**Math 690 (Special Topics in Mathematics)**

Jawad Abuhlail

**(Syllabus)**

**Textbook: J.** Adámek, H. Herrlich and G. Strecker, *Abstract and concrete categories*, Dover Books on Mathematics (2009).

**Grading Policy:**

| Mid Term Exam | Final | Assignments |
|---|---|---|
| 30% | 40% | 30% |

| Material | | Week(s) |
|---|---|---|
| **Ch. I: Categories, Functors and Natural Transformations** | | |
| | 3. Categories and Functors | 1 |
| | 4. Subcategories | 2 |
| | 5. Concrete Categories and Concrete Functors | 3 |
| | 6. Natural Transformations | 4 |
| | | |
| **Ch. II: Objects and Morphisms** | | |
| | 7. Objects and Morphisms in Abstract Categories | 5 |
| | 8. Objects and Morphisms in Concrete Categories | 6 |
| | | |
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| **Ch. III: Sources and Sinks** | | |
| | 11. Limits and Colimits | 7, 8 |
| | 12. Completeness and Cocompleteness | 9 |
| | 13. Functors and Limits | 10 |
| **Mid Term Exam** | | |
| **Ch. IV: Factorization Systems** | 14. Factorization Structures for Morphisms | 11 |
| | | |
| | | |
| **Ch. V: Adjoints and Monads** | | |
| | 18. Adjoint Functors | 12, 13 |
| | 19. Adjoint Situations | 14, 15 |
| | 20. Monads | (if time allows) |
| **Final Exam** | | |