Math 696 (Reading and Research II)

by Jawad Abuhlail

Title: *Zariski-like Topologies for Modules*

Semester: 122

Student: Hamza Hroub

Advisor: Jawad Abuhlail; **Coadvisor:** Othman Echi

Rationale/Objectives: The main objective of the course is to provide the student with basic knowledge about the construction/ properties of Zariski-like topologies for modules and to investigate possible connections with dimension theory.

Text Book:

D. P. Patil and U. Storch, *Introduction to Algebraic Geometry and Commutative Algebra*, World Scientific Publishing Company (2010).

Papers:

[JP1] J. Abuhlail, A *Zariski Topology for Modules*, Comm. Algebra 39 (12) (2011), 1–19.

[JP2] O. Echi, *Topological characterizations of some subspaces of a spectral space*, Questions Answers Gen. Topology 21 (2) (2003), 109–123.

[JP3] R. L. McCasland, M. E. Moore and P. F. Smith, *Subtractive bases of Zariski spaces*, Houston J. Math. 32 (4) (2006), 971–983.

[JP4] N. Schwartz and M. Tressl, *Elementary properties of minimal and maximal points in Zariski spectra*, J. Algebra 323 (3) (2010), 698–728.

Further Reading:

- Ulrich Görtz and T. Wedhorn, *Algebraic geometry I. Schemes with examples and exercises*. Advanced Lectures in Mathematics. *Vieweg + Teubner, Wiesbaden,* 2010 (ISBN-10: 3834806765; ISBN-13: 978-3834806765).

- R. Hartshorne, *Algebraic Geometry*, Graduate Texts in Mathematics 52, Springer (2010).

Grading Policy:

Presentations	Final
60%	40%

Syllabus

Material	Week(s)
• **Part I: Self Reading/Revision (Textbook)**	
Ch 1: Finitely Generated Algebras	Self Reading
Ch. 2: The K-Spectrum and the Zariski Topology	Self Reading
• **Part II: Textbook**	
Ch. 3: Prime Spectra and Dimension	2
Ch. 4: Schemes	2
Ch. 5: Projective Schemes	2
• **Part III: Research Papers**	
[JP1]	2
[JP2]	2
[JP3]	2
[JP4]	3