



# THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

## *Department of Architecture*

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### ARC 305 – Building Services I

#### COURSE PARTICULARS

**Course Code:** ARC 305

**Course Title:** Building Services I

**No. of Units:** 3

**Course Duration:** One hour of lecture and three hours of practical/studio per week for 15 weeks.

**Status:** Compulsory

**Course Email Address:** [arc305@gmail.com](mailto:arc305@gmail.com)

**Course Webpage:**

**Prerequisite:** NIL

#### COURSE INSTRUCTORS

**Arc. H. A. Ayoola**

*Room 203, Second Floor, SET Building,  
Dept. of Architecture,  
Federal University of Technology, Akure, Nigeria.*

**Phone:** +2348033799014

**Email:** [ayooladayo@yahoo.com](mailto:ayooladayo@yahoo.com)

and

**Arc. S. A. Ganiyu (C)**

*Room 030, Ground Floor, SET Building,  
Dept. of Architecture,  
Federal University of Technology, Akure, Nigeria.*

**Phone:** +2348035085416, +2348057198700

**Email:** [saganiyu@futa.edu.ng](mailto:saganiyu@futa.edu.ng), [ganiyusikuru@gmail.com](mailto:ganiyusikuru@gmail.com), [fadhikr2002@yahoo.co.uk](mailto:fadhikr2002@yahoo.co.uk)

and

**Arc. I. A. Ogundiran**

*Room 203, Second Floor, SET Building,  
Dept. of Architecture,  
Federal University of Technology, Akure, Nigeria.*

**Phone:** +2347030844757

**Email:** [ibukunoluwawa@gmail.com](mailto:ibukunoluwawa@gmail.com)

## COURSE DESCRIPTION

Building services for small to medium size projects. Cold and hot water supply mechanism and installation. Simple calculation of standard, velocity demand and selection of plumbing fittings leading to complete design for cold and hot water supply. Surface water drainage, waste disposal and hot water system. Principles of cooling and heating. The course does not set out to make engineers out of architectural students. It sets out to give some insight into the services of which architects – acting in their familiar role of principal agents – should have a basic understanding so that they can interpret the engineers requirements and accommodate these in their building design, and manage the design team.

## COURSE OBJECTIVES

The objectives of this course are to:

- introduce students to basic concepts in building services for small to medium size projects; and
- provide students with opportunities to develop basic skills with respect to cold and hot water supply mechanism and installation.

## COURSE LEARNING OUTCOMES / COMPETENCIES

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

*(Knowledge based)*

- explain the differences between cold and hot water supply mechanism and installation;
- understand the importance of services in buildings;
- understand the sources of water and water treatment techniques;
- understand water disposal and sanitary systems;

*(Skills)*

- read simple water metering;
- select the correct plumbing fittings for simple building;
- analyse principles of cooling and heating;
- appraise the correctness of plumbing installation in a building.

## GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Class Attendance	10%
Assignments	30%
<u>Final Examination</u>	<u>60%</u>
<b><u>TOTAL</u></b>	<b><u>100%</u></b>

## GENERAL INSTRUCTIONS

**Attendance:** It is expected that every student will be in class for lectures. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. Failure to meet the minimum University requirement of 65% attendance will disqualify the student from writing the final examination.

**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 the student a minus mark for every additional day. Instructors attach importance to originality of assignment. Only assignment submitted using the prescribed format will be accepted and marked.

**Code of Conduct in Lecture Rooms and Laboratories:** Students should turn off their cell phones or put it in silent mode during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, *etc.*) during lectures. Food and drinks are not permitted in the studio during lecture.

## READING LIST

<sup>1,2</sup> Olafare, S. O. (nd). Building Service and Services Explained. Hollad Publishers Ltd, Nigeria.

<sup>1,2</sup> Chudley, R. (1994). Construction Technology. 2nd Edition. Longman Group Ltd, UK  
Principles and Practice, 2nd Edition. John Wiley and Sons.

### **Legend**

1- Available as Personal Collection

2- Available in local bookshops.

## COURSE OUTLINE

Week	Topic	Remarks
1	Introduction and Course Overview	During this first class, the expectation of the students from the course will also be documented.
2	Importance of Services in Buildings <ul style="list-style-type: none"> <li>•</li> </ul>	
3	Water Supply and Distribution <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Sources of water</li> <li>• Water Production</li> <li>• Water Supply</li> <li>• Water Consumption</li> </ul>	
4	<ul style="list-style-type: none"> <li>• Water Contamination</li> <li>• Water Treatment</li> <li>• Hardness of Water               <ul style="list-style-type: none"> <li>• Water Distribution</li> </ul> </li> </ul>	
5	Cold Water System <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Cold water System               <ul style="list-style-type: none"> <li>Direct System</li> <li>Indirect System</li> </ul> </li> <li>•</li> </ul>	
6	Hot Water System <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Design Hot Water supply</li> <li>• Direct Hot water Supply               <ul style="list-style-type: none"> <li>Indirect System</li> </ul> </li> <li>• Problems of Hot Water Supply</li> </ul>	
7	Field Trip <ul style="list-style-type: none"> <li>• Sanitary wares and Fittings/Installation</li> <li>• Water Treatment and Distribution</li> <li>• Central Sewage System</li> </ul>	

8	Plumbing Fittings and Sanitary Wares <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Plumbing Materials</li> <li>• Pipes and Piping System</li> <li>• Sanitary Appliances and Wares</li> <li>• Taps, valves, wc, urinals, sink, bidet, bath, etc</li> <li>• Installation methods</li> </ul>	
9	Waste Disposal and Sanitation System <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Domestic Wastes: Types</li> <li>• Waste Disposal</li> <li>• Waste Treatment</li> </ul>	
10	Water Hammer <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Causes</li> <li>• Prevention</li> </ul>	
11	Drainage System <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Basic principles</li> <li>• Surface Drainage System</li> <li>• Used Water</li> <li>• Central Drainage System</li> </ul>	
12	Sewage Disposal and Treatment <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Sewage collection</li> <li>• Sewage Disposal</li> <li>• Sewage Treatment/Purification</li> <li>• Central Sewage System</li> </ul>	
13	Toilets <ul style="list-style-type: none"> <li>• Pit Toilets</li> <li>• V. I. P Toilet</li> </ul> Septic Tank	
14	Principles of Cooling and Heating	
15	Revision	This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.