QSV 401 – Measurement of Civil Engineering Works

COURSE PARTICULARS

Course Code: QSV 401  
Course Title: Measurement of Civil Engineering Works  
No. of Units: 2  
Course Duration: One hour of lecture and one hour of tutorials per week for 15 weeks.  
Status: Compulsory  
Course Email Address: qsv401@futa.edu.ng  
Prerequisite: NIL

COURSE INSTRUCTORS

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and

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COURSE DESCRIPTION

In order to achieve realistic estimating, computation of quantities need to be accurate. This course is meant to embed students with the skills of taking off and bill of quantities preparation for civil engineering works. Students with adequate knowledge of taking-off for building works are likely to have an edge in the course. Although the course is meant to impart useful skills on the students with regard to drawing interpretation, taking off and bill of quantities preparation, additional effort will be made to explain the construction of the civil engineering works for which taking-off is to be done. This is to ensure better understanding. Among the topics to be taught are scope of civil engineering works and methods of measurement, measurement of site
investigation and site clearance, measurement for excavation and earthworks, embankments and cuttings, retaining walls, piling, roads, railway work, bridges and culverts.

**COURSE OBJECTIVES**

The objectives of this course are to:
- provide students with taking-off skills for civil engineering works; and
- equip students with the basic skills of bill of quantities preparation for civil engineering works.

**COURSE LEARNING OUTCOMES / COMPETENCIES**

Upon successful completion of this course, the students will be able to:

*(Knowledge based)*
- describe the differences between civil engineering works and building works administration;
- understand how to use BESMM3 for taking off and preparation of bills of quantities for civil engineering works;
- interpretate drawings, take off, and prepare bill of quantities for civil engineering works.

*(Skills)*
- take off and prepare bill of quantities for:
  - Site investigation and site clearance;
  - Excavation, dredging and fillings;
  - Geotechnical process;
  - Earthworks, embankment and cutting;
- take off and prepare bill of quantities for:
  - Retaining walls;
  - Piling, underpinning, road and railway work, bridges and culvert;
  - other small civil works.

**GRADING SYSTEM FOR THE COURSE**

This course will be graded as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Attendance</td>
<td>5%</td>
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<tr>
<td>Assignments</td>
<td>15%</td>
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<td>Test(s)</td>
<td>20%</td>
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<tr>
<td>Final Examination</td>
<td>60%</td>
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<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all practical/tutorial classes. Attendance records will be kept and used to determine each person’s qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person’s work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students’ misconduct as spelt out in the Students’ Handbook.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms: Students should turn off their cell phones during lectures or better still put it in silent mode. Students are prohibited from engaging in other activities (such as texting, watching videos, chatting, gisting etc.) during lectures. Food and drinks are not permitted during lectures except otherwise approved by the tutor.

READING LIST


Legend
1- Available in the University Library
2- Available in Departmental/School Libraries
3- Available on the Internet.
4- Available as Personal Collection
5- Available in local bookshops.
# COURSE OUTLINE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Remarks</th>
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| 1&2  | The scope of civil engineering works and method of measurement.  
- Review of works involved  
- Contract documents  
- Daywork schedule  
- Method Related Charges  
  - Definition and general explanations  
  - Advantages and Disadvantages  
  - Reasons for introduction  
  - Practical application | Expectations of students from the course will be documented. |
| 3    | The use of Building and Engineering Standard Method of Measurement 3 (BESMM3) and Civil Engineering Standard Method of Measurement for the taking off and bill of quantities preparation for civil engineering works.  
- Measurement of Site investigation and site clearance | Relevant/related sections of the two standard methods of measurement will be compared.  
Meaning of Bill of Engineering Measurement and Evaluation (BEME) and its relationship with Bill of Quantities (BOQ) will be discussed  
Measurement for a number of site investigation methods will be done. |
| 4    | Excavation, dredging, fillings geotechnical process. | |
| 5 & 6| Earthworks, embankments and cuttings. | Both open earthworks and backfilled excavations will be considered.  
The following methods of quantities computation will be considered: Average end area, prismoidal, simpson’s rule, 1234 (grid average) method. The use of computer programmes and mass diagram will also be discussed. |
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7 &amp; 8</td>
<td>• Earthworks, embankments and cuttings (continued)</td>
<td>Assignment will be given</td>
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<td>9</td>
<td>• Retaining wall</td>
<td>Quick review of the construction process will be done.</td>
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<td>Process of Bill of Quantities (BOQ) preparation will be revisited and</td>
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<td>some peculiarities of civil works BOQ will be highlighted.</td>
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<td>10</td>
<td>Railway works</td>
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<td>11 &amp; 12</td>
<td>• Piling</td>
<td>Students will be divided into groups; they will be expected to look for</td>
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<td>• Underpining</td>
<td>a civil engineering work drawing, bring it to the instructor for approval</td>
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<td>and prepare a standard bill of quantities for it.</td>
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<td>13 &amp; 14</td>
<td>• Road works</td>
<td>Quick review of works done so far in the semester will be done, in</td>
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<td>• Bridges and Culverts</td>
<td>preparation for the main revision class (week 15)</td>
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<td>15</td>
<td>REVISION</td>
<td>This is the week preceding the final examination. At this time, evaluation</td>
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<td>will be done to assess how far the students’ expectations for the course</td>
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<td>have been met. All outstanding clarifications in respect of previously</td>
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<td>taught topics will be done.</td>
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