

191 340/EN113402 Route surveying 3(3-0-6)

Prerequisites 191 240/EN112400 Surveying

and 191 241/EN112401 Surveying laboratory

Contents

Chapter 1: Surveying techniques

Chapter 2: Introduction to global positioning system (GPS)

**Chapter 3: Introduction to photogrammetry and
remote sensing**

**Chapter 4: Introduction to geographic information
system (GIS)**

Contents (continued)

Chapter 5: Route location and design (midterm exam includes chapters 2-5 if possible)

Chapter 6: Horizontal curve and vertical curve

Chapter 7: Earthwork

Chapter 8: Alignment layout

Chapter 9: Construction survey

Chapter 10: Property law and right of way (final exam includes chapter 6-10)

References

1. **Route location and design** by Thomas F. Hickerson
2. **Route surveying and design** by Carl F. Meyer and David W. Gibson
3. **Route surveys and construction** by Harry Rubey
4. **Elementary surveying: An introduction to Geomatics** by Charles D. Ghilani and Paul R. Wolf
5. **Surveying: theory and practice** by James M. Anderson and Edward M. Mikhail

References (continued)

- 6. Introduction to modern photogrammetry** by
Edward M. Mikhail
- 7. GPS satellite surveying** by Alfred Leick
- 8. Surveying for construction** by William Irvine
- 9. Construction surveying** by Jack Roberts
- 10. Fundamentals of geographic information systems**
by Michael N. DeMers

Marking scheme

Total marks: 115 divided into :

- Class attendance 5 marks
- Assignment 10 marks
- Midterm exam 45 marks
- Final exam 55 marks

Grading scale

A total of 115 marks, grading after rounding up the marks obtained by the students to whole numbers

A	80 up	B+	72-79
B	64-71	C+	56-63
C	48-55	D+	40-47
D	30-39	F	0-29

Introduction to route surveying

What is a route survey

Route surveying is comprised of all survey operations required for design and construction of engineering works such as highways, pipelines, canals, railroads and so on.

4 Procedures for route surveying

- ➡ การสำรวจสังเขป (Reconnaissance survey)
- ➡ การสำรวจเบื้องต้น (Preliminary survey)
- ➡ การสำรวจวางแผนเส้นทาง (Location survey)
- ➡ การสำรวจเพื่อการก่อสร้าง (Construction survey)

ประเภทของเส้นทาง (Type of route)

ทางหลวง (Highways)



ทางนำร่อง (Guideways)



Personal rapid transportation (PRT)

ระบบท่อลำเลียง (Pipelines)



ทางรถไฟ (Railway)



รถไฟบนดิน (Train)



รถไฟเหนือพื้นดิน (Sky train)



รถไฟใต้ดิน (Underground, Tube)



รถราง (Tram)

ทางเคเบิล(Cableways)



ระบบสายส่ง (Transmission lines)



คลองส่งน้ำชลประทาน (Canals for irrigation)



ท่อส่งน้ำบนสะพาน (Aqueducts)



รางน้ำเปิด (Flumes)

