

1. Course Number and Course Title

COE 49410 – Telecommunications Networks Engineering

2. Credit Hours

3-0-3

3. Prerequisites and/or Co-Requisites:

Prerequisite: COE 370 (Communications Networks)

4. Name and Contact Information of Instructor:

Dr. Taha Landolsi

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Email: tlandolsi@aus.edu

Phone: (06)515-2473

Office Hours: Posted on office door

5. Course Description (Catalog Description):

Examines current topics in telecommunications networks. Covers network elements functions, access, metropolitan and transport network architectures, bandwidth considerations and multiplexing techniques, current engineering practices in designing and optimizing telecommunications networks.

6. Textbook and other Supplemental Material:

Textbook:

- B. A. Forouzan, Data Communications and Networking, 5th ed., McGraw-Hill, 2013.

Supplemental material:

- W. Stallings, Data and Computer Communications, 10th ed. Prentice Hall, 2013.
- I. Glover, P. Grant, Digital Communications, 3rd ed., Prentice Hall, 2010.
- J. Kurose, K. Ross, Computer Networking, 7th ed., Pearson, 2016.

7. Learning Outcomes:

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

1. Identify the functions of telecommunication systems and network elements.
2. Compare the different architectures of access, metropolitan, and transport networks.
3. Calculate the bit rates of electrical and optical multiplexed systems.
4. Estimate bandwidth and capacity requirements of telecommunications systems.
5. Understand design issues in optical and wireless networks.
6. Apply telecommunication engineering best practices to plan and optimize networks.

8. Teaching and Learning Methodologies:

Methods include lectures, class discussions, and homework assignments.

9. Course Topics and Schedule:

Topic	Weeks (tentative)
Overview of circuit and packet switching networks	2
Architectures of access, metropolitan, and transport networks	2
Elements of voice, data, multimedia communication systems	2
Wired and wireless links characteristics	2
Bandwidth and capacity estimation telecommunications systems	2
Multiplexing and design issues in telecommunication networks	2
Planning and optimization of telecommunication networks	2
Review and evaluations	2
Total:	16

10. Schedule of Laboratory and other Non-Lecture Sessions:

Not applicable.

11. Out-of-Class Assignments with Due Dates:

Assignment	Weight	Due date (tentative)
Homework 1	1 %	Week 03
Homework 2	1 %	Week 05
Homework 3	1 %	Week 08
Homework 4	1 %	Week 10
Homework 5	1 %	Week 13

12. Student Evaluation:

Assessment	Weight	Due date (tentative)
Homework	5 %	End of each chapter
Quizzes	15 %	Pop quizzes
Midterm Exam-I	25 %	Week 06
Midterm Exam-II	25 %	Week 11
Final Exam	30 %	Week 16

13. Course Project Description:

No main project assigned in the course.

14. Assessment Instruments:

Assessment	CLOs
Homework	O1 – O6
Quizzes	O1 – O6
Midterm Exam-I	O1, O2, O3
Midterm Exam-II	O4, O5
Final Exam	O1 – O6

15. Contribution of Course to Program Outcomes

COE Program Outcome	Emphasis	CLOs
1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	●	O3,O4
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.		
3. Communicate effectively with a range of audiences.		
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.		
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.		
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.		
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.		

Emphasis: ● High; ◐ Medium; ○ Low; Blank – Nothing Specific Expected

16. Letter Grade Policy:

Letter Grade	Total (T)
A	$95 \leq T$
A-	$90 \leq T < 95$
B+	$85 \leq T < 90$
B	$80 \leq T < 85$
B-	$75 \leq T < 80$

Letter Grade	Total (T)
C+	$70 \leq T < 75$
C	$65 \leq T < 70$
C-	$60 \leq T < 65$
D	$50 \leq T < 60$
F	$T < 50$