CAPC Minutes for March 17, 2009
11:30 – 12:30 University Center Room 268

Meeting called to order at 11:32 a.m.

Members Present: Maria Bullen; John Burningham; Wendy Burns-Ardolino; Jennell Charles; Nikki Finlay; Becky Gmeiner; Todd Janke; Cathy Jeffrey; Sam Maddox; Catherine Matos; Kelli Nipper; Charlene Romer; Manning Sabatier; Zi Wan; Ximena Zornosa.

Non-Members Present: Ethel Callen; Tom Eaves; Michelle Furlong; Anthony Giovannitti; Tammy Wilson

Approval of Minutes
A motion to Approval of the Minutes from the meeting of March 3, 2009 was made by Finlay seconded by Burns-Ardolino and approved by Council. They are posted at http://adminservices.clayton.edu/provost/CAPC/minutesdefault.htm

Old Business

1. Biology Program revisions (awaiting new Education Course Proposals) Tabled until the April 7 CAPC meeting.

New Business

2. **MATH 1221**, prerequisite change – Giovannitti explained the prerequisite change and after some discussion a motion was made to approve by Burns-Ardolino, seconded by Maddox, approved by Council; therefore, a second reading is not required. Wilson reminded everyone present that Banner Action Forms are required for changes to courses.

3. **Astronomy** – Furlong gave a brief overview of the proposed new courses and their curriculum placement. After some discussion a motion was made to approve the new course proposals with a recommendation to forward the sequence to the General Education Review Committee by Burns-Ardolino, seconded by Maddox, approved by Council, courses will not require a second reading.
   ASTR 1010, new course proposal
   ASTR 1020, new course proposal
   ASTR 1020L, new course proposal
   Additional of ASTR sequence to General Studies (D1)

Announcements
Next Meeting: April 7

Meeting adjourned at approximately 11:45 a.m.

Submitted by Tammy Wilson

MEMORANDUM

TO: **Dr. Lila Roberts, Dean**
College of Information and Mathematical Sciences
FROM: **Dr. Anthony J. Giovannitti, Head**
Department of Mathematics
RE: **Prerequisite Changes for MATH 1221**
DATE: **October 20, 2008**

The Department of Mathematics proposes the following changes to the prerequisites for MATH 1221:

MATH 1221: Finite Mathematics (3-0-3)

This course is a mathematical preparation for the understanding of various quantitative methods in modern management, information technology and social sciences. Topics include: sets, logic and circuits, basic combinatorics including permutations and combinations, probability and probability distributions, systems of linear equations, matrix theory, and linear programming using a geometric approach. Additional topics that may be included are elementary statistical distributions, Markov chains, and game theory.

Pre-Requisites:

	MATH 1101 with a minimum US grade of C
Or	**MATH 1111** with a minimum US grade of C
~~Or~~	~~CPTE 095And~~ ~~CPTC 050~~
~~Or~~	~~ALG3 1~~
~~Or~~	~~**MATH 115** with a minimum UG grade of D~~
Or	**MATH 1113** with a minimum US grade of D
Or	**MATH 1501** with a minimum US grade of D

Rationale for proposed changes:

- MATH 115 is a quarter-system course which no longer need to be listed.
- Completion of one of the Area A mathematics courses prior to completing MATH 1221 is recommended as this indicates the level of mathematical maturity necessary for MATH 1221. Therefore we are removing placement test scores from the list of prerequisites.

The proposed revision of the course description and prerequisites reads are as follows:

MATH 1221: Finite Mathematics (3-0-3)

This course is a mathematical preparation for the understanding of various quantitative methods in modern management, information technology and social sciences. Topics include: sets, logic and circuits, basic combinatorics including permutations and combinations, probability and probability distributions, systems of linear equations, matrix theory, and linear programming using a geometric approach. Additional topics that may be included are elementary statistical distributions, Markov chains, and game theory.

Pre-Requisites:

	MATH 1101 with a minimum US grade of C
Or	**MATH 1111** with a minimum US grade of C
Or	**MATH 1113** with a minimum US grade of D
Or	**MATH 1501** with a minimum US grade of D

The current course description and prerequisites reads are as follows:

MATH 1221: Finite Mathematics (3-0-3)

This course is a mathematical preparation for the understanding of various quantitative methods in modern management, information technology and social sciences. Topics include: sets, logic and circuits, basic combinatorics including permutations and combinations, probability and probability distributions, systems of linear equations, matrix theory, and linear programming using a geometric approach. Additional topics that may be included are elementary statistical distributions, Markov chains, and game theory.

Pre-Requisites:

	MATH 1101 with a minimum US grade of C
Or	**MATH 1111** with a minimum US grade of C
Or	CPTE 095And CPTC 050
Or	ALG3 1
Or	**MATH 115** with a minimum UG grade of D
Or	**MATH 1113** with a minimum US grade of D
Or	**MATH 1501** with a minimum US grade of D

MEMORANDUM

TO: **John Burningham, CAPC Chair**

FROM: **Nassar Momayezi, Dean of College of Arts and Sciences**

CC: **Erica Gannon, Arts and Sciences Curriculum Committee, Chair**

RE: **Proposal for modification of area D**

DATE: **March 3, 2009**

We propose to delete SCI 1901A from the catalog. The material covered in SCI 1901 A is identical to the material covered in ASTR 1010. ASTR 1010 is a new course proposal (attached). ASTR 1010, ASTR 1020 and ASTR 1020L are three new courses that can be used for the area D1 science sequence for non-science majors. ASTR 1020L contains laboratory materials that complement both ASTR 1010 and ASTR 1020. We decided since this lab complimented the course curricula in both lecture courses then the laboratory should be taken as a co-requisite to the ASTR 1020 versus ASTR 1010.

Students using these courses to complete D1 cannot use SCI 1901A to complete area D2; therefore, SCI 1901 A will be removed from the catalog and will no longer be taught. If students complete a different science sequence for D1 (i.e. CHEM 1151/L and CHEM 1152) then they can use a SCI 1901A in D2 if they have taken it prior to this change.

D. Natural Sciences, Mathematics, and Technology 10-11 hours

D1. One Science Sequence from Among

a.	ASTR	1010	Solar System Astronomy
	ASTR	1020	Stellar and Galactic Astronomy
	ASTR	1020L	Astronomy Laboratory
b.	BIOL	1107	Principles of Biology I
	BIOL	1107L	Principles of Biology Laboratory I
	BIOL	1108	Principles of Biology II
	BIOL	1108L	Principles of Biology Laboratory II
c.	BIOL	1111	Introductory Biology I
	BIOL	1111L	Introductory Biology Laboratory I
	BIOL	1112	Introductory Biology II
d.	CHEM	1151	Survey of Chemistry I
	CHEM	1151L	Survey of Chemistry Laboratory I
	CHEM	1152	Survey of Chemistry II
e.	CHEM	1211	Principles of Chemistry I
	CHEM	1211L	Principles of Chemistry Laboratory I
	CHEM	1212	Principles of Chemistry II
	CHEM	1212L	Principles of Chemistry Laboratory II
f.	PHYS	1111	Introductory Physics I
	PHYS	1111L	Introductory Physics Laboratory I
	PHYS	1112	Introductory Physics II
g.	PHYS	2211	Principles of Physics I
	PHYS	2211L	Principles of Physics Laboratory I
	PHYS	2212	Principles of Physics II
	PHYS	2212L	Principles of Physics Laboratory II
h.	SCI	1111	Integrated Science I
	SCI	1111L	Integrated Science Laboratory I
	SCI	1112	Integrated Science II

ASTR 1010 – Solar System Astronomy

This form is used for new course approval.
Signatures are required before submitting to the next level for review.
(Note: This form is not required for each individual course that is included in the comprehensive proposal for a new program.)

Department: ___Natural Sciences_____

Degree Program: __Core Curriculum_____

_____ _____ **Action Taken**
Signature, Department Head Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

School/College: ____Arts and Sciences_____

_____ _____ **Action Taken**
Signature, Dean of School/College originating proposal Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

Provost Office

_____ _____ **Action Taken**
Signature, Associate Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

CAPC

_____ _____ **Action Taken**
Signature, Chairperson of CAPC Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

Provost

_____ _____ **Action Taken**
Signature, Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

A: Catalog Information

1. Subject prefix, number, and hours (SCH and contact) distribution: (Number subject to Registrar's approval.)

ASTR 1010 (3-0-3)

2. Title:

Solar System Astronomy

3. Restrictions (if any):

a. Prerequisite(s):

MATH 0099 with a minimum US grade of C%
Or MATH 1101 with a minimum US grade of D can be taken concurrently
Or MATH 1113 with a minimum US grade of D can be taken concurrently
Or MATH 1111 with a minimum US grade of D can be taken concurrently
Or MATH 1501 with a minimum US grade of D can be taken concurrently
OR COMM 40
OR CPTE 075
OR (CPTE055 AND CPTC040)

b. Co-requisite(s): None

c. Other restrictions: None

d. Other comments: A laboratory is required in Area D1 for non-science majors to complete their science sequence requirement. The laboratory, taken with ASTR 1020, Stellar and Galactic Astronomy, will reinforce topics covered in ASTR 1010 and ASTR 1020. ASTR 1010 must be taken before ASTR 1020 – Stellar and Galactic Astronomy and ASTR 1020L, Astronomy Laboratory.

e. Fees: None.

f. Grade mode: Normal

g. What course(s) are deleted as a consequence: SCI 1901A – Selected Topics in Science – Astronomy. The content of SCI 1901A is the same as that of ASTR 1010. Students with credit for SCI 1901A would receive credit for ASTR 1010 if they desired to use it as the first course in the astronomy sequence in Area D1 of the core curriculum. Such students could complete the sequence by taking ASTR 1020 and ASTR 1020L.

4. Course description for catalog:

This course has a common course description in the University System of Georgia. The same course description is used by Armstrong Atlantic State University, Georgia State University, North Georgia College and State University, the University of Georgia and Valdosta State University.

ASTR 1010 Solar System Astronomy (3-0-3)
Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system.

5. Semester of Implementation:

Fall 2009

B. Justification.

1. Where will the course fit in the curriculum and what students are likely to take it?

The course will appear in Area D1 of the core curriculum. Non-science major students are the most likely to select it. The course will initially be offered at the Fayette campus site. The need at that campus site is pressing (see next paragraph).

2. Why is the course needed at CSU?

No science sequences are currently offered at the Fayette campus site due to the lack of laboratory facilities. The relatively modest laboratory facility and equipment requirements associated with introductory astronomy courses make it possible to offer the sequence at the Fayette campus site.

3. What similar courses (models) at other institutions have helped guide this proposal?

Solar System Astronomy courses appear in Area D1 of the core curriculum at the following University System of Georgia institutions (also appears in several two year institutions Area D1's).

Armstrong Atlantic State University:
ASTR 1010 – Astronomy of the Solar System (3-0-3)
Prerequisite: eligibility for MATH 1111
Astronomy from early ideas of the cosmos to modern observational techniques. Solar system planets, satellites, and minor bodies. Origin and evolution of the solar system.

Columbus State University:
ASTR 1105 – Descriptive Astronomy: The Solar System (3-0-3)
History of astronomy, structure of the solar system, formation of the sun and planetary bodies, moons, comets, asteroids, and meteors.

Georgia Southern University:
ASTR 1010 – Astronomy of the Solar System (3-0-3)
A study of the motions and physical properties of the planets, asteroids, and comets.

Georgia Southwestern State University:
PHYS 1221 – Astronomy of the Solar System (3-0-3)
The main focus of this class is to put our solar system into a broader perspective provided by the rest of the universe.

Georgia State University:
ASTR 1010 – Astronomy of the Solar System (3-2-4)
Astronomy of the Solar System. Three lecture and two laboratory hours a week. Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system.

North Georgia College and State University:
ASTR 1010 – Astronomy of the Solar System (3-0-3)
Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system. Slides, films, classroom demonstrations, and planetarium shows aid the discussion of these topics. Three lecture-discussions per week.

University of Georgia:
ASTR 1010 – Astronomy of the Solar System (3-0-3)
Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system.

Valdosta State University:
ASTR 1010K – Astronomy of the Solar System (3-2.5-4)
Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system. Three lectures and one night laboratory session per week.

4. Why are the restrictions needed? (prerequisites, co-requisites, etc.)

Modest mathematical knowledge is required in the course.

5. What impact will the addition of this course have on *other* courses and/or *other* programs at CSU? (e.g. similar courses, enrollment shifts, faculty shifts, accreditation impact, adjusted curriculum, etc.)

As long as the sequence is only offered at the Fayette campus site, it fills a missing requirement and should not affect enrollments in other courses. If taught at the main campus sometime in the future (assuming sufficient faculty were available to teach it), some shift of enrollments from the Introductory Biology sequence would be expected, and to a lesser extent from the Survey of Chemistry sequence.

C. Course Content

1. What learning outcomes for the major will the course address?

This course is part of the core curriculum. It is not a requirement in any major.

2. How will the course address the general education outcomes of Communication and Critical

Thinking? (If not applicable to the proposed course, please explain.)

This course will address the communication outcome through written and/or oral assignments. As with all science courses, the students will be required to apply the knowledge that they have gained to problems and/or analyze and interpret scientific data on the topic at hand.

3. Tentative course materials (textbooks, software, etc.)

Jeffrey Bennett, Megan Donahue, Nicholas Schneider, and Mark Voit, The Cosmic Perspective, 5th edition, Addison Wesley.

4. Expected method(s) of delivery (on-campus, on-line, hybrid, etc.)

On-campus or hybrid. Severe constraints on classroom space at the Fayette campus site make the option of hybrid delivery attractive.

5. Attach a tentative course outline (one page or less)

The Sky and our Place in the Universe
The Science of Astronomy
Matter and Energy
Universal Motion
Light
Telescopes and Spacecraft
Origin of the Solar System
Terrestrial Planets: Geology and Atmospheres
Jovian Planet Systems
Asteroids, Meteors, Comets and Pluto

D. Faculty, Facilities and Expenses

1. Will the course be taught by existing faculty with existing qualifications or will new faculty or faculty development be needed?

Existing physics faculty with existing qualifications will teach the course. Within the University System, this course is taught by both physicists and astronomers.

2. What impact will having faculty teach this course have on other courses?

Minimal impact is expected. Since the instructors of this course will be physicists, the potential impact lies with physics courses, and the science courses taught by physics faculty. Based on current enrollments modest increases in class size in physics courses can make up for the addition of one course per term and one lab every second terms.

3. What proportion of course sections are expected to be taught by full-time and part-time faculty?

All sections are expected to be taught by full-time faculty.

4. What expenditures, if any, will be required beyond faculty salaries and routine clerical support? (e.g. new equipment, new facilities, new software, etc.)

For this course, no new equipment, new facilities or new software will be required (there are modest new equipment needs associated with the laboratory accompanying this sequence).

5. Indicate several examples of (up-to-date) library resources currently held by the CSU Library that would support the curriculum of this course.

There are 159 books on astronomy in the CSU Library. Very few are close to current. Vast resources exist on-line. Galileo provides access to a wide range of journals and magazines on astronomy. Examples include:

Journal title	ISSN
Astrofizika	0571-7132
Astronautics & aeronautics	0004-6213
Astronomical and astrophysical transactions	1055-6796
The Astronomical journal	0004-6256
Astronomicheskiĭ vestnik	0320-930X
Astronomicheskiĭ zhurnal	0004-6299
Astronomy	0091-6358
Astronomy and astrophysics	0004-6361
Astronomy and astrophysics abstracts	0067-0022
The Astronomy and astrophysics review	0935-4956
Astronomy & astrophysics. Supplement series	0365-0138
Astronomy education review	1539-1515
Astronomy & geophysics	1366-8781
Astronomy letters	1063-7737
Astronomy reports	1063-7729
The astrophysical journal	0004-637X
The astrophysical journal. Supplement series	0067-0049
Astrophysical letters & communications	0888-6512
Astrophysics	0571-7256
Astrophysics and space physics reviews	1071-

	703X
Astrophysics and space science	0004-640X
Astrophysics and Space Sciences Transactions	1810-6528

6. What additional library resources must be added to support the proposed course?

   None are necessary.

7. What is the initial funding amount for library resources? What annual amount should be added to future budgets to continue the support for the course?

   Zero.

Part E. Enrollment

1. What is the estimated number of sections per year?

   One.

2. What is the estimated average enrollment per section?

   Twenty four (24).

3. What is the estimated total enrollment per year?

   Twenty four (24).

4. What is the estimated reduction in enrollment in other courses as a consequence of the new course? (explanation, if any)

   None. This course fills a missing requirement in the core curriculum (Area D1) not currently available at the Fayette campus site due to a lack of laboratory facilities.

ASTR 1020 – Stellar and Galactic Astronomy

This form is used for new course approval.
Signatures are required before submitting to the next level for review.
(Note: This form is not required for each individual course that is included in the comprehensive proposal for a new program.)

Department: ___Natural Sciences_____

Degree Program: __Core Curriculum_____

_____ _____ **Action Taken**
Signature, Department Head Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

School/College: ____Arts and Sciences_____

_____ _____ **Action Taken**
Signature, Dean of School/College originating proposal Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

Provost Office

_____ _____ **Action Taken**
Signature, Associate Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

CAPC

_____ _____ **Action Taken**
Signature, Chairperson of CAPC Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

Provost

_____ _____ **Action Taken**
Signature, Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

A: Catalog Information

1. Subject prefix, number, and hours (SCH and contact) distribution: (Number subject to Registrar's approval.)

ASTR 1020 (3-0-3)

2. Title:

Stellar and Galactic Astronomy

3. Restrictions (if any):

a. Prerequisite(s): ASTR 1010, Solar System Astronomy

b. Co-requisite(s): ASTR 1020L, Astronomy Laboratory

c. Other restrictions: None.

d. Other comments: A laboratory is required in Area D1 for non-science majors to complete their science sequence requirement. The laboratory, taken with ASTR 1020, Stellar and Galactic Astronomy, will reinforce topics covered in ASTR 1010 and ASTR 1020.

e. Fees: None.

f. Grade mode: Normal

g. What course(s) are deleted as a consequence: None.

4. Course description for catalog:

This course has a common course description in the University System of Georgia. This same course description is used by Armstrong Atlantic State University, Georgia State University, North Georgia College and State University, the University of Georgia and Valdosta State University.

ASTR 1020 Stellar and Galactic Astronomy (3-0-3)
The study of the Sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, and the origin and evolution of the Universe.

5. Semester of Implementation:

Spring 2010

B. Justification.

1. Where will the course fit in the curriculum and what students are likely to take it?

The course will appear in Area D1 of the core curriculum. Non-science major students are the most likely to select it. The course will initially be offered at the Fayette campus site. The need at that campus site is pressing (see next paragraph).

2. Why is the course needed at CSU?

No science sequences are currently offered at the Fayette campus site due to the lack of laboratory facilities. The physical requirements for the laboratory associated with the ASTR 1010/1020 sequence are modest. See the course description for ASTR 1020L for details.

3. What similar courses (models) at other institutions have helped guide this proposal?

Solar System Astronomy courses appear in Area D1 of the core curriculum at the following University System of Georgia institutions (also appears in several two year institutions Area D1's).

Armstrong Atlantic State University:
ASTR 1020 – Stellar and Galactic Astronomy (3-0-3)
Prerequisite: eligibility for MATH 1111
The study of the sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, the origin and evolution of the universe.

Columbus State University:
ASTR 1106 – Descriptive Astronomy: Stars and Galaxies (3-0-3)
Prerequisite: ASTR 1105 recommended as a prerequisite or co-requisite.
The sun, stars and stellar evolution, black holes, nebulae and interstellar dust, galaxies, quasars, and cosmology.

Georgia Southern University:
ASTR 1020 – Stellar and Galactic Astronomy (3-0-3)
A study of the physical properties of stars and galaxies and of the origins of the universe.

Georgia Southwestern State University:
PHYS 1222 – Stellar Astronomy (3-0-3)
The sun as a star, physical properties of stars, principles of spectroscopy as applied to astronomy, binary stars, variable stars, star clusters, gaseous nebulae, stellar motions and distribution, Milky Way and external galaxies, expanding universe, cosmic time scale.

Georgia State University:
ASTR 1020 – Stellar and Galactic Astronomy (3-2-4)
Prerequisite: ASTR 1010 with grade of D or higher.
The study of the Sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, and the origin and evolution of the universe.

North Georgia College and State University:
ASTR 1020 – Stellar and Galactic Astronomy (3-0-3)
The study of the sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, the origin and evolution of the universe. Slides, films, classroom demonstrations, and planetarium shows are used throughout to aid in classroom discussions. Three lecture-discussions per week.

University of Georgia:
ASTR 1020 – Stellar and Galactic Astronomy (3-0-3)
The study of the sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, and the origin and evolution of the Universe.

Valdosta State University:
ASTR 1020K – Stellar and Galactic Astronomy (3-2.5-4)
The study of the Sun and stars, their physical properties and evolution, interstellar matter, star clusters, our Galaxy and other galaxies, the origin and evolution of the Universe. Three lectures and one night laboratory session per week.

4. Why are the restrictions needed? (prerequisites, co-requisites, etc.)

ASTR 1010 provides fundamental prerequisite concepts in physics that apply to both courses in astronomy: matter and energy, motion, light, and astronomical instruments are covered in ASTR 1010. These topics are a necessary foundation for the study of stellar and galactic astronomy. The laboratory provides reinforcement of lecture content and hands-on experience.

5. What impact will the addition of this course have on *other* courses and/or *other* programs at CSU? (e.g. similar courses, enrollment shifts, faculty shifts, accreditation impact, adjusted curriculum, etc.)

As long as the sequence is only offered at the Fayette campus site, it fills a missing requirement and should not affect enrollments in other courses. If taught at the main campus sometime in the future (assuming sufficient faculty were available to teach it), some shift of enrollments from the Introductory Biology sequence would be expected, and to a lesser extent from the Survey of Chemistry sequence.

C. Course Content

1. What learning outcomes for the major will the course address?

This course is part of the core curriculum. It is not a requirement in any major.

2. How will the course address the general education outcomes of Communication and Critical Thinking? (If not applicable to the proposed course, please explain.)

This course will address the communication outcome through written and/or oral assignments. As with all science courses, the students will be required to apply the knowledge that they have gained to problems and/or analyze and interpret scientific data on the topic at hand.

3. Tentative course materials (textbooks, software, etc.)

Jeffrey Bennett, Megan Donahue, Nicholas Schneider, and Mark Voit, The Cosmic Perspective, 5th edition, Addison Wesley.

4. Expected method(s) of delivery (on-campus, on-line, hybrid, etc.)

On-campus or hybrid. Severe constraints on classroom space at the Fayette Campus site make the option of hybrid delivery attractive.

5. Attach a tentative course outline (one page or less)

Space, Time and Gravity
Particles and Forces
The Sun
Stars
Stellar Evolution
The Milky Way Galaxy
Galaxies
Galactic Evolution
Cosmology
Interstellar Travel and the Search for Extraterrestrial Civilizations

D. Faculty, Facilities and Expenses

1. Will the course be taught by existing faculty with existing qualifications or will new faculty or faculty development be needed?

Existing physics faculty with existing qualifications will teach the course. Within the University System, this course is taught by both physicists and astronomers.

2. What impact will having faculty teach this course have on other courses?

Minimal impact is expected. Since the instructors of this course will be physicists, the potential impact lies with physics courses, and the science courses taught by physics faculty. Based on current enrollments modest increases in class size in physics courses can make up for the addition of one course per term and one lab per every two terms.

3. What proportion of course sections are expected to be taught by full-time and part-time faculty?

All sections are expected to be taught by full-time faculty.

4. What expenditures, if any, will be required beyond faculty salaries and routine clerical support? (e.g. new equipment, new facilities, new software, etc.)

For this course, no new equipment, new facilities or new software will be required. There are modest new equipment needs associated with the laboratory accompanying this course.

5. Indicate several examples of (up-to-date) library resources currently held by the CSU Library that would support the curriculum of this course.

There are 159 books on astronomy in the CSU Library. Very few are close to current. Vast resources exist on-line. Galileo provides access to a wide range of journals and magazines on astronomy. Examples include:

Journal title	ISSN
Astrofizika	0571-7132
Astronautics & aeronautics	0004-6213
Astronomical and astrophysical transactions	1055-6796
The Astronomical journal	0004-6256
Astronomicheskiĭ vestnik	0320-930X
Astronomicheskiĭ zhurnal	0004-6299
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Astrophysics	0571-7256
Astrophysics and space physics reviews	1071-703X
Astrophysics and space science	0004-640X
Astrophysics and Space Sciences Transactions	1810-6528

6. What additional library resources must be added to support the proposed course?

   None are necessary.

7. What is the initial funding amount for library resources? What annual amount should be added to future budgets to continue the support for the course?

   Zero.

Part E. Enrollment

1. What is the estimated number of sections per year?

   One.

2. What is the estimated average enrollment per section?

   Twenty four (24).

3. What is the estimated total enrollment per year?

   Twenty four (24).

4. What is the estimated reduction in enrollment in other courses as a consequence of the new course? (explanation, if any)

   None. This course fills a missing requirement in the core curriculum (Area D1) not currently available at the Fayette campus site due to a lack of laboratory facilities.

ASTR 1020L – Astronomy Laboratory

This form is used for new course approval.
Signatures are required before submitting to the next level for review.
(Note: This form is not required for each individual course that is included in the comprehensive proposal for a new program.)

Department: ___Natural Sciences_____

Degree Program: __Core Curriculum_____

_____ _____ **Action Taken**
Signature, Department Head Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

School/College: ____Arts and Sciences_____

_____ _____ **Action Taken**
Signature, Dean of School/College originating proposal Date of Action ( )Approved
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Provost Office

_____ _____ **Action Taken**
Signature, Associate Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

CAPC

_____ _____ **Action Taken**
Signature, Chairperson of CAPC Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

Provost

_____ _____ **Action Taken**
Signature, Provost Date of Action ( )Approved
( )Disapproved
( )Non-Applicable

A. Catalog Information

1. Subject prefix, number, and hours (SCH and contact) distribution: (Number subject to Registrar's approval.)

ASTR 1020L (0-2-1)

2. Title:

Astronomy Laboratory

3. Restrictions (if any):

a. Prerequisite(s): ASTR 1010, Solar System Astronomy

b. Co-requisite(s): ASTR 1020, Stellar and Galactic Astronomy

c. Other restrictions: None.

d. Other comments: A laboratory is required in Area D1 for non-science majors to complete their science sequence requirement. The laboratory, taken with ASTR 1020, Stellar and Galactic Astronomy will reinforce topics covered in ASTR 1010 and ASTR 1020.

e. Fees: $35.00 Natural Sciences Laboratory fee.

f. Grade mode: Normal

g. What course(s) are deleted as a consequence: None.

4. Course description for catalog:

ASTR 1020L (0-2-1)
A series of laboratories designed to measure the physical properties of planets, stars, and galaxies.
Corequisite: ASTR 1020.

5. Semester of Implementation:

Spring 2010

B. Justification.

1. Where will the course fit in the curriculum and what students are likely to take it?

   The course will appear in Area D1 of the core curriculum. Non-science major students are the most likely to select it. The course will initially be offered at the Fayette campus site. The need at that campus site is pressing (see next paragraph). We do not have sufficient faculty to allow the course to also be taught at the main campus at this time.

2. Why is the course needed at CSU?

No science sequences are currently offered at the Fayette campus site due to the lack of laboratory facilities. The equipment requirements for the laboratory are modest.

3. What similar courses (models) at other institutions have helped guide this proposal?

The course description used is that of Georgia Southern University. A variety of different approaches to the laboratory are used in the University System of Georgia.

Armstrong Atlantic State University and Georgia Southern University offer a single laboratory course associated with the Astronomy sequence, but allow it to be taken with either of the two lecture courses in the sequence. Laboratory topics include material covered in both of the two lecture courses. The Clayton State version of the Astronomy Laboratory course most closely follows the approach taken at Armstrong Atlantic and Georgia Southern, but associates the laboratory with the second lecture course in the sequence.

Georgia Southwestern State University does not offer a laboratory associated with their Astronomy courses (there is no requirement that both lecture courses be in the same science discipline).

Georgia State University, North Georgia College & State University, the University of Georgia, and Valdosta State University offer laboratories associated with both lecture courses.

Associating the Clayton State laboratory with the second course of the sequence allows all topics to be covered in both lecture courses before they are encountered in the laboratory. This allows the greatest flexibility in selection of laboratory exercises. We do not have the faculty resources to offer two laboratories, Solar System and Stellar/Galactic, every term.

4. Why are the restrictions needed? (prerequisites, co-requisites, etc.)

ASTR 1010 and ASTR 1020 provide content coverage that supports the laboratory exercises to be used in ASTR 1020L. By requiring ASTR 1020 as a co-requisite, ASTR 1010 effectively becomes a prerequisite since it is the prerequisite for ASTR 1020.

5. What impact will the addition of this course have on *other* courses and/or *other* programs at CSU? (e.g. similar courses, enrollment shifts, faculty shifts, accreditation impact, adjusted curriculum, etc.)

As long as the sequence is only offered at the Fayette campus site, it fills a missing requirement and should not affect enrollments in other courses. If taught at the main campus sometime in the future (assuming sufficient faculty were available to teach it), some shift of enrollments from the Introductory Biology sequence would be expected, and to a lesser extent from the Survey of Chemistry sequence.

C. Course Content

1. What learning outcomes for the major will the course address?

This course is part of the core curriculum. It is not a requirement in any major.

2. How will the course address the general education outcomes of Communication and Critical

Thinking? (If not applicable to the proposed course, please explain.)

This course will address the communication outcome through written and/or oral assignments. As with all science courses, the students will be required to apply the knowledge that they have gained to a problem and/or analyze and interpret scientific data on the topic at hand.

3. Tentative course materials (textbooks, software, etc.)

Dale C. Ferguson, Introductory Astronomy Exercises, 2nd Edition, Brooks/Cole Publishing, 2001 (ISBN 0-534-37977-X)

4. Expected method(s) of delivery (on-campus, on-line, hybrid, etc.)

On-campus and in the field (observing)

5. Attach a tentative course outline (one page or less)

Introduction to the Science of Astronomy (indoor and outdoor).
The Seasons (indoor)
The Temperature of the Earth (indoor)
Astronomical Systems of Time (outdoor)
Locating Celestial Objects (outdoor)
The Moon (indoor)
Visual Observations of the Moon (outdoor)
The Planets (indoor)
Measurement of Astronomical Distances (outdoor)
Kepler's Third Law (indoor)
Spectroscopy (indoor)
Spectral Classification (indoor)
Herstzsprung-Russell Diagram (indoor)
Pulsars (indoor)
Galactic Spiral Structure (indoor)
Classification of Galaxies (indoor)
Hubble's Law (indoor)

This outline includes several extra indoor labs to allow substitution for outdoor labs which are subject to weather constraints.

D. Faculty, Facilities and Expenses

1. Will the course be taught by existing faculty with existing qualifications or will new faculty or faculty development be needed?

Existing physics faculty with existing qualifications will teach the course. Within the University System, this course is taught by both physicists and astronomers.

2. What impact will having faculty teach this course have on other courses?

Minimal impact is expected. Since the instructors of this course will be physicists, the potential impact lies with physics courses, and the science courses taught by physics faculty. Based on current enrollments modest increases in class size in physics courses can make up for the

addition of one course and one lab per term.

3. What proportion of course sections are expected to be taught by full-time and part-time faculty?

All sections are expected to be taught by full-time faculty.

4. What expenditures, if any, will be required beyond faculty salaries and routine clerical support? (e.g. new equipment, new facilities, new software, etc.)

Equipment required for this course:

Telescopes (6). Estimated total cost is approximately $5000.

5. Indicate several examples of (up-to-date) library resources currently held by the CSU Library that would support the curriculum of this course.

There are 159 books on astronomy in the CSU Library. Very few are close to current. Vast resources exist on-line. Galileo provides access to a wide range of journals and magazines on astronomy. Examples include:

Journal title	ISSN
Astrofizika	0571-7132
Astronautics & aeronautics	0004-6213
Astronomical and astrophysical transactions	1055-6796
The Astronomical journal	0004-6256
Astronomicheskiĭ vestnik	0320-930X
Astronomicheskiĭ zhurnal	0004-6299
Astronomy	0091-6358
Astronomy and astrophysics	0004-6361
Astronomy and astrophysics abstracts	0067-0022
The Astronomy and astrophysics review	0935-4956
Astronomy & astrophysics. Supplement series	0365-0138
Astronomy education review	1539-1515
Astronomy & geophysics	1366-8781
Astronomy letters	1063-7737
Astronomy reports	1063-7729
The astrophysical journal	0004-637X

The astrophysical journal. Supplement series	0067-0049
Astrophysical letters & communications	0888-6512
Astrophysics	0571-7256
Astrophysics and space physics reviews	1071-703X
Astrophysics and space science	0004-640X
Astrophysics and Space Sciences Transactions	1810-6528

6. What additional library resources must be added to support the proposed course?

   None are necessary.

7. What is the initial funding amount for library resources? What annual amount should be added to future budgets to continue the support for the course?

   Zero.

Part E. Enrollment

1. What is the estimated number of sections per year?

   One.

2. What is the estimated average enrollment per section?

   Twenty four (24).

3. What is the estimated total enrollment per year?

   Twenty four (24).

4. What is the estimated reduction in enrollment in other courses as a consequence of the new course? (explanation, if any)

   None. This course fills a missing requirement in the core curriculum (Area D1) not currently available at the Fayette campus site due to a lack of laboratory facilities.