

**Ambo University Woliso Campus**

**School of Technology**

**Civil Engineering Department**

*Course name: Highway Engineering Course Outline*

**Course No. : CENG3201**

*March, 2020*

**ECTS credits : 5**

**Credit hour: 3**

**Degree Program:** Bsc in Construction Technology and Management

**Pre-requisites:** CENG1031

**Module Name and No :** 20 (Transport design and construction)

**Instructor :** Boonaa A.

**Course Objective and competence to be acquired:** At the end of the course the student is expected to:-

- Understand the basics of road classification, alignment selection and
- Identify different geometric design controls and elements
- Able to determine the different elements of geometric features a road and evaluate with requirements on design standards
- Understand the basic purpose, types and design of drainage systems
- Be introduced with the types, design and construction of bridge structures
- Be familiarized with the Standard Specifications and Manuals of Ethiopia (ERA, AACRA...)

## **Course Contents**

### **1. Introduction**

1.1 Historical Perspective, Purpose of Roads, Route selection

### **2. Transport Planning**

2.1 Transport Planning Process

2.2 Forecasting Travel Demand

2.3 Evaluation Transport Alternatives

### **3. Highway Route Surveys and Location**

### **4. Geometric Design of Highways**

4.1. Highway Functional Classification

4.2 Design Controls and criteria

4.3. Elements of Design

4.3.1 Sight Distance

4.3.2 Horizontal Alignment

4.3.3 Vertical Alignment

4.3.4. Super elevation

4.3.5. Road widening

4.3.6. Road safety designs

**5. Earth work quantity and mass haul diagram.**

**6. Introduction of drainage design and construction, Introduction to Bridge design**

## **REFERENCES**

1. Wright, P.H. and Karen, D. (2003), Highway Engineering, 7th edition, Wiley
2. Rogers, M. (2003), Highway Engineering, Blackwell Science Lt.
3. Mannering, F.L., Kilareski, W.P., and Washburn, S.S. (2004), Principles of Highway Engineering and Traffic Analysis, 3rd edition, Wiley.
4. ERA (Ethiopian Roads Authority) (2002), Geometric design Manual.

***Assessment/Evaluation & Grading System: 60% Assignment, Project & Mid Exam. 40 %  
Final examination***

***Attendance Requirements 90% during lectures and tutorial.***