • Give more assignment<br>• Cite Visits<br>• More class exercises | Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Architectural Design and Drawing** | | **Course Code: QUS 315** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Understand the design process** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 4-5 | 3.1 Describe the culture of the people around the locality of a given site for a chosen type of residential building design.<br>3.2 Explain the environmental and climatic determinants on the design.<br>3.3 Prepare preliminary sketch design based on a prepared design brief.<br>3.4 Make material specification for the design. | Ditto | -Ditto |
| | **General Objective 4.0: Know the procedures for development and programming for full scale drawing.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 6-7 | 4.1 Interpret a given preliminary sketch designs.<br>4.2 Articulate the constituents of the working drawing and details to be done.<br>4.3 Choose size of drawing sheets and select overall dimensions<br>4.4 Identify significant details that should be produced.<br>4.5 Produce the required working drawings and details with dimension and annotations. | • Organise drawing exercises | • Drawing studio |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Architectural Design and Drawing | | Course Code: QUS 315 | Contact Hours: 1-0-3 |
| Course Specification: Theoretical Content | | | |
| | General Objective 5.0: Understand the principle of modular coordination in draughting. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 8-9 | 5.1 Define modular coordination.<br>5.2 Explain the basic methods in modular coordination.<br>5.3 Illustrate known modular draughting methods and conventions.<br>5.4 Illustrate the use of modular dimensioning in the assembly of component units in architectural working drawing.<br>5.5 Prepare architectural working drawing using modular draughting techniques for a given design.<br>5.6 Prepare modular details.<br>5.7 State the range tolerances for on - site lay-out of coordinates. | -do- | -do- |
| | General Objective 6.0: Know schedules and specifications. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 10-11 | 6.1 Define schedules and specifications<br>6.2 Clarify the differences between schedules and specifications.<br>6.3 Articulate the key ingredients of good schedules and specifications.<br>6.4 Enumerate the various types of schedules used in project drawing.<br>6.5 Prepare the necessary schedules for given building project drawing. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Architectural Design and Drawing | | Course Code: QUS 315 | Contact Hours: 1-0-3 |
| Course Specification: Theoretical Content | | | |
| | General Objective 7.0: Know how to prepare services drawing. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12-13 | 7.1 Describe services drawing.<br>7.2 Enumerate the various types of services drawing.<br>7.3 State the importance of services drawings in production drawings.<br>7.4 Articulate services lay-out for a simple residential projects e.g. water supply system, drainage, sewage disposal, solid waste disposal, electricity supply and distribution, telecommunication network, etc.<br>7.5 Prepare necessary drawing with annotations and schedules for 7.4 above. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Architectural Design and Drawing** | | **Course Code: QUS 315** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 8.0: Understand working drawing detailing.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 14-15 | 8.1 Explain the importance of detailing working drawing.<br>8.2 State the key ingredients in a good detail.<br>8.3 Produce working details for various foundation types such s strip, pad, raft and pile foundation.<br>8.4 Produce working details for various damp proofing systems in basement wall construction.<br>8.5 Produce details for various types of floor, wall and stair construction.<br>8.6 Produce details for various types of penetration works in building.<br>8.7 Produce details for various types of roof and ceiling construction. | | |
| | **Assessment:** Course work 20%; Course test 20%; Practical 20%; Examination 40%<br><br>**Competency:** The student should be able to prepare working drawing from a design brief including all the necessary schedules and Specification.<br><br>**References:** 1. Praser Reckie “Draughtmanship”<br>2. Robert, C. Mc High “Working Drawing Hand Book” | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Architectural Design and Drawing | | Course Code: QUS 315 | Contact Hours: 1-0-3 |
| Course Specification: Practical Content | | | |
| | General Objective 1.0: Know how to draw and interpret drawings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-8 | a. Understand the design process<br>b. Prepare preliminary sketch design based on a prepared design brief.<br>c. Make material specification for the design.<br>d. Know the procedures for development and programming for full scale drawing. | • Prepare samples and supervise assignment. | • Chalkboard, chalk, dusters, pair of compass, divider,<br>• protractor,<br>• projectors. |
| 9 | e. Choose size of drawing sheets and select overall dimensions.<br>f. Identify significant details that should be produced.<br>g. Produce the required working drawing and details with dimension and annotations.<br>h. Understand the principle of modular coordination in draughting. | • Organise drawing exercises. | • Drawing studio. |
| 10 | i. Prepare architectural working drawing using<br>j. Modular draughting techniques for a given design.<br>k. Prepare modular details. | ditto | ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Architectural Design and Drawing | | Course Code: QUS 315 | Contact Hours: 1-0-3 |
| Course Specification: Practical Content | | | |
| | General Objective 1.0: Know how to draw and interpret drawings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 11-13 | l. Know schedules and specifications.<br>m. Prepare the necessary schedules for given building Project drawing.<br>n. Know how to prepare services drawing.<br>o. Prepare services lay-out for a simple residential projects e.g. water supply system, drainage, sewage disposal, solid waste disposal, electricity supply and distribution, telecommunication network, etc.<br>p. Prepare necessary drawing with annotations and schedules for above. | ditto | ditto |
| 14 | q. Understand the working drawing detailing<br>r. Produce working details for various foundation types such as strip, pad, raft and pile foundation.<br>s. Produce working details for various damp proofing systems in basement wall construction.<br>t. Produce details for various types of floor, wall and stair construction. | ditto | ditto |
| 15 | u. Produce details for various types of penetration works in building.<br>v. Produce details for various types of roof and ceiling construction. | | |

# Building Courses

## Construction Economics I

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Economics I | | Course Code: QUS 303 | Contact Hours: 2-0-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: To introduce students to the factors which influence the cost of construction works. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-2 | 1.1 Explain the scope of construction economics.<br>1.2 Define the terms:<br>a. Cost planning<br>b. Cost Control<br>c. Cost Limit<br>d. Cost Plan<br>e. Cost Analysis<br>f. Cost Target<br>1.3 Apply these terms to construction works. | • Explain the terms using illustration<br>• Give students oral exercises in the class | • Lesson plan, chalkboard, classroom |
| | General Objective 2.0: Understand the techniques of cost Planning. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 3 | 2.1 Explain the role of the quantity surveyor during the design stages of<br>a. work as suggested in the plan of work for design team operation - e.g.<br>b. At feasibility stage.<br>c. At outline design stage.<br>d. Sketch design stage.<br>e. Detail design stage. | • Explain the entire design stages to students.<br>• Use question and answer technique.<br>• Give students oral exercises in the class | • Lesson plan, chalk board, classroom |
| 4-6 | 2.2 Stage the purpose and use of cost planning.<br>2.3 Describe the principles involved in preparation of cost analysis from bill of quantities.<br>2.4 Use cost analysis for producing an approximate estimate. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Economics I** | | **Course Code: QUS 303** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Understand the factors which influence Construction costs.** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 7-12 | 3.1 List factors which influence construction cost.<br>3.2 Describe the influence of construction costs on:<br>a. Size<br>b. Shape<br>c. Storey heights<br>d. Function and fitness for purpose | • Explain with actual building drawings | • Lesson plan, chalkboard, classroom |
| 13 - 15 | e. Location and site considerations<br>f. Duration<br>g. Functional life of components<br>3.3 Use the perimeter method to calculate how the cost of building will be influenced by: (i) Shape (ii) Size | - ditto- | - ditto- |
| | **Assessment:** Course Work - 20%; Course Test - 20%; Practical - 0% Examination 60%.<br><br>**Competency**: The student should know planning Techniques and its application to the Cost of Construction works.<br><br>**Reference**: 1. Stephen, L. G. “Construction Economics (An Introduction)” Macmillan.<br>2. Ivor H. Seeley “Building Economics” 4th Edition. | | |

# Construction Economics II

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Economics II** | | **Course Code: QUS 304** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| **Week** | **General Objective: Have advanced knowledge on the distribution of cost in building.** | | |
| | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-5 | 1.1 Describe the principles involved in building up:<br>a. Tender - based index series<br>b. Factor cost based index series<br>1.2 State the uses of indices in pre contract work e.g.<br>a. Up - dating of cost information<br>b. Forecasting construction cost from past trends.<br>1.3 State the uses of indices in post contract work, e.g.<br>a. Assessment of fluctuation in prices of material<br>b. Assessment of final projected costs of project.<br>1.4 Carry out simple calculations involving the uses of indices e.g. up-dating of bill rates. | • Expose students to real projects.<br>• Give more assignment | • Chalkboard<br>• Chalk, duster, calculator |
| | **General Objective 2.0: Understand the effects of legislation on building development/cost.** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 6-8 | 2.1 Explain the effect of legislation on building cost e.g.<br>a. Population density (in respect of estate)<br>b. Special installation in control of population e.g. in wood processing industry.<br>c. Special installations like lifts, fire fighting installations<br>2.2 Apply these legislation to construction practice. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Economics II** | | **Course Code: QUS 304** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Understand the techniques used in investment appraisal** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 9-12 | 3.1 Define the term:<br>a. Development<br>b. Investment<br>c. Value<br>3.2 State the conceptual difference between value and cost.<br>3.3 Describe the methods of determining value of property.<br>3.4 Explain the purpose of developer's budget.<br>3.5 Prepare developer's budget to determine:<br>a. Maximum expenditure for land (without exceeding the cost limit).<br>b. Maximum expenditure for building (without exceeding the cost limit).<br>3.6 Propose solutions where the maximum expenditure for land or building exceed the anticipated expenditure. | • Give assignment as examples | • Data from a real project |
| | **General Objective: 4.0 Understanding the principles involved in Establishing cost limit, their uses in controlling Costs during design.** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 13-15 | 4.1 Establish cost limit from past project.<br>4.2 Use cost limits in controlling cost.<br>4.3 Prepare outline cost plan of simple building using square metre methods of estimating. | Give assignment | |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student shall be able to estimate the cost of construction and develop budgets for a proposed development.<br><br>**Reference:** 1. R. D. Buchan, F. W. Flemings. & J. R. Kelly Butterworth "Estimating for Builders Quantity Surveying".<br>2. Ivor H. Seeley "Building Economics" 4th Edition. | | |

# Construction Economic III

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Economic III | | Course Code: QUS 403 | Contact Hours: 2-0-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the application of cost indices, the concept of cost limit, investment and cost plan as tools in controlling building costs. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-3 | 1.1 Prepare elemental cost plan adjusting for price and other factors which influence the cost of building projects using building cost indices approach.<br>1.2 Prepare graph of building costs and use this to forecast future cost trend. | • Use illustrative examples<br>• Give more exercises | • Chalkboard, chalk, duster, calculator |
| | General Objective 2.0: Understand the nature of costs and its effects on liquidity and profitability. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 4-5 | 2.1 Describe the effect of change in the cost of inputs in a fixed price contract on the profits of a contractor.<br>2.2 Explain the different inventory costing systems e.g.<br>a. LIFO<br>b. FIFO<br>c. AYCO<br>2.3 Show the effect of the above (2.2) mentioned systems on profit and replacement costs.<br>2.4 List the factors which influence financial fields on property. | • Ditto | • Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Economic III** | | **Course Code: QUS 403** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Understand use of discounted cash flow techniques for capital budgeting and the preparation of master budgets.** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 11-13 | 3.1 Explain the concept of:<br>a. DCF techniques.<br>b. Time - value of money<br>3.1 Carry out calculations on discounted cash flow techniques and give advice based on the results of the calculations<br>3.2 Draw graphs of:<br>a. Cost against Time<br>b. Cash out against Time<br>c. Money received against Time<br>d. Contract value against Time<br>3.3 Use the graph to determine:<br>a. Maximum amount require to finance a project<br>b. When the contract becomes self financing<br>3.4 Explain the tenure average payment delay<br>3.5 Explain what may be done to make a contract self financing. | • Use the locality to cite examples<br>• Use more worked examples<br>• Give adequate exercises to students. | Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Economic III** | | **Course Code: QUS 403** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 4.0: Understand the use of cost-in-use techniques for project evaluation purposes.** | | |
| **Week** | **Specific Learning Outcomes:** | **Teachers Activities** | **Resources** |
| 14-15 | 4.1 Explain the following terms:<br>a. Initial cost<br>b. Running cost<br>c. Maintenance cost<br>d. Cost - in - use<br>e. Life cycle costing<br>4.2 Carryout simple cost -in - use calculation to aid decision on:<br>a. Choice of alternative compound<br>b. Choice of type and layout of life installation<br>c. Choice of alternative decisions<br>4.3 List sources of information for cost-in-use exercises<br>4.4 Explain the merits and demerits of cost-in-use techniques.<br>4.5 Draw sensitivity analysis graphs to show the effect in cost of:<br>a. Charge in interest<br>b. Charge in functional life of buildings.<br>4.6 Use the graphs to make projections. | Ditto | Ditto |
| | **Assessment**: Coursework 20% Course Test 20% Practical 0% Examination 60%<br><br>**Competency:** The students should understand financial assessment of building and be able to establish cost limits.<br><br>**References:** 1. T. A. Lee “Cash flow Accounting” 2nd Edition.<br>2. A. E. Janning “Accounting and Finance for Building and Surveying” Macmillan. | | |

# Construction Technology I

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Technology I | | Course Code: QUS 307 | Contact Hours: 2-1-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know the preliminary works and preparation of large and restricted buildings | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-3 | 1.1 Outline general principles of construction and scope of building bye-laws and regulations governing the construction of large buildings.<br>1.2 Describe ways and uses of preliminary site investigation.<br>1.3 Identify problems of ground water on adjacent property.<br>1.4 Explain setting out showing under pinning access roads, storage and temporary building are preliminary activities on site. | • Explain with relevant examples.<br>• Field trips/site visit.<br>• More assignment. | • Chalkboard, chalk, duster |
| | General Objective 2.0: Know all temporary works involved in the construction of large buildings. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 4-5 | 2.1 Describe timbering to trench of different depth under different soil conditions.<br>2.2 Describe shuttering and formwork to walls, floors, etc.<br>2.3 Identify material used for scaffolding.<br>2.4 Select types used under different conditions. | • Field trip to existing construction site. | - Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Technology I | | Course Code: QUS 307 | Contact Hours: 2-1-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Know different types of foundations that can be used in the Construction of large buildings their methods of constructions and conditions for use. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 6-8 | 3.1 Describe excavation and basement construction.<br>3.2 Describe the construction of raft, pad, stepped, isolated. foundation in mass and reinforced concrete cantilever foundations and pile foundations.<br>3.3 Identify the factors affecting the choice of foundations.<br>3.4 Select type of foundation to be used under different walls construction. | • Explain with diagrams<br>• Site visit to existing construction site<br>• Give more assignment | Ditto |
| | General Objective 4.0: Understand the construction of different types of walls and the materials used in their construction. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9-10 | 4.1 Describe the construction of load bearing walls, non-load. bearing walls and certain wall using different materials, and cost construction.<br>4.2 Match different types of materials used in wall construction with different types of walls.<br>4.3 Identify different types of internal partitions including pre-formed and demountable partitions.<br>4.4 State traditional methods and modern pre-fabricated method of wall construction. | Ditto | • Video/Photograph of typical construction |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology I** | | **Course Code: QUS 307** | **Contact Hours: 2-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 5.0: Understand the construction of different types of floor using different materials.** | | |
| **Week** | **Specific Learning Outcome** | **Teachers Activities** | **Resources** |
| 11-12 | 5.1 Describe the construction of one-way and two-way spanning floors.<br>5.2 Describe the construction of ground, upper and raised floors.<br>5.3 Identify timber, concrete and steel as material used in floor construction and factors affecting their choice. | Ditto | Ditto |
| | **General Objective 6.0: Understand the construction of stairs in timber, steel and concrete.** | | |
| **Week** | **Specific Learning Outcome** | **Teachers Activities** | **Resources** |
| 13-15 | 6.1 Describe stair construction using timber, steel and concrete.<br>6.2 Identify the factors affecting the construction of internal and external stairs.<br>6.3 Identify the factors affecting choice of materials for different types of stairs.<br>6.4 Explain the formulae used in stair case design. | Ditto | |
| | **Assessment**: Coursework 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The students would be familiar with the various element involved in the construction of a building.<br><br>**Reference:** 1. Ivor, H. Seeley “Building Technology” Fifth Edition Macmillan. | | |

# Construction Technology II

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Technology II | | Course Code: QUS 308 | Contact Hours: 2-1-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know the advance construction of medium and long span roofs. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-3 | 1.1 Describe the construction of flat and pitched roofs spacing up to 10 metres.<br>1.2 Describe the use of galvanised iron, sheets, corrugated asbestos sheets, aluminum sheets and roof tiles as roofing materials.<br>1.3 Select the material in 1.2 above for construction purposes.<br>1.4 Describe the method of fixing of the different types of roofing materials in 1.2 above. | • illustrate with real diagrams.<br>• Give examples.<br>• Conduct site visit. | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Construction Technology II | | Course Code: QUS 308 | Contact Hours: 2-1-0 |
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Understand the production of concrete and its placement. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 4-8 | 2.1 Describe the dry materials used in concrete production.<br>2.2 Explain the factors affecting the mix ratio of concrete.<br>2.3 State quantities of dry materials.<br>2.4 Batch proportion of materials.<br>2.5 Outline principles of mixing concrete identifying water content mixing cycle, and introduction of admixtures.<br>2.6 Describe various transportation and placing of concrete.<br>2.7 Illustrate compaction of concrete using different methods.<br>2.8 Describe:<br>a. Plain concrete.<br>b. Rein force a concrete.<br>c. Pre-cast concrete.<br>d. In-situ concrete.<br>e. Pre-stressed concrete. | • Batch proputions in the workmaship.<br>• Give assignment. | • Guage box weighing scale Admixtures.<br>• Admixtures, Gauge box, weighing machines. |
| | 2.9 Describe type and quality of reinforcement used in reinforced concrete, and method of placement.<br>2.10 Explain the unit production in pre-cast concrete storage, handling and methods of fixing of pre-cast elements.<br>2.11 Describe methods of pre-tensioning, post-tensioning and types of equipment used. | • Visit pre- cast concrete yard. | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology II** | | **Course Code: QUS 308** | **Contact Hours: 2-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Know the different types of doors and windows and their methods** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 9-12 | 3.1 Identify printed and sliding windows in composite materials timber and in steel.<br>3.2 Describe their methods of fixing.<br>3.3 Identify sliding and folding types of doors.<br>3.4 Describe their methods of fixing. | | • Examples or video |
| | **General Objective 4.0: Know the different types of finishing as applied to large Building.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 13-15 | 4.1 Identify different types of finishes as applied to walls, floor, stating the purpose each is supposed to serve.<br>4.2 Describe different types of ceiling construction.<br>4.3 Identify finishes as applied to each type. | • Give assignment.<br>• Visit site. | • Video or site visit |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% Examination 60%.<br><br>**Competency:** The student should be familiar with the construction of long span roofs and details of building elements.<br><br>**Reference:** 1. R. Chudley “Construction Technology” Volume 1-4, Longman. | | |

# Construction Technology III

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology III** | | **Course Code: QUS 407** | **Contact Hours: 2-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0 Understand prefabricated components and plant requirements** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-2 | 1.1 Explain the development and use of prefabricated components and units.<br>1.2 Determine the plant requirements for handling and production.<br>1.3 Describe tolerance and jointing methods.<br>1.4 Describe portal frame, space frame, tension structures and air structures. | - Use Illustrative diagram to explain. | Chalk board, chalk, duster. |
| | **General Objective 2.0: Know industrialized building systems and provision for services** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 3 | 2.1 Describe industrialised building systems.<br>2.2 Determine the provision of services in industrialised building | Expose students to real project. | |
| | **General Objective 3.0: Know lifts and escalators.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 4-5 | 3.1 Differentiate between different kinds of lifts and escalators.<br>3.2 Design the installation of lifts and escalators.<br>3.3 Maintain lifts and escalators. | ditto | ditto |
| | **General Objective 4.0: Understand suspended ceilings.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 6 | 4.1 Describe suspended ceilings.<br>4.2 List services built in suspended ceilings. | ditto | ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology III** | | **Course Code: QUS 407** | **Contact Hours: 2-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 5.0: Know selected aspects of civil engineering works.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 7-12 | 5.1 Describe different types of roads.<br>5.2 Outline materials used in construction of flexible and rigid pavement.<br>5.3 Describe the parts of a standard road.<br>5.4 Explain grossed areas, boundary walls, fences, planted flowers, trees, and kerbs, etc.<br>5.5 Interpret “ROAD NOTE 29” or any similar code of practice<br>5.6 List the differences in earth roads, rigid, composite and flexible roads.<br>5.7 Describe with sketches joints in rigid pavements and bridges.<br>5.8 Explain how to carryout simple maintenance of roads.<br>5.9 Describe dams and bridges construction. | Use live examples. | Road note 29<br>chalkboard. |
| | **General Objective 6.0: Understand statutory regulations.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 13-15 | 6.1 Interpret statutory regulations.<br>6.2 Vet building/architectural drawings using the knowledge of statutory regulations.<br>6.3 Explain public health act, town and country planing act, building regulations and factory act.<br>6.4 Ensure that buildings are erected in compliance with statutory regulations. | • Vet the drawings with students participation. | • Drawing,<br>chalkboard. |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:**. The Student should be familiar with the construction of long span roofs and details of building components. The student should Also be aware of statutory regulations and factory Acts.<br><br>**References:** 1. Owen, R. E. “Roofs”.<br>2. Porvell -Smith, V. “The Building Regulation”. | | |

# Construction Technology IV

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology IV** | | **Course Code: QUS 408** | **Contact Hours: 1-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0: Understand the use of mechanical plants and Equipment.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-2 | 1.1 Select various plants and equipment for building works.<br>1.2 Use the plants in<br>1.1 above.<br>1.3 Identify different types of excavating plants, concreting plants, cranes, dumpers, and earth moving equipment.<br>1.4 Describe various types of power hand tools. | • Explain with visual aids diagram | • Diagrams, chalk, duster, chalkboard |
| | **General Objective 2.0: Know fire precautions and preventions** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 3-4 | 2.1 Define fire<br>2.2 Describe fire precautionary measures<br>2.3 Explain the fire resistance of elements. | • Use clean examples | |
| | **General Objective 3.0: Understand railway construction.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 5-6 | 3.1 Recognise all types of railway tracks<br>3.2 Describe ballast, ties, tie plates, tail joints, anchors, welded rails, switches, and crossings.<br>3.3 Outline various defects and failure on railway tracks and how to correct them.<br>3.4 Explain how to maintain railway tracks. | • Field trip<br>• Give assignments | Ditto |
| | **General Objective 4.0: Understand airport Construction.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 7-8 | 4.1 List the functional requirements of airport.<br>4.2 Describe classes and standards for airports.<br>4.3 Explain airport drainage and grading.<br>4.4 Define airport lighting, beacons, wind indicators, runway lights, light controls, heliport, air traffic control, threshold lightings, sequenced lights, etc. | Ditto | Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Technology IV** | | **Course Code: QUS 408** | **Contact Hours: 1-1-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 5.0: Know simple tunnels.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 7-12 | 5.1 Describe simple tunnels.<br>5.2 Describe methods of support in tunneling.<br>5.3 Solve excavation and underground water problems.<br>5.4 Describe methods of excavating tunnels.<br>5.5 Describe ways of removing muck from tunnels.<br>5.6 Explain the various principles of shaft and chivvy construction. | ditto | ditto |
| | **General Objective 6.0: Know the construction of reinforced concrete pre-stressed concrete.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 13-15 | 6.1 Describe types of reinforcement and their respective qualities.<br>6.2 Differentiate ordinary reinforcement concrete, pre-stressed concrete and pre-cast concrete.<br>6.3 Describe methods of fixing; cover spacing, lapping, bending, etc.<br>6.4 Describe systems of pre-tensioning and post-tensioning. | ditto | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** It is anticipated the student will be familiar with the types construction plants. Concrete works and associated rails.<br><br>**Reference:** 1. G. Barber “Builders’ plant and Equipment” 2nd Edition.<br>2. Barker, J. “Reinforced Concrete detailing”. | | |

# Building Services and Maintenance Courses

## Services I

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Services I** | | **Course Code: QUS 311** | **Contact Hours: 1-0-2** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0: Understand the principles and techniques of water supply to buildings** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-4 | 1.1 Describe the main sources of water supply<br>1.2 Sketch and explain methods of treatment and storage of water<br>1.3 Sketch and explain distribution methods<br>1.4 Sketch and explain supply to multi-storey buildings and problems associated with this.<br>1.5 Sketch and describe types of sanitary fittings in buildings | • Use illustrative diagrams<br>• Conduct site visit<br>• Give assignments to students | • Chalkboard, chalk, duster |
| | **General Objective 2.0: Plumbing and Waste Systems** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 5-7 | 2.1 Explain the design requirements for efficient system<br>2.2 Describe the cause of lose of trap seals together with precaution to avoid this<br>2.3 Describe pipes and pipe fittings in use<br>2.4 Assess the relative merit and demerits of different soil and waste systems<br>2.5 Explain methods of testing drainage. | Ditto | Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Services I | | Course Code: QUS 311 | Contact Hours: 1-0-2 |
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Know the various methods of disposing of wastes From buildings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 8-11 | 3.1 State the methods of waste disposal biological processes, landfill processes, incineration etc.<br>3.2 Describe the methods for 3.1.<br>3.3 Outline the basic methods of sewage and waste disposal.<br>3.4 Describe the design considerations of sewage treatment plant.<br>3.5 Describe a treatment plant and the treatment process.<br>3.6 State the regulation code of practice that govern its functionality.<br>3.7 State methods of providing fresh air to sewage lines. | • Visit treatment plant<br>• Give more assignments | Ditto |
| | General Objective 4.0: Understand the supply and methods and distribution of gas into buildings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12 | 4.1 State the sources of gas.<br>4.2 Describe the statutory law and building regulations that govern.<br>4.3 Compare its merits and demerits over electricity. | • Explain with examples<br>• Use questions and answer techniques | |
| | General Objective 5.0: Know the various equipment used for moving people in high rise buildings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 13 | 5.1 List different types of mechanical movements requirement in high rise buildings.<br>5.2 Explain the factors governing selection for different situations. | Ditto | Ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Services I** | | **Course Code: QUS 311** | **Contact Hours: 1-0-2** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 6.0: Understand refuse disposal system and their incorporation in buildings.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 14-15 | 6.1 Explain domestic, commercial and industrial refuses and possible hazard arising from them.<br>6.2 Describe common domestic refuse installation in building. Refuse dirt, grinder machinery.<br>6.3 Describe site suitable for disposal of refuse controlled and uncontrolled tipping sites. | • Give assignments<br>• Use illustrative diagrams | Ditto |
| | **Assessment:** Coursework 20%; Course test 20%; Practical 20%; Examination 40%<br><br>**Competency:** The students should be familiar with the various services connected to, and within high rise and low rise buildings.<br><br>**References:** 1. Townsend, A. L. “Plumbing”<br>2. American Society of Civil engineers and the Civil pollution control: Design and Construction of sanity and Toring Sewers. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Services 1 | | Course Code: QUS 311 | Contact Hours: 1-0-2 |
| Course Specification: Practical Content | | | |
| | General Objective. Understand the connection of water and gas, the disposal of waste water and disposal of refuse in low and high use building. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-10 | 1.0 Understand the principles and techniques of water Supply to 1 buildings.<br>2.0 Sketch and explain methods of treatment and storage of water.<br>3.0 Sketch and explain distribution methods.<br>4.0 Sketch and explain supply to multi-storey buildings and d. problems associated with this.<br>5.0 Sketch and describe types of sanitary fittings in buildings, and Plumbing and Waste Systems. | Give sketches | Chalkboard and accessories |
| 11-15 | 6.0 Identify pipes and fittings in use.<br>7.0 Demonstrate methods of testing drainage. | • Show student practical examples. | |

# Service II

| Course: Service II | | Course Code: QUS 312 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective: 1.0 Know the basic electrical installation in building and on the site | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-3 | 1.1 State the I.E.E regulation with respect to<br>1.2 State consumer distribution system<br>1.3 State the uses and sizes of fuses, circuit, breakers and lightening conductors<br>1.4 Describe the phase system used in domestic and industrial installation | • Expose students to practical application<br>• Give more exercises. | I.E.E. Regulations, Chalkboard and accessories |
| 4-5 | 1.5 Explain the installation consideration of conduit and surface systems of wiring<br>1.6 Describe the types of main distribution system suitable for small sites<br>1.7 List the safety precautions necessary when using electrical fittings | ditto | ditto |

| Course: Service II | | Course Code: QUS 312 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Know the provisions required for fire prevention. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 6-7 | 2.1 List the different first aid fire equipment used In building.<br>2.2 Describe fixed and movable fire fighting equipment, stating their merits and demerits.<br>2.3 Explain the design consideration required for fire protection in buildings | • Provide or show a copy of the building regulation to students.<br>• Explain with examples. | |
| 8 | 2.4 Explain the methods of flame and fire test to building materials.<br>2.5 Cite the building regulation and statutory laws that govern the safety of lives and property in relation to fire protection in buildings. | ditto | • Chalkboard, chalk, duster. |
| | General Objective 3.0: Understand natural and mechanical methods of ventilation. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 9 | 3.1 Describe natural and mechanical methods of Ventilation. | Explain with examples. Conduct site visite with students. Give more worked examples. | ditto |
| 10-11 | 3.2 State the application of the method to different Situation.<br>3.3 State building regulations on ventilation requirements for building.<br>3.4 Describe the principle of air-conditioning<br>3.5 State the types and uses of air-conditioning systems | Ditto | ditto |
| 12 | 3.6 Describe the installation on provision for air-conditioning unit<br>3.7 Calculate the capacity of air-conditional unit in a predetermined space. | Ditto | ditto |

| Course: Service II | | Course Code: QUS 312 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 4.0: Know the various mechanical plants in the Construction process. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 13-15 | 4.1 State the need for mechanical plants in the Construction process.<br>4.2 Describe the types and uses of mechanical plant such as lifts, hoists, excavators, earth moving plants, dumpers etc<br>4.3 Explain the methods of assessing performance of plants and their cost implications | ditto | ditto |
| | **Assessment:** Coursework 20%; Course test 20%; Practical 20%; Examination 40%<br><br>**Competency:** The student would be familiar with statutory regulation governing installations in buildings and be aware of the details of the mechanical plant Involved.<br><br>**References:** 1. Powell-Smith, V. “The building Regulation”<br>2. G. Barber. “Builders’ Plant and Equipment”. | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| Course: Services II | Course Code: QUS 312 | | Contact Hours: 1-0-2 |
| Course Specification: Practical Content | | | |
| | General Objective. 1.0 Know the basic electrical installation in building and on the site. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-15 | a. State consumer distribution system.<br>b. Identify the uses and sizes of fuses, circuit, breakers and lightening conductor.<br>c. Sketch the phase system used in domestic and Industrial installation.<br>d. Identify types of main distribution system suitable for small sites.<br>e. Know the provisions required for fire prevention.<br>f. Identify fixed and movable fire fighting equipment.<br>g. Understand natural and mechanical methods of ventilation.<br>h. Describe mechanical methods of ventilation.<br>i. Know the various mechanical plants in the construction process<br>j. Describe the types and uses of mechanical plant such as lifts, hoists, excavators, earth moving plants, dumpers etc. | • Expose students to practical application.<br>• Give more exercises.<br>• Ditto<br>• Conduct site visit with students.<br>• Give more worked e.g.<br>• Visit site and show<br>• Practical examples. | |

# Maintenance Technology and Management

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0: Understand the importance, of planned, preventive and organised maintenance and improvement projects.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1 - 2 | 1.1 Define maintenance management.<br>1.2 Explain the purpose of maintenance management.<br>1.3 Analyse the processes involved and improvement management.<br>1.4 Prepare maintenance plan for given project.<br>1.5 Develop maintenance programme for a given project.<br>1.6 Propose strategies for effective maintenance of an estate.<br>1.7 Interpret the following for a given project:<br>a. Scheme design.<br>b. Detailed design.<br>c. Specifications.<br>d. Maintenance plan.<br>1.8 Check the effectiveness of the following in relation to:<br>a. Control Time.<br>b. Cost and quality.<br>c. Compliance with statutory requirements.<br>d. Management and funding.<br>1.9 State the effects of factors in 1.7 and 1.8 above on the. maintenance and use conversion of the project. | Give Lectures and assignments | • Examples of various schedules<br>• Chalkboard and related items |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 2.0: Know the materials and processes for carrying out maintenance work on building and infrastructure facilities** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 3 - 5 | 2.1 Identify the various materials used for maintenance works.<br>2.2 State the utility life-span of the various structural finishing materials used in construction works.<br>2.3 Explain the advantages and disadvantages of allowing structural materials serve as finishing material to maintenance works.<br>2.4 Determine the uses of the materials identified above.<br>2.5 Enumerate the various stages in maintenance works.<br>2.6 Interpret the following.<br>a. Maintenance manual.<br>b. Schedule of Dilapidation and Alteration work.<br>c. Work programme for maintenance work.<br>d. Final Accounts.<br>2.7 State the importance of item (i) to (iv) in 2.6 above.<br>2.8 Prepare item (i.) to (ii) above for a given building.<br>2.9 Use items prepared in 2.8 above in carrying out maintenance work. | • List various material and their life span<br>• Enumerate the advantages and disadvantages of using structural materials as finishing. | ditto |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Know the types and causes of failure in building and infrastructure facilities.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 6 - 7 | 3.1 Enumerate the various types of failure in construction works e.g. foundation failure, material failure, design failure, poor workmanship, structural failures, weathering failure due to wrong usage, etc.<br>3.2 Explain the causes of these various types of failures.<br>3.3 State the impact of good design and construction works in minimising maintenance problems.<br>3.4 Analyse the contributory factors affecting ageing and absence in construction works.<br>3.5 Detect the various types of failures enumerated in 3.1 above.<br>3.6 Correct these failures whenever detected. | • Site visit to view typical defects, students to prepare a report. | |
| | **General Objective 4.0: Understand the nature of deterioration in common building materials and components that are caused by external and internal agents.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 8 - 9 | 4.1 State various types of deterioration that occur in building materials.<br>4.2 Determine the causes of these types of deterioration in building materials.<br>4.3 Protect these building materials against deterioration before and after use.<br>4.4 Identify the factors affecting the selection of these materials for use i.e. thermal insulation, impermeability, durability, compatibility, etc. | • Visit a building | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 5.0: Understand the peculiar maintenance problems associated with high rise buildings and other specialist works.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 10 - 11 | 4.4 Analyse the particular problems of high rise and complex commercial buildings due to size, height, construction technique, structural modes, etc.<br>5.2 Analyse the particular problems associated with industrial buildings due to industrial processes, heavy traffic vibration, etc.<br>5.3 Analyse the particular problems associated with specialist works such as hospitals, laboratories, military installations, sewage plants etc due to requirement for services functional requirement, location, equipment, etc.<br>5.4 Propose solutions to the problems analysed in 5.1, 5.2 and 5.3 above<br>5.5 Outline maintenance works in respect of any of the given problems above. | • Explain peculiar problems likely to be encountered in high rise and complex buildings.<br>• Discuss solution with students participation | • Chalkboard |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 6.0: Understand the peculiar maintenance problems associated with estate roads.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 12 - 14 | 6.1 Explain the importance of maintaining estate roads and other infrastructures<br>6.2 Analyse the relationship between design, construction, performance and maintenance costs of estate roads.<br>6.3 Enumerate the various types of defects and failures that are associated with estate roads<br>6.4 State the causes of high maintenance cost of estate and township roads.<br>6.5 Propose methods of reducing the maintenance cost referred to 6.4 above.<br>6.6 Describe the methods of detecting defects of failures in 6.3 above.<br>6.7 Propose solution to the defects or failures detected in 6.6 above.<br>6.8 Carryout repairs of a given road work.<br>6.9 Enumerate the various failures that are associated with infrastructures such as electricity supply, water supply in buildings, sewage disposal, drainage's etc.<br>6.10 Describe the methods of detecting the failures enumerated in 6.9 above.<br>6.11 Propose remedial actions to failures detected in 6.10 above.<br>6.12 Carryout maintenance operations for infrastructure associated with a given building or minor civil engineering works. | • Explain the relationship between construction performance and maintenance costs of estate roads.<br>• Illustrate work sketches the various types of defects and failures associated with estate roads.<br>• Use question and answer technique to discuss repairs on a given road.<br>• Explain methods of remedy failures associated with infrastructure. | • Chalkboard |
| | **Assessment:** Course work 20% Course test 20% Practical 20% Examination 40%<br>**Competency:** The Student should be able to identify defects and know the causes and remedial actions on building and how to Maintain Same.<br>**Reference:** 1. Richardson, B. A. "Remidial treatment of Building".<br>2. Lee, R. "Building Maintenance Management". | | |

| PROGRAMME: HIGHER NATIONAL DIPLOMA IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Maintenance Technology and Management** | | **Course Code: QUS 417** | **Contact Hours: 1-0-3** |
| **Course Specification: Practical Content** | | | |
| | **General Objective 1.0: Know the types and causes of failure in building and infrastructure facilities.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-15 | a. Identify the various types of failure in construction works e.g. foundation failure, material failure, design failure, poor workmanship, structural failures, weathering failure due to wrong usage, etc.<br>b. Understand the nature of deterioration in common building materials and components that are caused by external and internal agents.<br>c. Identify the causes of these types of deterioration<br>d. In building materials.<br>e. Identify the various types of defects and failures that are associated with estate roads.<br>f. Carry repairs of a given road work.<br>g. Carryout maintenance operations for infrastructure associated with given building or minor civil engineering works. | • Site visit to view typical defects, students to prepare a report.<br>• Visit a building.<br>• Visit site and carry out practical works. | |

# Computer Courses

## Computer Applications in Project Management

| PROGRAMME: INFORMATION AND COMMUNICATION TECHNOLOGY FOR ENGINEERS | | | |
|---|---|---|---|
| COURSE: COMPUTER APPLICATIONS IN PROJECT MANAGEMENT | | Course Code: QSC 301 | Contact Hours: 0-0-3 |
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the role of Project Management for Corporate effectiveness | | |
| Week | Specific Learning Objective: | Teachers Activities | Resources |
| 1-3 | 1.1 Define Project Management<br>1.2 List its Components<br>1.3 Discuss types of Project Management software available<br>1.4 Discuss the merits and demerits of using computer - based Project Management | • Use various real life Management environments to explain so as to enable students to appreciate corporate Management. | • LCD Projector<br>• Magic Board<br>• Personal Computer systems installed with current Projector.<br>• Management Package (Software). |
| | General Objective 2.0: Understand the working environment of MS-Project 2000 and the use of each component: | | |
| Week | Specific Learning Objective: | Teachers Activities | Resources |
| 4-7 | 2.1 Explain how to set a calendar<br>2.2 Generate Network Diagram<br>2.3 Enter Project Data<br>2.4 Work on task usage table<br>2.5 Draw Tracking Gantt<br>2.6 Draw Resource Graph<br>2.7 Measure Resource Usage<br>2.8 Enter tasks into the task form | • Navigate the Software File, View, Insert, Format, Tools, Project, Window and Help.<br>• Assist the students to take part in the exploration.<br>• Give students practical question to apply all the facilities on the Project Management Package. | ditto |

| PROGRAMME: INFORMATION AND COMMUNICATION TECHNOLOGY FOR ENGINEERS | | | |
|---|---|---|---|
| **COURSE: COMPUTER APPLICATIONS IN PROJECT MANAGEMENT** | | **Course Code: QSC 301** | **Contact Hours: 0-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 3.0: Understand how to work in different views.** | | |
| **Week** | **Specific Learning Objective:** | **Teachers Activities** | **Resources** |
| 8-10 | 3.1 Use Bar Rolling<br>3.2 Explore calendar<br>3.3 Explain Descriptive Network Diagram<br>3.4 Explain Detail Gantt Chart<br>3.5 Explain Leveling Gantt<br>3.6 Explain Milestone Data Rollup<br>3.7 Explain Relationship Diagram | • Give students practical questions to demonstrate all the capabilities of the package. | ditto |
| | **General Objective 4.0: Understand the use of Work Breakdown Structures in Task Creation.** | | |
| **Week** | **Specific Learning Objective:** | **Teachers Activities** | **Resources** |
| 11-12 | 4.1 Explain how Work Programmes are broken into Milestones.<br>4.2 Explain How Milestone is broken into Tasks.<br>4.3 Explain how Tasks are broken into Subtasks.<br>4.4 Explain the allocation of Time and Resources to tasks and subtasks. | • Take up a typical project and use WBS to detail the Project into:<br>i. Milestone<br>ii. Tasks<br>iii. Subtasks<br>• Ask students to allocate Time and Resources to Tasks and subtasks. | ditto |
| | **General Objective 5.0: Understand Task Relationship.** | | |
| **Week** | **Specific Learning Objective:** | **Teachers Activities** | **Resources** |
| 13 | a. Start to finish.<br>b. Start to Start.<br>c. Finish to Start.<br>d. Finish to Finish. | Ask students to produce the task relationship for a given project. | ditto |

| PROGRAMME: INFORMATION AND COMMUNICATION TECHNOLOGY FOR ENGINEERS | | | |
|---|---|---|---|
| **COURSE: COMPUTER APPLICATIONS IN PROJECT MANAGEMENT** | | **Course Code: QSC 301** | **Contact Hours: 0-0-3** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 6.0: Understand Baseline Schedule.** | | |
| **Week** | **Specific Learning Objective:** | **Teachers Activities** | **Resources** |
| 14-15 | a. Enter Milestone, Task and subtask for a given Project.<br>b. Enter Project start and finish Dates.<br>c. Enter Task and subtask starts and finish Dates.<br>d. Enter Task and subtask Resource Usage.<br>e. Produce a Baseline schedule | • Ask students to enter the milestone, task and subtasks.<br>• Ask students to enter start and finish Dates.<br>• Ask students to enter Resources Usage.<br>• Ask students to generate Base Line Schedule using<br>i. Gantt Chart<br>ii. PERT Chart | ditto |
| | **Assessment**: Course work - 10%; Course test - 10%; Practical - 40%; Examination - 40%<br><br>**Competency:** The student should be able to use Computer for project Management.<br><br>**Reference**: 1. Chapra, S. C. and Canak, R.P. “Introduction to computing for Civil Engineers, McGraw hill, 1994.<br>2. J. Bingham, “Mastering Data Processing”, McMillan Edc. Ltd. 1986. | | |

# Law and Management Courses

## Construction Management I

| PROGRAMME: LAW AND MANAGEMENT IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Management I** | | **Course Code: QUS 305** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 1.0: Understand the Management Terminologies and appraise the concept and value of effective control, organization, planning and communication.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1-2 | 1.1 Define the management terms like planning organising, staffing, controlling, 'coordinating, leadership etc.<br>1.2 Apply these terms to construction management. | • Explain with examples. | • Chalkboard, chalk, duster. |
| | **General Objective 2.0: Understanding the principal concept that surround the organisational structures** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 3-4 | 2.1 Distinguish between various types of formal organization.<br>2.2 Explain predominant role of structure of different organisation.<br>2.3 Characterise patterns involvement by people in different organisations.<br>2.4 Apply typical strategies used by different people. | • Use question and answer techniques<br>• to test students understanding.<br>• Cite relevant examples. | Ditto |
| | **General Objective 3.0: Understand various typical organisational structures common to the construction industry** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 5-6 | 3.1 Describe the principle characteristics of large, medium and small design partnerships<br>3.2 State the principal characteristic of large, medium and small construction company<br>3.3 Apply the principal characteristics of large, medium, and small construction site organisations. | • Conduct Site Visits.<br>• Give more assignment. | Ditto |

| PROGRAMME: LAW AND MANAGEMENT IN QUANTITY SURVEY | | | |
|---|---|---|---|
| **Course: Construction Management I** | | **Course Code: QUS 305** | **Contact Hours: 2-0-0** |
| **Course Specification: Theoretical Content** | | | |
| | **General Objective 4.0: Know the value of effective communications.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 7-8 | 4.1 Demonstrate the value of effective communicating roles and relationships between clearly identified job functions on building project.<br>4.2 Describe the conflicts that arise in interpersonal relationships between clearly identified job functions on building project.<br>4.3 Use effective methods of interviewing applicants for a job. | Ditto | Ditto |
| | **General Objective 5.0: Understand span of control, delegation and Accountability.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 9-10 | 5.1 Define span of control.<br>5.2 Demonstrate how span of control affects site organisation<br>5.3 Describe how delegation and accountability affect site organisation. | Explain with examples | ditto |
| | **General Objective 6.0: Know the principles of planning and assignment of responsibility.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 12-13 | 6.1 Define objectives of an organization<br>6.2 Describe policy planning.<br>6.3 Determine the constraints. | | |
| 15 | 6.4 Propose planning for a construction industry<br>6.5 Carryout case studies using the knowledge gained in (1.1-6.2) above. | ditto | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br>**Competency:** The student should be familiar with the organizational structure of building and Civil engineering firms. They should also know the elements of Planning and accountability.<br>**Reference**: 1. Cole, G. A. “Management Theory and practice” 5th Edition letts Educational.<br>2. B. Cooke “Contract Planning and Contract Procedures”. | | |

# Course: Construction Management II

| Course: Construction Management II | | Course Code: QUS 306 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective: Know the behavioral science as related to working environment | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-4 | 1.1 Describe an outline study of human reactions.<br>1.2 State types of behaviour in working environment<br>1.3 Analyse human behaviour in working environment. | • Uses the locality to cite examples.<br>• Use question and answer techniques to test understanding. | • Chalkboard, chalk, duster |
| | General Objective 2.0: Understand the use of committee on construction site. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 5-8 | 2.1 Define the work committee in management and how committees are set-up.<br>2.2 Describe the work of committee and where they can best be used.<br>2.3 Describe the ratification and implementation of the decision reached by the committee.<br>2.4 Analyse the committee decision. | Ditto | Ditto |

| Course: Construction Management II | | Course Code: QUS 306 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Understand different types and methods of programmining in construction industry. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 9-15 | 3.1 State the objectives and advantages of programming.<br>3.2 Explain different types of programming and where they can best be used-master overall programme short term programme and weekly programme.<br>3.3 Explain the use and application of network analysis e.g. Bar chart, C.P.M and PERT in construction project.<br>3.4 Prepare Bar chart and network diagrams from given or deemed construction information.<br>3.5 Illustrate the use of linear programming construction projects.<br>3.6 Apply the linear programming to construction practice. | • Use questions and answer techniques to facilitate understanding.<br>• Give more worked examples. | Ditto<br>• Compute program on computer |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The students should understand the use of management tools and be able to write a programme for a execution of project.<br><br>**References:** 1. Langford, D. (etal) " Human Resources Management" 1995 Edition<br>2. Fellows, R. (etal) "Construction Management in practice" 1983 Edition. | | |

# Contract Law and Arbitration

| Course: Contract Law and Arbitration | | Course Code: QUS 313 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the Law of contract of employment. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-3 | 1.1 Define (a) employee (b) employer and Distinguish between the two.<br>1.2 Explain:<br>a. express terms of employment contract<br>b. implied terms of employment contract<br>1.3 Cite example of statutes which have effect on Labour Decree 1970.<br>1.4 State the duties of the employer/employee.<br>1.5 Explain the termination of employment<br>1.6 Contract.<br>1.7 Explain redundancy. | • Use practical examples to elaborate on terms<br>• Cite relevant and practical examples.<br>• Cite practical examples. | • Chalkboard, chalk, duster |
| | General Objective 2.0: Understand the law governing labour or trade Unions. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 4-5 | 2.1 Write about the origin and development of trade unions and the right of worker to participate in trade unionism.<br>2.2 Define trade dispute.<br>2.1 Describe the settlement of trade dispute as given in the trade dispute Act 1976 and later amended in 1977.<br>2.2 Cite relevant cases in (1) above. | • Explain the significance of trade unions to an individual nation building.<br>• Define dispute.<br>• Highlight on the trade dispute concept.<br>• Explain principles of the trade dispute Acts.<br>• Give extensive practical examples. | • Chalkboard, chalk, duster. |

| Course: Contract Law and Arbitration | | Course Code: QUS 313 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Understand voluntary and compulsory liquidation | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 6-8 | 3.1 Define liquidation, bankruptcy in-solvency and winding-up<br>3.2 Explain voluntary liquidation<br>3.3 Explain compulsory liquidation<br>3.4 Give example of statutes control bankruptcy and distribution of assets to creditors e.g. bankruptcy Act 1914, Bankruptcy Act/Amendment 1926, companies Act 1968 etc | • Cite relevant practical examples<br>• Treat and discuss each concept and Acts, citing relevant practical applications. | • Chalkboard, chalk, duster |
| | General Objective 4.0: Understand the responsibilities and obligations of all the parties to a contract. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 9-10 | 4.1 Explain the relationship between the client and nominal sub- contractor and suppliers<br>4.2 Differentiate between the contractor and sub-contractors and nominated sub-contractor<br>4.3 Interpret the indemnity classes as they affect the clients, main contractors and nominated subcontractors and suppliers<br>4.4 State the role of client agents | • Identify the role of each on contractual relationship<br>• Cite relevant examples<br>• Use the relevant JCT to explain the practical interrelationship between the parties | Ditto |
| | General Objective 5.0: Understand the liabilities of the professionals in the construction industry. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 11 | 5.1 Explain the liabilities of the professional in the construction<br>5.2 Determine their respective roles | | • Define:<br>a. responsibility<br>b. liabilities and<br>• Discuss each as applied in the JCT. |

| Course: Contract Law and Arbitration | | Course Code: QUS 313 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 6.0: Understand how contract can be discharged and remedied. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12-13 | 6.1 Explain the following method of discharging contracts.<br>a. discharge by performance.<br>b. discharge under conditions.<br>c. discharge by renunciation.<br>d. discharge by fresh agreement.<br>e. discharge by frustration.<br>f. discharge by determination.<br>6.2 Propose appropriate remedies for breach of contract including their classifications.<br>6.3 Cite relevant case. | | • Cite relevant and practical examples |
| | General Objective 7.0: Know the meaning application and procedures of arbitration in the building industry. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 14-15 | 7.1 Define arbitration and arbitration agreement.<br>7.2 State the merits and demerits of arbitration.<br>7.3 Describe how arbitrators are appointed.<br>7.4 State the duties of arbitrators. | | • Give relevant examples<br>• Expose the students to various arbitration cases |
| | **Assessment:** Coursework 20%; Course test 20%; Practical 0%; Examination 60%<br><br>**Competency:** The students would be familiar with current laws governing employment, labour and the responsibility involved in contract laws.<br><br>**References:** 1. I. E. Sagary “Nigerian Law of Contract” Spectrum Law Series.<br>2. Kodilinye and Aluko “Nigerian Law of Torts” Spectrum Law Series | | |

# Conditions of Contract

| Course: Conditions of Contract | | Course Code: QUS 314 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Provide the students with advance knowledge of the application of JCT classes in project execution. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-9 | 1.1 Analyse clause by clause, the JCT 1963/1977, or the JCT 1980 (both private and with quantities).<br>1.2 Identify the differences between the condition studied above and the following standard forms.<br>a. The Federal Ministry of Work (FMW) standard form.<br>b. The JCT 1963/1977 or JCT 1980 (private without quantities).<br>c. State government.<br>d. The I.C.E conditions of agreement and bond<br>e. Form GC/Works/1.<br>1.3 Detect flaws in standard contract clauses.<br>1.4 Suggest modifications to standard contract forms to suit unusual condition or situations.<br>1.5 Appraise practical problems and legal technicalities in construction contract. | • Provide all copies of the JCT<br>• Use question and answer techniques.<br>• Give more assignment | • Copies of all the JCT forms of contract,<br>• chalk, duster, chalkboard<br>• Copies of ICE and FMW contract documents |

| Course: Conditions of Contract | | Course Code: QUS 314 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Understand in details the various standard forms for subcontract works and relate them to the main contract forms. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 10-13 | 2.1 Analyse clause by clause the JCT 1963/1977 or JCT 1980 standard subcontract form.<br>2.2 Identify the relationship of the subcontract clause to those in the main contract.<br>2.3 Interpret these clauses to those in the main contract.<br>2.4 Apply them to construction work. | ditto | ditto |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** Student should be familiar with and understand the JCT form, and other forms of contract and be able to interpret the clauses.<br><br>**References:** 1. JCT Standard form of Building Contract 1998 Edition.<br>2. Fellows, R. F. “JCT Standard form of Building Contract” 1980 Edition. | | |

# Financial Management

| Course: Financial Management | | Course Code: QUS 405 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective: Understand the financial assessment of a particular building industry. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1 | 1.1 Explain banking and the money markets.<br>1.2 Examine the sources of finance and capital for the building industry from both inside and outside the organization, banks, insurance companies, capital market (share, stock). | • Cite relevant examples<br>• Use question and answer techniques to test student's understanding.<br>• Give more assignment | • Chalkboard, chalk, duster. |
| 2 | 1.3 Evaluate the cost of capital<br>1.4 Explain contract documentation and its effects on contract financing. | ditto | |
| 3-4 | 1.5 Determine investment policies using the budgetary and marginal control techniques and other investment appraisal techniques.<br>1.6 Explain the contract budget appreciating the needs for budgetary control.<br>1.7 Use the theory and techniques used in budgetary control during the construction stage. | ditto | • Obtain examples for illustration. |
| 5-7 | 1.8 Prepare cash flow forecast stating the factors affecting financial Field.<br>1.9 Prepare cash flow forecast stating the factors affecting financial field.<br>1.10 Determine the sources of cost information, their comparative accuracy and reliability.<br>1.11 Collect, analyse, allocate the present cost data for control purposes.<br>1.12 Apply the standard and marginal costing techniques.<br>1.13 Illustrate the use of break-even analysis as an aid to financial management. | ditto | • Chalkboard, chalk, duster. |

| Course: Financial Management | | Course Code: QUS 405 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective: Understand the financial assessment of a particular building industry. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 8-10 | 1.14 Explain the value of insurance<br>1.15 Carry out inter-firm comparison<br>1.16 Identify the role of internal and external auditors.<br>1.17 Explain depreciation and asset replacement.<br>1.18 Apply the methods of depreciation explaining the management's responsibility for depreciation and asset replacement.<br>1.19 Prepare financial statements for organizations in the construction industry. | ditto | ditto |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% examination 60%<br><br>**Competency:** The students shall understand financial management as used in the building industry and be able to forecasts and make allowance for depreciation: the cash flow for a project.<br><br>**Reference:** A. E. Jenning "Accounting and Finance for Building and Surveying" Macmillan. | | |

# Marketing

| Course: Marketing | | Course Code: QUS 406 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand marketing concept and the role of marketing in the Nigerian Economy | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-2 | 1.1 Explain the meaning of marketing, government and non-profit organisations.<br>1.2 Explain marketing.<br>1.3 Explain philosophies and goals of market management.<br>1.4 Discuss organisational analysis of companies. | • Lecture | Chalkboard and related items |
| | 1.5 Describe strategic plans, and market processes:<br>a. Marketing planning.<br>b. Marketing research.<br>c. Marketing control.<br>d. Marketing organization.<br>e. Information System. | • Lecture | |
| | General Objective 2.0: Understand target Market Analysis | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 3 | 2.1 Analyse, marketing environment<br>2.2 Explain consumer market and buying behaviour, market segmentation and targeting. | ditto | ditto |

| Course: Marketing | | Course Code: QUS 406 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Understand marketing mix strategy. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 4-7 | 3.1 Discuss the 4 P's of marketing<br>3.2 Explain new product development, product life cycle, concepts and strategies and product branding.<br>3.3 Discuss packaging and service strategy, pricing strategy, and marketing channel.<br>3.4 Explain retailing and wholesale strategy.<br>3.5 Know and understand market communications, advertising, sales promotion, and publicity strategy.<br>3.6 Understand promotional mix strategy.<br>3.7 Understand personal selling and sales management strategy.<br>3.8 Understand causes of product failure. | ditto | ditto |
| | General Objective 4.0: Understand marketing of services organisation and persons. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 8 -10 | 4.1 Know the nature of services marketing and characteristics of construction services business.<br>4.2 State differences between marketing of professional services and construction services.<br>4.3 Understand organisation marketing, image making, choice and plan control.<br>4.4 Explain mission statement as a marketing tool.<br>4.5 Explain personal marketing. | • Organise a visit to local company and use data obtained for the basis of coursework | |

| Course: Marketing | | Course Code: QUS 406 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 5.0: Understand professional ethics and marketing. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 11-12 | 5.1 Understand social criticism of marketing,<br>5.2 Understand citizen and government action to regulate the market.<br>5.3 Understand the concept of consumerism. | • Acquaint the student the students with standard of professional ethics | • Ethic's code, chalkboard. |
| 13-15 | 5.4 Explain controlled marketing, professional ethics and marketing.<br>5.5 Understand the Quantity Surveyor's Registration Board of Nigeria Decree 31 of 1986.<br>5.6 Understand the NIQS and QSRBN recommended standard of ethical behaviour and social responsibilities of the Quantity Surveyor. | ditto | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The Student should understand and be able to apply marketing techniques to a small business.<br><br>**Reference**: Alan E. Turner "Building Procurement " 2nd Edition Macmillan. | | |

# Quantity Surveying Courses

## Tendering and Estimating I

| Course: Tendering and Estimating I | | Course Code: QUS 309 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know the various methods of tendering and sources of cost information and be able to build up and analyse unit prices of building. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-3 | 1.1 Identify different tendering procedures:- Negotiation, competition - open, selection etc.<br>1.2 Identify the different types of building contracts:<br>a. Fixed rate<br>b. Cost reimbursable<br>c. Target cost<br>d. Turnkey<br>e. Package deal<br>f. Management<br>1.3 Apply these procedures to tendering and estimating. | • Cite relevant examples<br>• Give students assignments | • Chalkboard, chalk, duster. |
| | General Objective 2.0: Know the contractor's procedures prior to submission of tender. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 4-5 | 2.1 Outline the contractor's procedures prior to submission of tender:<br>a. Assessment of resources i.e. capital, plant, labour<br>b. Profitability of project<br>c. Reliability of contract financially<br>d. Market survey i.e. cost and availability of materials<br>e. Inspection of drawings, bills and site pricing bills<br>f. Submission of form of tender etc. | ditto | ditto |

| Course: Tendering and Estimating I | | Course Code: QUS 309 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Know the contractor's procedures prior to submission of tender. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| | 3.0 Understand the duties of the Quantity Surveyor and Architect at the pre-tender and tender stage. | | |
| 6-8 | 3.1 Explain the steps of the design sequence prior to the invitation to tenders and role of the Quantity Surveyor during these steps.<br>3.2 Prepare tender documents explaining the tendering procedures<br>3.3 Analyse contractor's tenders | • Explain with relevant examples.<br>• Give assignment. | ditto |
| | General Objective 4.0: Know how to analyse and build up unit prices in buildings and calculate daywork from labour sheets. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 9-15 | 4.1 Build up unit princes in building for all materials required to put the substructure.<br>4.2 Price preliminary and plant item.<br>4.3 Calculate cost of variation from daywork sheet.<br>4.4 Explain the expenditure of contingency sum allocated in the bill of quantities. | • Lecture with examples<br>• Give students assignments. | ditto |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency**: The students would understand the tendering procedure, preparation of the information involved, and be able to build up unit price.<br><br>**Reference:** 1. Smith, R. C. "Estimating and Tendering for Building Work" 2000 Edition.<br>2. Alton, W. "Estimating applied to building". | | |

# Tendering and Estimating II

| Course: Tendering and Estimating II | | Course Code: QUS 310 | Contact Hours: 1- 1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Outline the duties of the quantity surveyor and pre-tendering stage. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-6 | 1.1 Explain the steps of the design sequence prior to the invitation to tenders and the role of the quantity surveyor and architect during these steps.<br>1.2 Identify and prepare tender document and explain the tendering procedure.<br>1.3 Analyse and report on contractor's tenders. | • Explain with examples. | • Chalkboard, Chalk, duster. |
| | General Objective 2.0: Analyse and build up unit prices in complex building price, plant and preliminary items and calculate day work from labour sheets. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 7-11 | 2.1 Analyse and build-up unit prices in complex buildings for materials required to put up the structure.<br>2.2 Price preliminary and plant item completely.<br>2.3 Calculate daywork from labour sheets. | • Conduct market survey with students.<br>• Give worked examples<br>• Give an assignment. | • Calculator, chalk, chalkboard, duster |
| | General Objective 3.0: Make approximate estimates by various methods. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12-15 | 3.1 Make approximate estimate by various methods:<br>a. Unit method<br>b. Cubic method<br>c. Superficial or floor area method.<br>d. Storey enclosure<br>e. Approximate Quantities. | • Give more worked examples.<br>• Give students assignment. | ditto |
| | **Assessment:** Coursework 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The students would be familiar with the tender process and be able to analyse the unit price involved in a complete building.<br><br>**Reference:** 1. F.W. Flemings and J. R. Kelly, Butterworth Henimann "Estimating for Builders and Surveyors".<br>2. Caryclidge, D. P. "Cost planning and Building Economics". | | |

# Tendering and Estimating III

| Course: Tendering and Estimating III | | Course Code: QUS 409 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Explain the effect of factors affecting the cost of the Tender. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-3 | 1.1 Identify and appreciate the factors which affect the tender materials, labour, plant, on-site costs, profit, site conditions, site locations costs, head office costs etc. | | • Chalkboard, chalk, duster. |
| | General Objective 2.0: Analyse and build up unit prices for complex building works and civil engineering works including pricing of preliminary items. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 4-10 | 2.1 Build up unit prices and analyse rates for all materials required for complex buildings and civil engineering works.<br>2.2 Price preliminary items for building and Civil Engineering work<br>2.3 Price temporary works and services for Civil Engineering works.<br>2.4 Explain break-even analysis.<br>2.5 Prepare schedule of materials<br>2.6 Calculate pro-rate rates. | • Set students a course work project and supervise. | • Calculator, chalkboard, chalk, duster. |
| | General Objective 3.0: Understand the unit rate analysis as applied to bills of quantities | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 11-15 | 3.1 Build up rates For:<br>a. Roof work<br>b. Finishes including Painting and Decoration<br>c. Drainage and External Works | • Set students practical exercise. | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student should be familiar with factors affecting building cost and be able to prepare estimates for preliminaries.<br><br>**Reference:** 1. We Howard Wainwright and A.A.B. wood. “Practical Builders’ Estimating” 4th | | |

| | |
|---|---|
| | Edition<br>2. The Afua Group" Tender and Contract for Building". |

# Tendering and Estimating IV

| Course: Tendering and Estimating IV | | Course Code: QUS 410 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand modern bidding techniques and methods. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-6 | 1.1 Explain modern bidding strategies.<br>1.2 Explain the bidding procedures and the role of different parties involved in preparation and submission of bids. | | • chalkboard, chalk, duster. |
| | General Objective 2.0: Know the calculation of unit rtes for electrical works and plumbing works. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 7-11 | 2.1 Compute the unit rates for final sub-circuits in concealed conduct systems, and surface wiring systems.<br>2.2 Build-up unit rates for plumbing works and associated pipe work. | • Give examples for students to use. | • Ditto, Calculator |
| | General Objective 3.0: Know lifts and escalators. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 12-15 | 3.1 Know how to analyse tenders<br>3.2 Know how to write tender reports for selected projects such as duplex, high rise building, etc. | • Organise analysis of tenders documents. | • Examples of competition tenders. |
| | **Assessment**: Course work 20%; course Test 20%; practical 0% Examination 60%.<br><br>**Competency**: The student should be able to build up rate for Electrical and mechanical works. And also know how to prepare tender reports.<br><br>**Reference**: Spence G. "Estimating for building and Civil Engineering works". | | |

# Advanced Measurement of Construction Works I

| Course: Advanced Measurement of Construction Works I | | Course Code: QUS 301 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective: Know how to measure from drawings and by reference to specifications of more complex building construction | | |
| WEEK | Special Learning Objective: | Teachers Activities | Resources |
| 1-4 | 1.0 Measure substructure work for complex and special foundations.<br>1.2 Measure floor-solid, suspended, ground floor slab and associated reinforcement and form work<br>1.3 Measure walls of brickwork, blockwork of solid cavity and hollow nature, together with associated features. | • Lecture<br>• Give assignment | • Typical drawings of details for building. |
| 5-8 | 1.4 Measure doors, windows and associated frames and iron mongery including adjustment for openings<br>1.5 Measure roof construction and roof covering-reinforced concrete roofs, steel trusses tiles, felt asbestos, corrugated sheet, lead, zinc, copper and aluminum. | ditto | - do - |
| 9-15 | 1.6 Measure staircase timber, reinforced concrete including finishing.<br>1.7 Measure fittings and fixture-cupboards, shelving, skirting, architrave's picture rails, pelmets, dadoes etc.<br>1.8 Measure frames-structural steel, reinforced concrete beams. | ditto | - do - |
| | **Assessment**: Course work 20% Course Test 20% Practical - 20% Examination - 40%.<br><br>**Competency**: The student should able to prepare measurements from drawings in a standard form.<br><br>**Reference**: Emmanuel C. Oforeh, Agele Olufolai "Advance Measurement of Building works" | | |

| Course: Advanced Measurement of Construction Works 1 | | Course Code: QUS 301 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Practical Content | | | |
| | General Objective: Know how to Read from building drawings and preparing specifications and schedules of more complex building construction. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-8 | a. Know how to read drawings for substructure work for complex and specification of more complex building construction of traditional class and simple industrial buildings of two stories. | Give practical examples and supervise assignment. | |
| 9-15 | b. Provide and read drawing substructure for complex and special foundations.<br>c. Prepare specification and schedules of suspended, ground floor slab of building drawings.<br>d. Prepare doors, and windows schedules for a complex building. | ditto | |

# Advanced Measurement of Construction Works II

| Course: Advanced Measurement of Construction Works II | | Course Code: QUS 302 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know how to measure drainage, service installations and external works | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-8 | 1.1 Measure drainage - explanation pipe work, manholes, inspection chambers, soak away pits, septic tanks.<br>1.2 Measure water supply and sanitary appliances.<br>1.3 Measure external works, paths, roads, flower and tree planting, turfing, fencing and gates. | • Use illustrative diagrams to explain<br>• Provide more practical exposure.<br>• Create site visit | • Calculator, chalkboard, Duster, chalk |
| | General Objective 2.0: Know how to prepare examples of different methods of the processing dimensions, billing and preparing Schedules | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 9-15 | 2.1 Process dimension - abstracting, cut and shuffle, billing direct.<br>2.2 Prepare different bill formats explaining their uses:-<br>a. Work section bill<br>b. Elemental bill<br>c. Sectionalized Trade bill<br>d. Operational bill<br>e. Activity bill<br>2.3 Prepare schedules for finishing, reinforcement, openings (doors and windows), ironmongery, sanitary appliances and drainage. | ditto<br>• Give a practical project. | ditto<br>• Drawing of building and civil engineering works |
| | **Assessment:** Coursework 20% Course test 20% Practical 20% Examination 40%<br><br>**Competency:** The students should be able to prepare accurate data from drawings and to arrange detail schedules<br><br>**Reference:** 1. I. H. Seeley. “Advanced Building Measurement” 3rd Edition. | | |

| Course: Advanced Measurement of Construction Works 11 | | Course Code: QUS 302 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Practical Content | | | |
| | General Objective 1.0: To provide student with an practical knowledge of Construction working drawings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-8 | 1.1 Read drawings or pipe work, manholes, inspection chambers, soak away pits, septic tanks<br>1.2 Read drawings or work, paths, roads, fencing and gates. | • Use illustrative diagrams to explain.<br>• Provide more practical exposure.<br>• Give assignment. | • Calculator, chalkboard, duster, chalk, drawing of building. |
| | 2.0 Know how to prepare examples of different methods of the processing dimensions, billing and preparing schedules. | | |
| 9-15 | 2.1 Prepare schedules for finishing, reinforcement, openings (doors and windows, ironmongery, sanitary appliances and drainage of complex. building. | ditto<br>• Give a practical project | ditto<br>• Drawing of building and civil engineering works |

# Advanced Measurement of Construction Works III

| Course: Advanced Measurement of Construction Works III | | Course Code: QUS 401 | Contact Hour: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know how to measure from drawings and by reference to specification, including prefabricated buildings and finishings to framed buildings | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1-4 | 1.1 Measure substructure - special foundations e.g. driven and bored piling, sheet pilings underpinning, and grillage foundations. | • Identify relevant clauses.<br>• Interpret working drawings<br>• Measure quantities from drawings | • Lesson Plan<br>• Chalkboard.<br>• classroom, SMM<br>• Working Drawings<br>• scale rule, calculators, take-off sheet flip chart, marker, pens etc. |
| 5-11 | 1.2 Measure:<br>a. Prefabricated buildings<br>b. Industrial and system buildings.<br>c. Buildings constructed mainly of standardized components off - site.<br>1.3 Measure structural frames of precast concrete, timber and steel works.<br>1.4 Measure wall cladding and external finishings, pre-cast concrete, cast stone, curtain walls, etc.<br>1.5 Measure internal and external finishings - ceiling, wall and floor for finishings of a more complex nature including demountable partition and suspended ceilings. | - do - | - do - |

| Course: Advanced Measurement of Construction Works III | | Course Code: QUS 401 | Contact Hour: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Understand the measurement of plumbing and mechanical engineering installations. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12-15 | 1.4 Measure works in domestic plumbing installation -cold/hot water installation, sanitary installation, rain water installation, etc. and associated appliances and builders works. | • Identify relevant clauses.<br>• Interpret working drawings, supervise student to measure quantities from drawings. | • Lesson Plan<br>• Chalkboard,<br>• Classroom, SMM,<br>• Working Drawings,<br>• scale rule, calculators, take-off sheet, flip chart, marker, pens etc. |
| | **Assessment:** Coursework 20% Course test 20% Practical 20% Examination 40%<br><br>**Competency:** The students should be competent at measurement and be able to take off accurate measurements from drawings<br><br>**Reference**: I. H. Seeley. “Advance Building measurement” 3rd Edition. | | |

| Course: Advanced Measurement of Construction Works III | | Course Code: QUS 401 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Practical Content | | | |
| | General Objective 1.0: Know how to read from drawings and by reference to specification, buildings including prefabricated buildings and finishing to framed buildings. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-8 | 1.1 Prepare schedule from drawing for external finishing-ceiling, wall and floor finishings of a more complex nature including demountable partition and suspended ceilings. | Identify relevant clauses. Interpret working drawing, supervise student to measure quantities from drawing. | Lesson Plan Chalkboard, Classroom, SMM, Working Drawings, scale rule, calculators, take-off sheet, flip chart, market, pens etc. |
| | General Objective 2.0: Understand drawings of plumbing and Drawings of plumbing and mechanical engineering installations. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9-15 | Read drawings or domestic plumbing, Installation-cold/hot water installation, sanitary installation, rain water installation, etc. and associated appliances and prepare schedules. | ditto | ditto |

# Advanced Measurement of Construction Works IV

| Course: Advanced Measurement of Construction Works IV | | Course Code: QUS 402 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand Preamble and preliminary clauses for inclusion in Bills of Quantities. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-2 | 1.1 Explain preamble and preliminary clauses.<br>1.2 Identify the importance of preamble and preliminary clauses and their differences.<br>1.3 Write typical preamble clauses for different work/trade sections.<br>1.4 Write typical preliminary clauses for Bills of Quantities items in accordance with SMM. | • Lecture | • Copies of typical houses |
| | General Objective 2.0: Understand the measurement of Demolition and Alteration of buildings. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 3 - 5 | 2.1 Measure works in demolitions and alterations.<br>2.2 Measure shoring and scaffolding in structures. | | |

| Course: Advanced Measurement of Construction Works IV | | Course Code: QUS 402 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Know how to prepare a complete Bills of Quantities. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 6-9 | 3.1 Describe the various processes in Bills preparation from taking - off stage to Billing stage<br>3.2 Explain the traditional and modern methods of Bill Production e.g. cut and shuffle<br>3.3 Explain the direct billing method of Bills of Quantities<br>3.4 Use standard phraseology of description for Bills of Quantities<br>3.5 Identify the different formats for arranging Bills of Quantities items and when to use each format. | • Lecture with examples. | |
| 10-15 | 3.6 Prepare a complete Bill of Quantities for a selected single storey building which should incorporate taking-off squaring, abstracting, billing and including writing all necessary preliminary and preamble clauses.<br>3.7 Use computer to prepare a complete bill of quantities following 3.6 procedure. | • Supervise Case Study. | • Case studies details<br>• Computers and suitable parckage. |
| | **Assessment**: Course work - 20%; Course Test 20%, Practical - 20% Examination - 40%.<br><br>**Competency:** The Student shall be proficient at taking -off and preparing Bills of quantities.<br><br>**Reference:** I. H. Seeley “Building Quantities Explained” 5th Edition. | | |

| Course: Advanced Measurement of Construction Works IV | | Course Code: QUS 402 | Contact Hours: 2-0-2 |
|---|---|---|---|
| Course Specification: Practical Content | | | |
| | General Objective 1.0: Understand the measurement of Demolition and Alteration of buildings. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 1 - 5 | 1.1 Measure works in demolitions and alterations.<br>1.2 Measure shoring and scaffolding in structures. | Make site visit of existing structure, demonstrate and supervise assignment. | |
| | General Objective 2.0: Know how to prepare a complete Bills of Quantities. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 6 - 15 | 2.1 Prepare a complete Bill of Quantities for a selected single storey building which should incorporate taking-off squaring, abstracting, billing and including writing all necessary preliminary and preamble clauses.<br>2.2 Use computer to prepare a complete bill of quantities following procedure. | • Supervise case study | • Case studies details<br>• Computers and suitable package. |

# Measurement of Heavy Engineering Works

| Course: Measurement of Heavy Engineering Works | | Course Code: QUS 404 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the scope of the Heavy Engineering works | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-2 | 1.1 Define heavy engineering works<br>1.2 Know the constituents of heavy engineering works<br>1.3 Explain the components of:<br>a. Oil exploration<br>b. Petroleum refineries<br>c. Power generation<br>d. Telecommunication installation<br>e. Steel and metal production etc. | • Lecturer | • Photographs of heavy plant. |
| | General Objective 2.0: Know the nature of I.C.E. standard method of measurement | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 3-5 | 2.1 Discuss the various section of I.C.E. standard method of measurement<br>a. Construction of Site services<br>b. Scaffolding<br>c. Steel works<br>d. Plant<br>e. Ductwork<br>f. Pipe work<br>g. Electrical work<br>h. Instrumentation<br>i. Insulation<br>j. Protective covering<br>k. Sundry items | • Lecture and give examples<br>• organise Coursework for students | • Copies of IEC methods of measurement. |

| Course: Measurement of Heavy Engineering Works | | Course Code: QUS 404 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Understand use of discounted cash flow techniques for capital budgeting and the preparation of master budgets. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 6-9 | 3.1 Explain the concept of:<br>a. DCF techniques.<br>b. Time - value of money<br>3.2 Carry out calculations on discounted cash flow techniques and give advice based on the results of the calculations.<br>3.3 Draw graphs of:<br>a. Cost against Time<br>b. Cash out against Time<br>c. Money received against Time<br>d. Contract value against Time<br>3.4 Use the graph to determine:<br>a. Maximum amount require to finance a project<br>b. When the contract becomes self financing<br>3.5 Explain the tenure average payment delay<br>3.6 Explain what may be done to make a contract self financing. | • Lecturer with examples-organize a practical example | • Chalkboard, chalk, duster |

| Course: Measurement of Heavy Engineering Works | | Course Code: QUS 404 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 4.0: Understand the use of cost-in-use techniques for project evaluation purposes. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 10-15 | 4.1 Explain the following terms:<br>a. Initial cost<br>b. Running cost<br>c. Maintenance cost<br>d. Cost - in - use<br>e. Life cycle costing<br>4.2 Carryout simple cost -in - use calculation to aid decision on:<br>a. Choice of alternative compound<br>b. Choice o type and layout of life installation<br>c. Choice of alternative decisions<br>4.3 List sources of information for cost-in-use exercises<br>4.4 Explain the merits and demerits of cost-in-use techniques.<br>4.5 Draw sensitivity analysis graphs to show the effect in cost of:<br>a. Charge in interest<br>b. Charge in functional life of buildings.<br>4.6 Use the graphs to make projections. | • Organise a practical for students to use simple cost -in-use calculation | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student should be able to apply advanced Costing Techniques to the Cost analysis of heavy Engineering work. The student will also be familiar with the I.E.C. method of measurement.<br><br>**References:** 1. I. T. A. Lee. “Cash flow accounting” 2nd Edition.<br>2 Spence, G. “Estimating for Building and Civil Engineering Works”. | | |

| Course: Measurement of Heavy Engineering Work | | Course Code: QUS 404 | Contact Hours: 1-0-2 |
|---|---|---|---|
| Course Specification: Theoretical content | | | |
| | General Objective 1.0: Understand use of discounted cash flow techniques for capital budgeting and the preparation of master budgets | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-8 | 1.1 Draw graphs of:<br>a. Cost against Time<br>b. Cash out against Time<br>c. Money received against Time<br>d. Contract value against Time<br>1.4 Use the graph to determine:<br>a. Maximum amount require to finance a Project.<br>b. When the contract becomes self Financing. | • Organise a practical example. | |
| | General Objective 2.0: Understand the use of cost -in-use techniques for project evaluation purposes. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9-12 | 2.0 Draw sensitivity analysis graphs to show the effect in cost of:<br>a. Charge in interest<br>b. Charge in functional life of buildings.<br>c. Use the graphs to make projections. | a. Organise a practical for Students to use simple cost-in-use calculations. | |

# Measurement of Civil Engineering Works I

| Course: Measurement of Civil Engineering Works I | Course Code: QUS 316 | Contact Hours: 1-0-3 |
|---|---|---|
| Course Specification: Theoretical Content | | |
| | General Objective 1.0: Understand the principles and format of CESMM | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-7 | 1.1 Explain the arrangement and format of the CESMM<br>1.2 Analyse the sections in the CESMM i.e:<br>a. Definitions<br>b. General principles<br>c. Application of work classification.<br>d. Coding and numbering of items<br>e. Preparation of the bill of quantities.<br>f. Completion and pricing of the bill of quantities<br>g. Working classification<br>1.3 Explain the method of coding in the CESMM<br>1.4 Use the coding for Civil Engineering works<br>1.5 Explain the method of deriving bill | • Explain the concept of CESMM<br>• Give assignment on CESMM coding | • Chalk, Chalkboard, duster CESMM |
| | General Objective 2.0: Understand the concept of method related charges | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 8-10 | 2.1 Explain method related charges,<br>2.2 Identify the reason for providing for method related charges.<br>2.3 State the advantages and disadvantages of method related charges.<br>2.4 Write method related charges for inclusion in bill of quantities. | • Lecture<br>• Give assignment on the utilization of method related charges | • Chalk, Chalkboard, duster |

| Course: Measurement of Civil Engineering Works I | | Course Code: QUS 316 | Contact Hours: 1-0-3 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objectives 3.0: Understand the measurement code and measure works in some selected areas. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 11-13 | 3.1 Measure works under general items.<br>3.2 Measure works under site investigation<br>3.3 Measure works under geotechnical and other specialist process.<br>3.4 Measure works under demolition and site clearance. | • Give working examples<br>• Give assignment<br>• Visit new site | • Ditto, drawings, CESMM |
| | **Assessment:** Course work 20%; Course Test 20%; Practical 20%; Examination 40%<br><br>**Competency:** The student should be able to measure special civil engineering works and understand preparation of method related charges in Civil Engineering bills of quantities.<br><br>**Reference:** Ivor, H. Seeley “Civil Engineering Quantities” 5th Edition | | |

| Course: Measurement of Heavy Engineering Work I | | Course Code: QUS 316 | Contact Hours: 1-0-3 |
|---|---|---|---|
| Course Specification: Practical content | | | |
| | General Objective 1.0: Understand the principles and format of CESMM | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-8 | 1.1 Apply the section and coding in the CESMM in the measurement of the following:<br>a. General items<br>b. Demolition and site clearance<br>c. Site investigation works | • Give assignment | • Chalk, chalkboard, duster, drawing CESMM |
| | General Objective 2.0: Understand the concept of method related charges | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9-12 | 2.1 Write method related charges for inclusion in bills of quantities. | - do - | - do - |

# Measurement of Civil Engineering Works II

| Course: Measurement of Civil Engineering Works II | | Course Code: QUS 415 | Contact Hours: 1-0-3 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the measurement codes and measure works in selected areas | | |
| Week | Specific Learning Outcomes | Teachers Activities | Resources |
| 1-9 | 1.1 Measure works under Earth works - cutting and embankments.<br>1.2 Measure works under in situ, and pre-cast concrete, including ancillaries in culverts, bridges, retaining walls, dams, etc]<br>1.3 Measure works under roads and air-fields.<br>1.4 Measure works under piling and ancillary works.<br>1.5 Measure works in railway tracks.<br>1.6 Measure works in pipelines (for gas and water), sewers and drains.<br>1.7 Measure works in structural steel works and metal works.<br>1.8 Measure works in Timber.<br>1.9 Measure works in painting and water - proofing, fencing, tunneling, etc. | • Give Students Project work in measurement of Earthworks.<br>• Ditto in Steelwork. | • Drawing of Case Study |

| Course: Measurement of Civil Engineering Works II | | Course Code: QUS 415 | Contact Hours: 1-0-3 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Know how to prepare and write preamble and preliminary clauses for bills of Quantities in accordance with the CESMM. | | |
| Week | Specific Learning Outcomes | Teachers Activities | Resources |
| 10-15 | 2.1 Explain preamble and preliminary clauses in Civil Engineering works.<br>2.2 Identify the importance of preamble and preliminary clauses<br>2.3 Write typical preamble clauses for different work sections in CESMM.<br>2.4 Write typical preliminary descriptions for bill of quantities items in accordance with CESMM. | | |
| | **Assessment:** Course work 20% Course test 20% Practical 20% Examination 40%<br><br>**Competency:** The student shall understand the CESMM and be able to write preamble clauses to this method of measurement. The student shall also be practical in the measurement of heavy Engineering works.<br><br>**Reference:** 1. Ivor, H. Seeley “Civil Engineering Quantities 5th Edition.<br>2. Ivor H. Seeley “Civil Engineering Specification”. | | |

| Course: Measurement of Civil Engineering Works II | | Course Code: QUS 415 | Contact Hours: 1-0-3 |
|---|---|---|---|
| Course Specification: Practical Content | | | |
| | General Objective. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-9 | a. Know how to prepare and write preamble and preliminary clauses for bills of Quantities in accordance with the CESMM. | | |
| 10-15 | b. Write typical preamble clauses for different work sections in CESMM.<br>c. Write typical preliminary descriptions for bill of quantities items in accordance with CESMM. | • Cite examples using CESMM and give assignment. | • Chalkboard, chalk, duster, CESMM. |

# Professional Practice and Procedures I

| Course: Professional Practice and Procedures I | | Course Code: QUS 411 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | **General Objective 1.0: Understand the structure of, and, the relationship with the construction industry including the organisation of trade unions.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 1 | 1.1 Explain the structure of the construction industry.<br>1.2 Determine the inter-relationship of the various professionals involved in the construction industry<br>1.3 Examine the concept and objectives of the various related professional institutions. | • Lecture | • Chalkboard, chalk, duster. |
| 2 | 1.4 Explain the role of Trade Unionism in the construction industry.<br>1.5 Analyse the impact of trade unionism in the construction industry. | ditto | ditto |
| | **General Objective 2.0: Understand the Quantity Surveyor's duties at the pre-contract and post-contract stages with other professionals at each stage.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 3 | 2.1 Explain the duties of the parties involved in pre-contract procedures.<br>2.2 State the duties of each party in the pre-contract procedures. | ditto | ditto |
| 4 | 2.3 Analyse the duties of all the various professionals in the post-contract administration.<br>2.4 Determine at what level each of their duties terminate. | ditto | |
| | **General Objective 3.0: Understand the Quantity Surveyor's duties in other matters relating to construction contracts.** | | |
| **Week** | **Specific Learning Outcome:** | **Teachers Activities** | **Resources** |
| 5-8 | 3.1 Describe schedules of repairs.<br>3.2 Prepare schedules of dilapidation.<br>3.3 Apply these schedules in building works.<br>3.4 Explain fire Insurance.<br>3.5 State the various types of fire insurance.<br>3.6 Prepare fire insurance claims. | • Provide examples of each item | ditto |

| Course: Professional Practice and Procedures I | | Course Code: QUS 411 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 4.0: Understand the legal liability of the professional Quantity Surveyor for reports. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 10 | 4.1 Analyse the implication of advice given by the professional Quantity Surveyor.<br>4.2 Differentiate between the professional conduct of Quantity Surveyors employed by clients and those employed by contractual organisation. | | |
| 11 | 4.3 Develop formals for report writing e.g. tender reports<br>4.4 Write letters for application for commission<br>4.5 Make replies or acceptances of application for commission.<br>4.6 File and retrieve information for future use. | • Give student a report to write. | |
| | General Objective 5.0: Understand how to achieve full professional status and organise a professional office. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 12 | 5.1 Identify the professional controlling bodies for Quantity Surveyors both in Nigeria and other countries<br>5.2 State the examinations, membership condition/procedures for these professionals. | | ditto |
| 13 | 5.3 Determine the various levels of requirements in the profession.<br>5.4 Explain how professional Quantity Surveying office is set up and managed.<br>5.5 Consider the procedure for recruiting and disciplining of staff. | • Give case studies. | ditto |

| Course: Professional Practice and Procedures I | | Course Code: QUS 411 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 6.0: Understand procedure for bidding and negotiation for international project. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 14 | 6.1 State what constitutes international project.<br>6.2 Describe the bidding procedure for consultancy services and construction works. | | ditto |
| 15 | 6.3 Describe negotiation process in construction contracts.<br>6.4 State when and how to negotiate | | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student shall be conversant with the professional role of a quantity surveyor and understand the role of the surveyor in the building Industry.<br><br>**Reference:** 1. I. H. Seeley “Quantity Surveying Practice”. 2nd Edition. | | |

# Professional Practice and Procedures II

| Course: Professional Practice and Procedures II | | Course Code: QUS 412 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand how claims arise, and how they are resolved. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-3 | 1.1 Explain the term claims.<br>1.2 Differentiate between contractual and extra-contract claims.<br>1.3 Identify the claim clauses, under JCT and ICE conditions of contract.<br>1.4 Determine the types of claims that will arise under each clause.<br>1.5 Prepare and present a contractors claim under some important claim clause headings.<br>1.6 Resolve contractors claim.<br>1.7 Explain the term extension of time and the conditions for its award.<br>1.8 Determine their effects on a contract.<br>1.9 Explain liquidated and ascertained damages.<br>1.10 Apply the various methods in practice. | • Lecture with case studies. | • Chalkboard, chalk, duster. |
| | General Objective 2.0: Understand what gives rise to determination in a contract and how determination is effected. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 4-5 | 2.1. Explain the term determination<br>2.2. Differentiate between ‘determination of the employment of the contractor’ and ‘determination of the contract.’<br>2.3. Identify the contractual grounds for determination by the contractor, and by the employer.<br>2.4. State the procedure to be followed in effecting determination.<br>2.5. State the rights and duties of all the parties after determination.<br>2.6. Describe the procedure to be followed after determination in achieving completion or settlement.<br>2.7. Prepare final settlement account in case of determination. | Lecture | Ditto |

| Course: Professional Practice and Procedures II | | Course Code: QUS 412 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Know how to prepare financial statement and progress report. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 6-8 | 3.1 Explain 'Financial statement' and 'Progress Report'.<br>3.2 List their important in the construction industry.<br>3.3 State their use.<br>3.4 Prepare financial statement and progress report at all stages.<br>3.5 Cost reductions and adjustment exercises on projects cost exceeding budgetary limit. | • Lecture<br>• Course work. | • Example of financial statement. |
| | General Objective 4.0: Understand the principles of professional conduct | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 9-11 | 4.1 Explain the quasi-judicial role of the Quantity surveyor<br>4.2 Explain the ethics of professional conduct as prescribed by the Nigerian Institute of Quantity Surveyors and the Quantity Surveyors Registration Board of Nigeria.<br>4.3 Interpret the ethics of professional conduct.<br>4.4 Apply the ethics of professional conduct in the practice of Quantity Surveying. | • Discuss Case histories. | • Chalkboard, chalk, duster. |

| Course: Professional Practice and Procedures II | | Course Code: QUS 412 | Contact Hours: 2-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 5.0: Understand the terms of consultancy agreement and methods of fee calculation. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 12-15 | 5.1 Identify the sources and nature of quantity surveying commission.<br>5.2 Analyse a typical consultancy agreement forms e.g. Federal Ministry of works (FUN) form and/or Nigerian Institute of Quantity Surveyor's form.<br>5.3 Identify normal, additional and partial Quantity Surveying services<br>5.4 Analyse the Federal Ministry of works scale of fees for each of the construction consultants.<br>5.5 Calculate pre-and post- contract fees for the Quantity Surveyor and other consultants applying the scale of fees taking into consideration repetitions, reimbursibles, etc. | • Copies of forms. | |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student shall be familiar with the role of a quantity surveyor in resolving disputes and clauses, and be aware of the Professional responsibilities devolved in this regard.<br><br>**Reference:** Peg Thomas "Construction Contract Claims" Macmillan. | | |

# Valuation & Final Accounts Procedure I

| Course: Valuation & Final Accounts Procedure I | | Course Code: QUS 413 | Contact Hours: 2-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand basic procedures of measurement on site of items for variations and for the purpose of interim valuation. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 1-4 | 1.1 Carryout site measurement of work executed under:<br>a. The main contract<br>b. Variation orders<br>c. Daywork carried out on day work basis and additional works covering such items as foundations, excavation, roads, block work, finishings, doors, windows, plumbing works, drainage and other external works.<br>1.2 Make valuations for interim certificates<br>1.3 Prepare a final account for a simple project, give the relevant data. | • Visit site or building to make measurements. | • Tapes, note book etc |
| | General Objective 2.0: Understand the purpose and use of variation order and day works, and the methods of preparing variation accounts. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 5-7 | 2.1 State the uses of variation order and day works.<br>2.2 Prepare a day-work sheet from a given data.<br>2.3 Prepare a bill of variation from a given data.<br>2.4 Prepare variation account from a given set of architects instruction. | • Give coursework | • Data for bill of variation |

| Course: Valuation & Final Accounts Procedure I | | Course Code: QUS 413 | Contact Hours: 2-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0: Understand the terms P.C and Provisional Sums and their application in contract with respect to nominated sub- contract/supplies. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 8-11 | 3.1 Explain the terms P.C and Provisional sums<br>3.2 Explain the terms nominated sub-contractor/suppliers and differentiating them from domestic sub-contractors/suppliers.<br>3.5 Explain the principles of addition of profits, general attendance(s), special attendance(s), cash discounts to nominated sub-contractors/suppliers quotations.<br>3.6 Prepare nominated sub-contractors/suppliers final accounts.<br>3.5 Demonstrate the method of adjustment for the following items in variations - PC sums, provisional sums, Day-work, variations etc. | • Lecturer | |

| Course: Valuation & Final Accounts Procedure I | | Course Code: QUS 413 | Contact Hours: 2-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 4.0: Understand the application of insurance and performance bonds in the construction industry. | | |
| Week | Specific Learning Outcomes: | Teachers Activities | Resources |
| 12-15 | 4.1 Explain the value of insurances and performance bonds in a construction contract.<br>4.2 Differentiate between insurances and bonds<br>4.3 Analyse the various contractual provisions relating to indemnity, insurance, and bonds.<br>4.4 Use the various types of insurances and bonds in the construction industry.<br>4.5 Explain the term premium.<br>4.6 Identify the factors that will affect the value of premium payable on a contract insurance/bond<br>4.7 Explain how the costs of insurances and bonds may be included in a contract sum<br>4.8 Ascertain the cost.<br>4.9 Prepare final account of a completed construction work. | ditto<br>• Give assignment | • Examples of Insurance documents and performance bonds.<br>• Data for assignment. |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The Student should understand the implication of various financial provisions in a control such as kp.c. sums, Dayworks and variation orders. The use of bonds in a contract should also be fully understand.<br><br>**References:** 1. David Richmond “Introduction to valuation” 2nd Edition.<br>2. Hibberd, P. R. “Variation in construction contracts” | | |

# Valuation and Final Accounts Procedure II

| Course: Valuation and Final Accounts Procedure II | | Course Code: QUS 414 | Contact Hours: 2-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the procedure for preparing Interim Valuation, Variation Accounts and Final Accounts. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-3 | 1.1 Explain the effect of variation order on contract work and progress and extension of contract duration.<br>1.2 Asses the value of:<br>a. Variation<br>b. Day-work<br>c. Fluctuation | • Set students examples | • Drawings and bill of quantities. |
| 4-8 | 1.3 Prepare variation accounts from drawings, bills of quantities in all sections of building work including sub-contract.<br>1.4 Prepare day-work accounts.<br>1.5 Prepare interim valuation and certificates for payment using priced bills of quantities.<br>1.6 Prepare variation accounts and final accounts.<br>1.7 Adjust for the following factors in a valuation:<br>a. Variation to the contract executed but not yet agreed for inclusion.<br>b. Day-work undertaken but not yet agreed for inclusion.<br>c. Re-measured work.<br>d. Increased cost of labour and materials for main contract.<br>e. Preliminaries for capital costs expended but not yet covered.<br>f. P.C Sums and Provisional Sums. | ditto | Ditto |

| Course: Valuation and Final Accounts Procedure II | | Course Code: QUS 414 | Contact Hours: 2-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Understand the principles of and procedure for adjusting contract sums because of changes in prices of labour, materials and plant i.e. fluctuations. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9-10 | 2.1 Define Fluctuation.<br>2.2 Explain from price full or limited fluctuation conditions in contracts.<br>2.3 Identify the conditions that will influence the decision on the fluctuations provisions to be incorporated in contracts.<br>2.4 Explain 'traditional method' and form 'formula method' of calculating fluctuation. | • Lecture with example | ditto |
| 11-12 | 2.5 Distinguish between the above two methods.<br>2.6 Identify the conditions that will influence the decision on the method to be used in calculating fluctuations.<br>2.7 Identify the problems associated with each methods.<br>2.8 Analyse the contract provisions applying to fluctuation - by the traditional method and by the formula method. | ditto | ditto |
| 13-15 | 2.9 Calculate fluctuations using the traditional method.<br>2.10 Explain the procedure for calculating fluctuation, using the formula method.<br>2.11 Prepare schedule of allocation.<br>2.12 Calculate fluctuation, using the formula method. | ditto | ditto |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The student should be able to prepare final account and be aware of methods of including variations and fluctuation in prices.<br><br>**References:** 1. Wain wright, W.H. "Variation and final account".<br>2. R. T. M. Whipple "Real Estate Valuation Reports and appraisals". | | |

# Estate Management and Valuation

| Course: Estate Management and Valuation | | Course Code: QUS 416 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand the functions of the Estate Surveyor/Valuer and the processes in Estate Surveying practice. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-4 | 1.1 Explain the functions of the Estate Surveyor/Valuer.<br>1.2 Identify the similarities/differences between Estate Surveying and Quantity Surveying professions.<br>1.3 Explain the procedures in Estate Surveying practice.<br>1.4 Differentiate between the Estate Surveyor and the Building Surveyor. | Lecture | Chalkboard and related items |

| Course: Estate Management and Valuation | | Course Code: QUS 416 | Contact Hours: 1-1-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 2.0: Understand the methods of property valuation and carry out simple calculations. | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 5-9 | 2.1 Explain the principles and procedure of property valuation.<br>2.2 Analyse by valuation tables (Parry's etc), the method of their construction and their use.<br>2.3 Identify the land and property value determinants and the factors affecting choice of sites<br>2.4 Use the methods of valuation of landed property to carry out simple calculations. | • Organise a visit to an acceptable area of land.<br>• Set examples. | • Data for calculaitions |
| 10-15 | 2.5 Determine the factors affecting the accuracy of property<br>2.6 valuation calculations in Nigeria.<br>2.7 Explain property rating<br>2.8 Explain the various approaches that are used in carrying out financial feasibility studies for proposed building developments in residual value, return on capital, payback period and other methods.<br>2.9 Carry out simple calculations using each of the above methods. | • Give students a coursework. | • Data for calculations |
| | **Assessment:** Course work 20% Course test 20% Practical 0% Examination 60%<br><br>**Competency:** The students shall be familiar with the rule on Estate Surveyor and the Principles involved in valuaing property and land.<br><br>**Reference:** 1. R. T. M. Whipple "Real Estate Valuation Reports" | | |

# SIWES and Projects

## Project

| Course: PROJECT | | Course Code: QUS 418 | Contact Hours: 1-1-4 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Know how to identify problem in practice | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 2 - 4 | 1.1 Identify typical problems in quantity surveying practice.<br>1.2 State the causes of these problems in relevant works.<br>1.3 Understand literature review of relevant works.<br>1.4 Explain the significance of solution to the problem. | • Monitor, supervise, and Advise the student on chosen field of study | • Chalkboard, chalk, dusters, calculators |
| | General Objective 2.0: Know how to collect data for analysis | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 5 - 8 | 2.1 State how the data for solution to the typical problems are collected.<br>2.2 Explain the use of the collected data.<br>2.3 State the kind of analysis for such data. | | |

| Course: PROJECT | | Course Code: QUS 418 | Contact Hours: 1-1-4 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 3.0 Know how to present project. | | |
| Week | Specific Learning Outcome: | Teachers Activities | Resources |
| 9 - 13 | 3.1 Analyse data collected<br>3.2 Make conclusions and recommendation<br>3.3 Write outline of the dissertation<br>3.4 Analyse the outline for consistency, unity, coherence and clarity<br>3.5 Prepare foot-notes<br>3.6 List references/bibliography correctly stating:<br>a. Author's name<br>b. Title of Book or Journal<br>c. Publishers<br>d. Name, place and date published<br>3.7 Revise the written project work<br>3.8 Proof-read after typing<br>3.9 Produce the completed work neatly<br>3.10 Present the project works individually to designated assessors<br>3.11 Bind the work in a book form (preferably A4 size) | | |

# Research Methodology

| Course: Research Methodology | | Course Code: QUS 419 | Contact Hours: 1-0-0 |
|---|---|---|---|
| Course Specification: Theoretical Content | | | |
| | General Objective 1.0: Understand how to define a research problem in Quantity Surveying | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-3 | 1.1 Articulate a research problem relevant to Quantity surveying. | | |
| | General Objective 2.0: Know how to formulate research topic. | | |
| 4-7 | 2.1 Formulate relevant research topic | | |
| | General Objective 3.0: Know how to design a questionnaire for the collection of data | | |
| 8-11 | 3.1 Design questionnaire for the collection data | | |
| | General Objective 4.0 Know how to analyse data from different source. | | |
| 12-13 | 4.1 Analyse Data from different sources | | |
| | General Objective 5.0: Deduce conclusions from results and make recommendations based on findings. | | |
| 14-15 | 5.1 Arrive at conclusions based on results obtained and make recommendations | | |

# Guidelines for Assessment of Project Part A: Supervisor Assessment

| | |
|---|---|
| TITLE OF PROJECT | |
| NAME OF STUDENT | |
| REGISTRATION NUMBER | |
| COURSE | |

**GENERAL ASSESSEMENT**

| | | | MAXIMUM SCORE | ACTUAL SCORE |
|---|---|---|---|---|
| 1 | Has the student understood the problem and pursued it? | (Fully)<br>(Partly)<br>(Not at all) | 4 | |
| 2 | To what extent has the student shown self reliance in determining the outcome of work? | (Greatly)<br>(Slightly)<br>(Not at all) | 3 | |
| 3 | What original work has the student contributed to the problem? E.g. a experimental technique, mathematical derivation, an ingenious design. | (A considerable amount)<br>(A litle)<br>(Nothing) | 3 | |
| 4 | Do you consider that the student has done more than just about or less than what are required by the objectives | (A reasonable)<br>(Just amount of work)<br>(Not much) | 4 | |
| 5 | Is the summary (a) concise | REPORT ASSESSMENT<br>(Abolutely clea?)<br>(Moderately clear?)<br>(Not clearly?) | 3 | |
| 6 | Is the summary (b) | (Adequately complete?)<br>(Not complete?) | 3 | |
| 7 | Is the presentation of the report good and in conformity with the standard format in: building quality, typing quality, minimal errors and corrections, topics layout numbering system, acceptable number of words? | | 3 | |

| | | | MAXIMUM SCORE | ACTUAL SCORE |
|---|---|---|---|---|
| 8 | Is the quality of English (sentence construction, grammar, spelling?) | | 2 | |
| 9 | How is the survey of literature. (Has relevant references being omitted? Is the appraisal critical enough?). | | 2 | |
| 10 | Were results discussed? (in the case of literature survey, results may be replaced by contents of literature such as assumptions, leading statement, supporting experiments). | | 3 | |
| 11 | How are diagrams presented and cross-referencing carried out? Are references made correctly? | | 3 | |
| 12 | Does the report read as an integrated whole? (e.g details of work should be put in appendices, padding should be penalised). | | 2 | |
| 13 | Has the problem been presented to the reader. | | 2 | |
| 14 | How is the conclusion? | | 3 | |
| | | **TOTAL** | **40** | |

Brief Remarks: _____

_____

_____

Name of Supervisor: _____ Date: _____

# Part B: Panel Assessment (ORAL DEFENCE)

| | |
|---|---|
| TITLE OF PROJECT | |
| NAME OF STUDENT | |
| REGISTRATION NUMBER | |
| COURSE | |

| | | MAXIMUM SCORE | ACTUAL SCORE |
|---|---|---|---|
| 1 | Abstract (summary) | 2 | |
| 2 | Clear Presentation of Problem | 2 | |
| 3 | Literature Survey (Adequacy of) | 2 | |
| 4 | Results Discussion (Through or Not) | 2 | |
| 5 | Diagrams, Referencing and Cross-Referencing) | 2 | |
| 6 | Overall flow and Cohenrency of the Report | 2 | |
| 7 | Conclusions | 2 | |
| 8 | Quality of English | 2 | |
| 9 | Overall Presentation and Quality of Report | 2 | |
| 10 | Amount of Work done by the Student | 2 | |
| 11 | Overall Presentation | | |
| | a) Confidence in Presentation | 4 | |
| | b) Understand of Subject Matter | 4 | |
| | c) Response to Technical Question | 4 | |
| | d) Command of English Language | 4 | |
| | e) Overall Performance | 4 | |
| | **TOTAL** | **40** | |

Remarks: _____

_____

PANEL MEMBERS:

| S/N | NAME | SIGNATURE | DATE |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |

# Part C: Reader Assessment

| | |
|---|---|
| TITLE OF PROJECT | |
| NAME OF STUDENT | |
| REGISTRATION NUMBER | |
| COURSE | |
| NAME OF SUPERVISOR | |

| | | | MAXIMUM SCORE | ACTUAL SCORE |
|---|---|---|---|---|
| 1. | Abstract (summary) | (Absolutely clear?)<br>(Moderately clear?)<br>(Not clear) | 1 | |
| | | (Adequate?)<br>(Moderately?)<br>(Comprehensive?)<br>(Inadequate?) | 1 | |
| 2. | Has the problem been presented. | (Clearly?) | 2 | |
| 3. | Is the survey of Literature. | (Satisfactory?)<br>(Moderately Good?)<br>(Unsatisfactory?) | 2 | |
| 4. | Were results discussed? | (Thoroughly)<br>(A little?)<br>(Not at all?) | 2 | |
| 5. | How are diagrams presented and cross-referencing carried out? Are references made correctly? | (Well)<br>(Moderately Well?)<br>(Not at all?) | 2 | |
| 6. | Does report read as an integrated whole? | (Yes)<br>(Party)<br>(No) | 2 | |
| 7. | Are conclusion in body of report | (Precise)<br>(Moderately clear) | 2 | |
| 8. | In the quality of English (Sentence construction, grammar, spelling. | (Good)<br>(Moderate)<br>(Bad) | 2 | |

| | | | MAXIMUM SCORE | ACTUAL SCORE |
|---|---|---|---|---|
| 9. | Is the presentation of the report good in conformity with the standard format in: binding quality, typing quality, errors and corrections, topics layout, numbering system etc. | | 2 | |
| 10. | Do you consider the student has done more than, just about or less than. | (A reasonable amount of work? | 2 | |
| | | **TOTAL** | **40** | |

Remarks: _____

_____

_____

Name of Reader: _____

Signature: _____ Date: _____

# Guidelines for text book writers

## NATIONAL DIPLOMA AND HIGHER NATIONAL DIPLOMA

The following guidelines are suggestions from the Engineering Committees to the writers of the textbooks for the new curricula. They are intended to supplement the detailed syllabuses which have been produced, and which define the content and level of the courses.

Authors should bear in mind that the curriculum has been designed to give the students a broad understanding of applications in industry and commerce, and this is reflected in the curriculum objectives.

- One book should be produced for each syllabus
- Page size should be A4
- The front size should be 12 point for normal text and 14 point where emphasis is needed
- Line spacing should be set to 1.5 lines
- Headings and subheadings should be emboldened
- Photographs, diagrams and charts should used extensively throughout the book, and these items must be up-to-date
- In all cases the material must be related to industry and commerce, using real life examples wherever possible so that the book is not just a theory book. It must help the students to see the subject in the context of the ‘real word”
- The philosophy of the courses is one of an integrated approach to theory and practice, and as such the books should reflect this by not making an artificial divide between theory and practice.
- Illustrations should labeled and numbered.
- Examples should drawn from Nigeria wherever possible, so that the information is set in a country context.
- Each chapter should end with student self-assessment questions (SAG) so that students can check their own master of the subject

• Accurate instructions should be given for any practical work having first conducted the practical to check that the instructions do indeed work

• The books must have a proper index or table of contents, a list of references and an introduction based on the overall course philosophy and aims of the syllabus.

• Symbols and units must be listed and a unified approach used throughout the book

• In case of queries regarding the contents of the books and the depth of information, the author must contact the relevant curriculum committee via the National Board for Technical Education

• The final draft version of the books should be submitted to Nigerian members of the curriculum working groups for their comments regarding the content in relation to the desired syllabus.

# List of Minimum Resources

## LIST OF EQUIPMENT FOR THE NATIONAL DIPLOMA IN BUILDING AND QUANTITY SURVEYING PROGRAMME

| | | |
|---|---|---|
| **LABORATORIES** | | |
| 1. | Structures/Strength of Materials | |
| 2. | Material Science Laboratory | |
| 1. | B & K sound level units octave filter | 3 |
| 2. | Micro-computer | 1 |
| 3. | Planimeter stop | 3 sets |
| 4. | Stop watches | 10 |
| 5. | Daylight factor units | 3 sets |
| 6. | Sound pressure meter | 3 |
| 7. | Accelerometer for vibration analysis | 2 |
| **Soil Mechanics** | | |
| 1. | Consistency limits test apparatus | 10 |
| 2. | Compacting core machine | 1 |
| 3. | Compacting factor testing machine | 1 |
| 4. | Particles size distribution test apparatus | 5 |
| 5. | Compaction test apparatus | 1 |
| 6. | Core penetrometer | 1 |
| 7. | Moisture content test apparatus | 6 |
| 8. | Specific gravity test apparatus | 10 |
| 9. | Density test apparatus | 10 |
| 10. | Le Chatelier test apparatus | 5 |
| 11. | Augers and rigs | 6 |
| 12. | V-B Consistometer test apparatus | 1 |
| 13. | Drying Ovens | 3 |
| 14. | Sample collecting trays and sample containers | 10 |
| 15. | 150mm cube moulds | 30 |
| 16. | 15mm cylindrical moulds | 30 |
| 17. | Balanced | 2 of each |
| 18. | Vicat apparatus | 2 |

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| **LABORATORIES** | | |
| **Soil Mechanics** | | |
| 19. | Thermometers | 5 of each |
| 20. | Cement fineness test apparatus | 2 |
| 21. | Measuring cylinders | 5 |
| 22. | Soil hydrometers | 5 |
| 23. | Crucibles, spatulas, filter papers funnel and verniercalipers | Assorted |
| 24. | Desiccators | 6 |
| 25. | Curing tank | |
| 26. | Stop watches | 10 |
| 27. | Beam moulds | 4 |
| 28. | Crushing machine | 1 |
| **WORKSHOPS** | | |
| **Carpentry (Planes and Saws)** | | |
| 1. | Jack planes | 15 |
| 2. | Smoothing planes | 15 |
| 3. | Block planes | 6 |
| 4. | Shoulder planes | 6 |
| 5. | Rebate plane | 6 |
| 6. | Multi-plough plane | 2 |
| 7. | Grooving/plough plane | 6 |
| 8. | Bull nose plane | 2 |
| 9. | Compass plane | 2 |
| 10. | Jointing plane | 6 |
| 11. | Side rabbet plant | 6 |
| 12. | Rip saw | 6 |
| 13. | Cross cut/band saw | 6 |
| 14. | Tenon saw | 12 |
| 15. | Panel saw | 6 |
| 16. | Coping saw | 6 |
| 17. | Nest of saws compass saw | 6 |
| 18. | Key hole saw | 6 |
| 19. | Bracket or Fret Saw | 6 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Chisels** | | |
| 20. | Ordinary firmer (set) 3 mm, 6 mm, 12 mm, 18 mm and 25 mm. | 6 |
| 21. | Bevel-edge firmer (set) 3 mm, 6 mm, 12 mm, 18 mm and 25 mm | 6 |
| 22. | Mortice (set) 6 each of 6 mm, 9 mm, and 12 mm pairing bevel-edge (set) | 6 |
| 23. | Firmer gauge (Set) | 6 |
| 24. | Paring firmer (set) | 6 |
| 25. | Turning chisels (set) | 6 |
| **Bits** | | |
| 27. | Centre (Set | 6 |
| 28. | Auger (set) | 6 |
| 29. | Twist (set) | 6 |
| 30. | Counter sink (set) | 6 |
| 31. | Rose (set) | 6 |
| 32. | Gimlet | 6 |
| **Driving/Striking Tools** | | |
| 33. | Screw driver (set of six) | 6 |
| 34. | Mallet | 6 |
| 35. | Claw hammer | 6 |
| 36. | Pane hammer | 6 |
| 37. | Warington hammer | 6 |
| 38. | Bradawl | 6 |
| **Cramps** | | |
| 39. | Sash (set) | 6 |
| 40. | G’ cramp | 6 |
| 41. | Corner | 6 |
| 42. | Bench hold fast | 6 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Miscellaneous** | | |
| 43. | Cork rubber | 6 |
| 44. | Triangular files (set) | 6 |
| 45. | Flat files | 6 |
| 46. | Scraper (flat) | 6 |
| 47. | Dividers | 6 |
| 48. | Round files (set) | 6 |
| 49. | Scraper (cabinet) | 6 |
| 50. | Calipers set (inside and outside) | 6 |
| 51. | Spoke shaves (Set) | 6 |
| 52. | Wood-workers pencils | 6 |
| **Machines** | | |
| 53. | Circular saw bench | 1 |
| 54. | Surfacer | 1 |
| 55. | Wood lathe with accessories | 1 |
| 56. | Band saw | 1 |
| 57. | Spindle moulder | 1 |
| 58. | Radial circular saw | 1 |
| 59. | Compression and spraying | 1 |
| 60. | Universal wood-worker | 1 |
| 61. | Tenon saw | 1 |
| 62. | Mortiser (chisel and chain) | 1 |
| 63. | Sander (drum, disc and belt) | 1 |
| 64. | Cross cut sawing machine | 1 |
| 65. | Drilling machine | 1 |
| 66. | Jig saw | 1 |
| 67. | Presser (School size) | 1 |
| **Utilities** | | |
| 68. | Work benches | 16 |
| 69. | Tool trolleys | 4 |
| 70. | Hangers for dresses | |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **A/V** | | |
| 71. | Magnetic board | 2 |
| 72. | Display board | 2 |
| 73. | Overhead projector and transparencies | 1 |
| 74. | Slide projector | 1 |
| 75. | Film strips projector | 1 |
| 76. | Opaque projector | 1 |
| 77. | Projector screen | 1 |
| **Dressing** | | |
| 78. | Overalls (aprons-brown) | 55 |
| 79. | Goggles | 40 |
| **Chalk Board** | | |
| 80. | T. Square | 2 |
| 81. | Set square 60/45 | 2 |
| 82. | Compasses | 2 |
| 83. | Protractor | 2 |
| 84. | Duster | 2 |
| 85. | Ruler (metre rule) | 2 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Powered Hand Tools** | | |
| 86. | Circular saw | 4 |
| 87. | Drills | 4 |
| 88. | Orbital sander | 4 |
| 90. | Jig saw | 4 |
| 91. | Blower | 4 |
| 92. | Sprayer | 4 |
| 93. | Grinding machines | 2 |
| 94. | Sharpening machines | 2 |
| 95. | Grinding stone | 5 |
| 96. | Oil cans | 5 |
| 97. | Saw vices | 5 |
| 98. | Bench stop (metal type) | 5 |
| 99. | Band saw setter/sharpener | 1 |
| 100. | Grinding for long blades e.g surface plane | 1 |
| 101. | Paint brushes (sets) | 10 |
| 102 | Paint containers | 10 |
| 103. | Putty knives | 10 |
| 104. | Glue pot 2 jacket (for animal glue) | 4 |
| 105. | Glue spreader | 30 |
| 106. | Glue brushes (various sizes) | 5 each |
| **Gauges, Knives, etc** | | |
| 107. | Marking gauge | 5 |
| 108. | Mortice gauge | 5 |
| 109. | Combination gauge | 2 |
| 110. | Cutting gauge | 5 |
| 111. | Marking knives | 5 |
| 112. | Vernier knives | 5 |
| 113. | Try square | 10 |
| 114. | Metre square | 5 |
| 115. | Four fold wooden ruler metric | 5 |
| 116. | Measuring tapes metric (6m) | 5 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Concrete/Blocklaying** | | |
| 1. | Portable compressor and accessories | 1 |
| 2. | Bar bending machine | 1 |
| 3. | Steel cutter | 1 |
| 4. | Mash/BRC cutter | 1 |
| 5. | Tyrolean machine | 1 |
| 6. | Concrete vibrators: poker and table vibrators | 1 each |
| 7. | Hand rammers | 4 each |
| 8. | Concrete portable mixer (At least 2cu. ft capacity) | 1 |
| 9. | Crick/block making machine | 1 |
| 10. | Wheel barrow | 5 |
| 11. | Watering can | 5 |
| 12. | Shovels | 20 |
| 13. | Head pan | 10 |
| 14. | Terrazzoe polishing machine | 1 |
| 15. | Brick saw | 1 |
| 16. | Concrete nail gun | 1 |
| 17. | Hand tools e.g spirit level, hammers, rulers., squares, mallet, rapes, floats, etc. | Assorted |
| 18. | Tilting mixer | 1 |
| 19. | Multiflow mixer | 1 |
| 20. | Cement box | 5 |
| 21. | Aggregates and sand box | 5 |
| 22. | Slump cone | 2 |
| 23. | Curing Tanks | 2 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Plumbing** | | |
| 1. | Guillotine (three feet) | 1 |
| 2. | Fittings | Assorted |
| 3. | Pumps various types e.g centrifugal, submissive etc | 1 each |
| 4. | Valves, surge tanks, water base | Assorted |
| 5. | Pipe bending machine | 1 |
| 6. | Light duty drilling machine | 1 |
| 7. | Heavy duty drilling machine | 1 |
| 8. | Table drilling machine | 1 |
| 9. | Sheet metal folding machine | 1 |
| 10. | Tapping machine | 1 |
| 11. | Forge | 1 |
| 12. | Arc-welding machine | 1 |
| 13. | Oxy-acetylene generator | 1 |
| 14. | Acetylene generator | 1 |
| 15. | Electric soldering tool | 2 |
| 16. | Refix hydraulic pipe bender | 1 |
| 17. | Grinding machine | 1 |
| 18. | Jack pump | 1 |
| 19. | Pipe standing vices | 6 |
| 20. | Table vices | 6 |
| 21. | Cooper tube bender | 1 |
| 22. | Cooper bit | 1 |
| 23. | Hacksaw | |
| 24. | Boxwood being dresser | 20 |
| 25. | Shave hooks | 6 |
| 26. | Tin snips | 6 |
| 27. | Hacking knife | 6 |
| 28. | Gimlet for lead pipe and wood screws | 6 |
| 29. | Wrenches | Assorted |
| 30. | Dies | Assorted |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Painting, Decorating and Glazing** | | |
| 1. | Spraying machine | 2 |
| 2. | Paint rollers | 6 |
| 3. | Diamond/glass cutter | 2 |
| 4. | Assorted Hand tools, e.g knives., hooks stirrer, hammers, pincers, punch straight edge, screw-drivers, wire brushes, trowels, chisel, strainers, filling board and hawk, rubbing block etc. | |
| 5. | Paint kettle and hook | 2 |
| 6. | Bucker | 10 |
| 7. | Tray | 10 |
| 8. | Sanders | 6 |
| 9. | Wire brush | 5 |
| 10. | Descaling chisels | 2 |
| 11. | Needles gum | 1 |
| 12. | Gas torch | 10 |
| 13. | Brushes | 2 |
| 14. | Paint pad | |
| 15. | Pain mitten | 1 |
| **Electrical Workshop** | | |
| 1. | Bending vices/machine | 10 |
| 2. | Electrician tool kits | 4 |
| 3. | Soldering Iron | 10 |
| 4. | Avo meters | 2 |
| 6. | Voltmeters | 2 |
| 7. | Wiring boards | 2 |
| 8. | Consumer units (i) circuit breakers | 6 |
| | (ii) distribution box | Assorted |
| | (iii) switches | 5 |
| | (iv) meters | Assorted |
| | (v) mains switch | 5 |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Studio/Drawing Room** | | |
| 1. | Drawing table (A1 size) | 31 |
| 2. | T. square (A1 size) | 31 |
| 3. | Set square | 3 |
| 4. | Drawing pen | 3 |
| 5. | Chalkboard set square | 2 set |
| 6. | Chalkboard protectors | 2 |
| 7. | Chalkboard divider | 2 |
| 8. | Chalkboard pair of compasses | 2 |
| 9. | Chalkboard Wooden straight edges | 2 |
| 10. | Chalkboard lettering set | 2 sets |
| 11. | Drafting machine for standard drawing table | 4 |
| 12. | Templates | 2 sets |
| 13. | Plastic curves | 2 sets |
| 14. | Projector | 2 sets |
| 15. | Electronic calculators for the use in Quantity-Surveying Department | 20 |
| 16. | Drawing Instruments | 3 |
| 17. | Scale Rules | Assorted |
| 18. | One light table (AO size) | of each |

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| **LABORATORIES** | | |
| **WORKSHOPS** | | |
| **Other Facilities** | | |
| 1. | Land Surveying Equipment Store | |
| 1. | Leveling instruments | 6 |
| 2. | Theodolities | 6 |
| 3. | Compasses with tripods | 6 |
| 4. | Plane table | 5 |
| 5. | Tripods (level and theodolite) | 12 |
| 6. | Staves | 10 |
| 7. | Ranging poles | 20 |
| 8. | Surveying umbrella | 2 |
| 9. | Chains | 7 |
| 10. | Steel arrows | 30 |
| 11. | Planimeter | 6 |
| 12. | Tapes (30m, 50m and 100m) | 6 each |
| 13. | Optical square | 6 |
| 14. | Pocket altimeter | 7 |
| 15. | Set of targets | 3 |
| 16. | Steel band | 5 |
| **Computer Room** | | |
| 1. | Minicomputer with associated printers and terminals and preferably a UPSS (Uninterrupted Power Supply System) | |
| 2. | Softwares of various Engineering and Environmental Packages | 2 |
| 3. | Duplicating and Printing Room | |
| 1. | Photostating machine | 1 |
| 2. | Plan Printing machine | 1 |
| 3. | Duplicating machine | 1 |
| 4. | Trimming machine | 1 |
| 5. | Scanning machine | 1 |

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| LABORATORIES | | |
| WORKSHOPS | | |
| Safety Equipment for Each Workshop | | |
| 1. | First aid box | 1 |
| 2. | Safety goggles | 32 |
| 3. | Safety caps | 32 |
| 4. | Rubber boots | 32 pairs |
| 5. | Leather apron | 32 |
| 6. | Leather palm gloves | 32 pairs |
| 7. | Fire extinguisher | 2 |
| 8. | Fire buckets | 2 |
| 9. | Safety charts and drawings | Assorted |
| 10. | Shower | 1 |
| Safety Equipment for each Laboratory | | |
| 1. | First Aid Box | 1 |
| 2. | Shower | 1 |
| 3. | Fire Extinguisher | 2 |
| 4. | Fire buckets | 2 |
| 5. | Safety Charts and Drawings | Assorted |

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## UNESCO-NIGERIA PROJECT IN SUPPORT OF REVITILISATION OF TECHNICAL AND VOCATIONAL EDUCATION IN NIGERIA

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