

# Engr 664: Theory of Concurrent Programming

## Lecture Notes, Fall 2016

H. Conrad Cunningham, D.Sc.  
Department of Computer and Information Science  
The University of Mississippi

28 November 2016

### Contents

<b>Lecture Notes</b>	<b>1</b>
Quick Links . . . . .	1
Schedule, Notes, and Examples . . . . .	1
References . . . . .	2

### Lecture Notes

#### Quick Links

- Demonstration programs
- LTS analyzer

#### Schedule, Notes, and Examples

0. Introduction
  - a. (22 Aug) Discuss syllabus and class organization
  - b. (24 Aug) Concurrent Programming Introduction – HTML – PDF
1. (24-26 Aug) Concurrency: Concepts, Models and Programs – PDF – PPT
2. (29-31 Aug, 2 Sep) Processes and Threads – PDF – PPT
3. (2-9 Sep) Concurrent Execution – PDF – PPT

4. (12, 14, 19 Sep) Shared Objects and Mutual Exclusion – PDF – PPT  
No class on Friday, 19 Sep
5. (19, 21, 26 Sep) Monitors and Condition Synchronization – PDF – PPT  
(23 Sep) Side discussion of the concept of invariant in various computing science contexts
6. (26-30 Sep) Deadlock – PDF – PPT
7. (3-7 Oct) Safety and Liveness – PDF – PPT  
(10 Oct) Review for Exam #1  
**(12 Oct) Examination #1**
8. (14-19 Oct) Model-Based Design – PDF – PPT  
(24 Oct) Return Exam #1  
(26 Oct) Side talk about OO design
9. (21, 28, 31 Oct) Dynamic Systems – PDF – PPT
10. (2-4? Nov) Message Passing – PDF – PPT
11. (7?-14 Nov) Concurrent Architectures  
(14 Nov) Review for Exam #2  
(16 Nov) No class because of Apple seminar  
**(18 Nov) Examination #2**  
(28 Nov) Return Exam #2
12. (28-30 Nov) Timed Systems – PDF – PPT
13. (Not used 2016) Logical Properties – PDF – PPT

## References

101. Textbook website
  - demo programs
  
  - LTS analyzer
102. Local copies of textbook slides
103. Local copies of LTSA tools
104. Local copies of demo applets