

	Campus: Princeton High School		
Author: Tanya Summers	Date Created / Revised: January 8, 2019		
Six Weeks Period: 5	Grade Level & Course: 12 - Astronomy		
Timeline: Days 9 Mar 18 - 27	Unit Title: Unit 12 Dark Matter and Galaxies		Lesson 1
Stated Objectives: TEK # and SE	<p>(12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p>		
See Instructional Focus Document (IFD) for TEK Specificity			
Key Understandings	<ul style="list-style-type: none"> • Describe some of the methods used to determine the masses of distant galaxies. • Explain why astronomers think that most of the matter in the universe is invisible. • Discuss some of the theories of how galaxies evolve. • Explain the role of black holes and active galaxies in current theories of galactic evolution. • Summarize what is known about the large scale distribution of galaxies in the universe. • Describe some techniques used by astronomers to probe the univers on very large scales. 		
Misconceptions	<ul style="list-style-type: none"> • 		
Key Vocabulary	Dark halo Microlensing Supercluster	Dark matter Quasar feedback Void	Galactic cannibalism Starburst galaxy
Suggested Day 5E Model	Instructional Procedures (Engage, Explore, Explain, Extend/Elaborate, Evaluate)		Materials, Resources, Notes
Day 1	Topic: Dark matter in the Universe Objective: Describe some of the methods used to determine the masses of distant galaxies.		Instructional Notes: Resources: Ch 25.1

	<ul style="list-style-type: none"> Explain why astronomers think that most of the matter in the universe is invisible. <p>TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: Dark matter what is it really</p>	<p>Materials: Unit vocab, Unit review worksheet</p>
<p>Day 2</p>	<p>Topic: Galaxy collisions Objective: Discuss some of the theories of how galaxies evolve. TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: Not just worlds, but galaxies colliding</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.2</p> <p>Materials:</p>
<p>Day 3</p>	<p>Topic: Galaxy evolution Objective: Discuss some of the theories of how galaxies evolve. TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.3</p> <p>Materials:</p>

	<p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: What do they morph into</p>	
<p>Day 4</p>	<p>Topic: Black holes in galaxies</p> <p>Objective: Explain the role of black holes and active galaxies in current theories of galactic evolution.</p> <p>TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: Can a black hole in a galaxy hinder the galaxy</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.4</p> <p>Materials:</p>
<p>Day 5</p>	<p>Topic: The universe on a large scale</p> <p>Objective: Describe some techniques used by astronomers to probe the univers on very large scales.</p> <p>TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.5</p> <p>Materials: Review worksheets due</p>

	<p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: The grand Scheme and galaxy quantity</p>	
<p>Day 6</p>	<p>Topic: Quasars Objective: Discuss some of the theories of how galaxies evolve.</p> <ul style="list-style-type: none"> • Explain the role of black holes and active galaxies in current theories of galactic evolution. <p>TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p> <p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: What a strange word, is it sci-fi of reality</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.5</p> <p>Materials:</p>
<p>Day 7</p>	<p>Topic: Mapping Dark matter Objective: Describe some techniques used by astronomers to probe the univers on very large scales.</p> <p>TEK/SE: (12) Science concepts. The student knows the variety and properties of galaxies. The student is expected to:</p> <p>(A) describe characteristics of galaxies;</p> <p>(C) compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf.</p> <p>(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:</p>	<p>Instructional Notes:</p> <p>Resources: Ch 25.5</p> <p>Materials:</p>

	<p>(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.</p> <p>Engage: Video clip discussion Extend: Power point notes Closing: What are the tools for mapping</p>	
Day 8	<p>Topic: Unit 12 Vocab test Objective: TEK/SE: Evaluate/Elaborate: Unit 12 vocab test/kahoots unit 12 review Closing: Kahoots review for unit 12 test</p>	<p>Instructional Notes: Resources: Materials:</p>
Day 9	<p>Topic: Unit 12 test Objective: TEK/SE: Evaluate: Unit 12 test Closing: start unit 13 vocab</p>	<p>Instructional Notes: Resources: Materials:</p>

Accommodations for Special Populations

Accommodations for instruction will be provided as stated on each student's (IEP) Individual Education Plan for special education, 504, at risk, and ESL/Bilingual.