Math 466/566: Topics in Algebra II, on CW's book series "Symmetries of Algebras"

9:25am - 10:40am, Location TBA. See Syllabus for details
Instructor: Dr. Chelsea Walton. notlaw@rice.edu

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Lecture #	Date	Broad Topic	Sub-topic (Notes in Dropbox folder)	Section(s) of Walton's text [see references within for supplementary material]	Homework Due Dates
1	Tues Jan 13, 2026	Introduction	Intro to Course Groups, Rings, and Vector Spaces Univ. Prop., Construction of V. Spaces	1.1.1 - 1.1.4	
2	Thurs Jan 17, 2026	Algebras over a Field	Algebras Examples of Algebras	1.1.5 1.2.1-1.2.7	
3	Tues Jan 20, 2026	Algebras over a Field	Representations and modules Operations on algebras and modules	1.3 1.4	
4	Thurs Jan 22, 2026	Categories	Categories Universal objects and morphisms	2.1 2.2.1	
5	Tues Jan 27, 2026	Categories	Universal objects and morphisms Abelian categories	2.2.1 2.2.2	**Chap 1 Problems due at 9:00AM via Email**
6	Thurs Jan 29, 2026	Categories	Functors and Natural Transformations	2.3	
7	Tues Feb 3, 2026	Categories	Isomorphisms and Equivalence Morita equivalence	2.4	
8	Thurs Feb 5, 2026	Categories	Adjunction Representable Functors	2.5 2.6	
9	Tues Feb 10, 2026	Monoidal Categories	Monoidal categories Monoidal functors	3.1 3.2.1	
10	Tues Feb 17, 2026 (after Spr Recess)	Monoidal Categories	Monoidal isomorphism, Monoidal equivalence, (Bi)Module categories	3.2.2 3.2.3 3.3	**Chap 2 Problems due at 9:00AM via Email**
11	Thurs Feb 19, 2026	Monoidal Categories	Strictness and coherence, and graphical calculus Rigidity	3.4 3.5 3.6	
12	Tues Feb 24, 2026	Monoidal Categories	Rigidity Pivotality	3.6 3.7	
13	Thurs Feb 26, 2026	Monoidal Categories	Fusion categories	3.9	
14	Tues Mar 3, 2026	Algebras in Monoidal Categories	Algebras, subalgs, quotient algebras, Doctrinal adjunction	4.1.1, 4.2 4.3.1	
15	Thurs Mar 5, 2026	Algebras in Monoidal Categories	Modules, bimodules Monads and EM categories	4.4.1, 4.4.2 4.3.2, 4.4.3	**Chap 3 Problems due at 9:00AM via Email**
16	Tues Mar 10, 2026	Algebras in Monoidal Categories	Algebraic operations Generalized Eilenberg-Watts Theorem Generalized Morita's Theorem	4.5 4.7	
17	Thurs Mar 12, 2026	Coalgebras over a Field	Coalgebras Examples of Coalgebras	5.1 5.3	
18	Tues Mar 24, 2026 (after Spr Brk)	Coalgebras over a Field	Duality (Bi)comodules	5.4 5.5	**Chap 4 Problems due at 9:00AM via Email**
19	Thurs Mar 26, 2026	Coalgebras over a Field	Properties of coalgebras Morita—Takeuchi Theory	5.6 5.7	
20	Tues Mar 31, 2026	Coalgebras in Monoidal Categories	Coalgebras (Bi)comodules Comonads	6.2 6.3 6.4	
21	Thurs Apr 2, 2026	(Co)algebras in Monoidal Categories	Internal Hom and Cohoms	4.8, 6.5	**Chap 5 Problems due at 9:00AM via Email**
22	Tues Apr 7, 2026	Coalgebras in Monoidal Categories	Coends and ends Reconstruction	6.7 6.8	
23	Thurs Apr 9, 2026	Frobenius algebras over a Field	Frobenius algebras Characterizations	7.1 7.2	
24	Tues Apr 14, 2026	Frobenius algebras over a Field	Subclasses Modules Self-injective algebras	7.4 7.5 7.6	**Chap 6 Problems due at 9:00AM via Email**
25	Thurs Apr 16, 2026	Frobenius algebras over a Field	Self-injective algebras	7.6	
26	Tues Apr 21, 2026	Frobenius algebras in Monoidal Categories	Frobenius algebras Examples of Frobenius algebras	Instructor Notes	
27	Thurs Apr 23, 2026	Frobenius algebras in Monoidal Categories	On 2-dimensional Topological Quantum Field Theories (2d-TQFTs)	Instructor Notes	**Chap 7 Problems due at 9:00AM via Email**
–	Fri Apr 24, 2026				**Chap 8 Problems due at 11:59PM via Email**