



CHANGING GRADUATION REQUIREMENTS IN A MAJOR

The addition or removal of any graduation requirement in a major requires that this form, accompanied by any supporting documentation, be completed and approved as indicated below.

College/School College of Science and Liberal Arts

Department Physics and Space Sciences

Degree level Undergraduate

Program title Space Sciences

To be initiated with catalog year 2005/2006

APPROVALS

Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Registrar's Office.

<u>Brady</u>	<u>10/1/03</u>	_____	_____
Originator	Date	Chair, Graduate Council	Date
<u>Brady</u>	<u>10/1/03</u>		
Department Head/Program Chair	Date	OR	
<u>[Signature]</u>	<u>10/16/03</u>	_____	_____
Dean or Associate Dean	Date	Chair, Undergraduate Curriculum Committee	Date

Registrar's Use Only

Operator Init _____

Date _____

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Department of Physics and Space Sciences
M E M O R A N D U M

TO: Dr. Richard Enstice, Vice President for Academic Affairs
FROM: Dr. Laszlo Baksay, Head, Professor, Physics and Space Sciences *LB*
DATE: August 27, 2003
SUBJECT: Changing Graduation Requirements in a Major
Program Title: Space Sciences

The Department of Physics and Space Sciences requests a change in the Space Sciences Program Degree Requirements for the 2005/2006 university catalog as follows:

Senior Year
Spring

Reinsert the following course: SPS 4110 Senior Lab (2) credits

Total Senior/Spring credits increase to (18) from 16.
Total Credits Required changes to (133) credits in place of 131.

(See attached copy of 2003-04 catalog, page 119 and 2001-02 catalog, page 120.)

Reason: SPS 4110 Senior Lab is a required course, which was accidentally omitted when the 2002-2003-catalog revision was published.

Florida Institute of Technology

Bachelor of Science Degree Program

The space sciences undergraduate program is designed for students interested in pursuing space-related careers, either upon graduation or after completing graduate studies in the earth, planetary or space sciences. Emphasis in the curriculum is on achieving a broad but sound education in the basic physical, mathematical and engineering sciences as a foundation for successful entry into any of the many sub-fields of modern space science activity. Students may gain experience in designing space missions and instrumentation and working on current NASA spacecraft (ACE, Wind and Ulysses). Current research topics include solar energetic particle measurements, x-ray and gamma-ray observations of lightning, cosmic-ray astrophysics, the impact of solar eruptions on the geospace environment, and atmospheric optical and UV observations. (For more details, see "Geospace Physics Laboratory" in the *Research: Institutes, Centers and Major Laboratories* section of this catalog.)

Degree Requirements

Candidates for a Bachelor of Science in Space Sciences must complete the minimum course requirements outlined in the following curricula. The student must select either the Bachelor of Science in Space Sciences or the Bachelor of Science in Space Sciences, Astronomy and Astrophysics option. One or the other, but not both, will be shown on the transcript and diploma.

Because subject matter in general physics and astronomy forms a critically important foundation for all advanced course work in space sciences, the minimum grade for satisfying the prerequisite requirements for a space sciences major is a grade of C for each of the following courses: PHY 1001, PHY 2002, PHY 2003, PHY 2091, PHY 2092; and SPS 1010, SPS 1020.

Freshman Year

FALL	CREDITS
CHM 1101 Chemistry 1	4
COM 1101 Composition and Rhetoric	3
MTH 1001 Calculus 1	4
PHY 1050 Physics and Space Science Seminar	1
SPS 1010 Introduction to Astronomy	3
	15

SPRING

CHM 1102 Chemistry 2	4
MTH 1002 Calculus 2	4
PHY 1001 Physics 1	4
PHY 2091 Physics Lab 1	1
SPS 1020 Introduction to Space Sciences	3
	16

Sophomore Year

FALL	CREDITS
COM 1102 Writing about Literature	3
CSE 15xx Restricted Elective (Computer Science)	3
MTH 2001 Calculus 3	4
PHY 2002 Physics 2	4
PHY 2092 Physics Lab 2	1
Free Elective	3
	18

SPRING

HUM 2051 Civilization 1	3
MTH 2201 Differential Equations/Linear Algebra	4
PHY 2003 Modern Physics	3
PHY 3152 Electronic Measurement Techniques	4
SPS 2010 Observational Astronomy	3
	17

Junior Year

FALL	CREDITS
HUM 2052 Civilization 2	3
PHY 3011 Physical Mechanics	4
PHY 3060 Thermodynamics, Kinetic Theory and Statistical Mechanics	4
SPS 3010 Geophysics	3
SPS 3040 Fundamentals of Remote Sensing	3
or	
MET 4233 Remote Sensing for Meteorology	3
or	
OCN 4704 Remote Sensing for Oceanography	3
	17
SPRING	
COM 2223 Scientific and Technical Communication	3
MTH 3201 Boundary Value Problems	3
PHY 3440 Electromagnetic Theory	3
SPS 4025 Introduction to Space Plasma Physics*	3
or	
SPS 4035 Comparative Planetology*	3
Humanities Elective	3
	15

Senior Year

FALL	CREDITS
MAE 3061 Fluid Mechanics 1	3
or	
OCE 3020 Fluid Mechanics	3
PHY 4020 Optics	3
PHY 4021 Experiments in Optics	1
SPS 3030 Orbital Mechanics	3
SPS 4010 Astrophysics 1	3
SPS 4200 Senior Seminar 1	1
Technical Elective or Senior Research	3
	17
SPRING	
SPS 4025 Introduction to Space Plasma Physics*	3
or	
SPS 4035 Comparative Planetology*	3
SPS 4030 Physics of the Atmosphere	3
SPS 4210 Senior Seminar 2	1
Technical Elective or Senior Research	3
Social Science Elective	3
Free Elective	3
	16

TOTAL CREDITS REQUIRED ~~131~~ **131**

Astronomy and Astrophysics Option

The astronomy and astrophysics option is designed to meet the needs of students intending to pursue graduate education and a career in the astronomical sciences.

Freshman Year

FALL	CREDITS
CHM 1101 Chemistry 1	4
COM 1101 Composition and Rhetoric	3
MTH 1001 Calculus 1	4
PHY 1050 Physics and Space Science Seminar	1
SPS 1010 Introduction to Astronomy	3
	15

SPRING

CHM 1102 Chemistry 2	4
MTH 1002 Calculus 2	4
PHY 1001 Physics 1	4
PHY 2091 Physics Lab 1	1
SPS 1020 Introduction to Space Sciences	3
	16

Sophomore Year

FALL	CREDITS
COM 1102 Writing about Literature	3
CSE 15xx Restricted Elective (Computer Science)	3
MTH 2001 Calculus 3	4
PHY 2002 Physics 2	4
PHY 2003 Modern Physics 1	3
PHY 2092 Physics Lab 2	1
	18

pages copied from
2003-2004 catalog

remove from Spring
move to Junior yr.
Fall

SPRING	
COM 2223 Scientific and Technical Communication	3
PHY 3060 Thermodynamics, Kinetic Theory and Statistical Mechanics	4
PHY 3440 Electromagnetic Theory	3
SPS 3040 Fundamentals of Remote Sensing	3
SPS 4035 Comparative Planetology*	3
	15
	15

Senior Year

FALL		CREDITS
MAE 3061 Fluid Mechanics 1	3	
PHY 4020 Optics	3	
PHY 4021 Experiments in Optics	1	
SPS 3030 Orbital Mechanics	3	
SPS 4010 Astrophysics 1	3	
SPS 4200 Senior Seminar 1	1	
SPS 4902 Undergraduate Research	3	
or Technical Elective	3	
		17

SPRING	
SPS 4025 Introduction to Space Plasma Physics*	3
or	
SPS 4030 Physics of the Atmosphere	3
SPS 4110 Senior Lab 2	2
SPS 4210 Senior Seminar 2	1
SPS 4902 Undergraduate Research	3
or Technical Elective	3
Social Science Elective	3
Free Elective	3
	15

TOTAL CREDITS REQUIRED 130

*Courses taught on an alternate-year basis.

Astronomy and Astrophysics Option

The Astronomy and Astrophysics Option is designed to meet the needs of students intending to pursue graduate education and a career in the astronomical sciences.

Freshman Year

FALL		CREDITS
CHM 1101 Chemistry 1	4	
COM 1101 Composition and Rhetoric	3	
MTH 1001 Calculus 1	4	
PHY 1050 Physics and Space Science Seminar	1	
SPS 1010 Introduction to Astronomy	3	
		15

SPRING	
CHM 1102 Chemistry 2	4
MTH 1002 Calculus 2	4
PHY 1001 Physics 1	4
PHY 2091 Physics Lab 1	1
SPS 1020 Introduction to Space Sciences	3
	16

Sophomore Year

FALL		CREDITS
COM 1102 Writing about Literature	3	
CSE 15xx Restricted Elective (Computer Science)	3	
MTH 2001 Calculus 3	4	
PHY 2002 Physics 2	4	
PHY 2092 Physics Lab 2	1	
SPS 2010 Observational Astronomy	3	
		18

SPRING	
COM 2223 Scientific and Technical Communication	3
HUM 2051 Civilization 1	3
MTH 2201 Differential Equations/Linear Algebra	4
PHY 2003 Modern Physics 1	3
Free Elective	3
	16

Junior Year

FALL		CREDITS
HUM 2052 Civilization 2	3	
MTH 3101 Complex Variables	3	
PHY 3011 Physical Mechanics	4	
PHY 3035 Quantum Mechanics	4	
SPS 3010 Geophysics	3	
		17

Senior Year

SPRING	
MTH 3201 Boundary Value Problems	3
PHY 3060 Thermodynamics, Kinetic Theory and Statistical Mechanics	4
PHY 3440 Electromagnetic Theory	3
SPS 3020 Methods and Instrumentation	3
Social Science Elective	3
	16

Senior Year

FALL		CREDITS
MAE 3061 Fluid Mechanics 1	3	
PHY 4020 Optics	3	
PHY 4021 Experiments in Optics	1	
SPS 4010 Astrophysics 1	3	
SPS 4200 Senior Seminar 1	1	
SPS 4901 Undergraduate Research	3	
or Technical Elective	3	
Humanities Elective	3	
		17

Senior Year

SPRING	
SPS 4020 Astrophysics 2	3
SPS 4035 Comparative Planetology*	3
SPS 4110 Senior Laboratory 2	2
SPS 4210 Senior Seminar 2	1
SPS 4902 Undergraduate Research	3
or Technical Elective	3
Free Elective	3
	15

TOTAL CREDITS REQUIRED 130

*Courses taught on an alternate-year basis.

Master of Science Degree Program

The space sciences graduate program stresses astrophysics, the physics of the Earth and planets, astrodynamics, tracking technology and instrumentation, multispectral remote sensing, solar-terrestrial interrelations, near-Earth space environment, auroral and magnetospheric physics, terrestrial geomagnetism and stellar photometry. Graduate study in space sciences at the master's level prepares the graduate for a wide range of scientific and technical responsibilities in industry and government related directly or indirectly to the space program.

ADMISSION REQUIREMENTS

An applicant for admission should have an undergraduate major in physics, mathematics, space science or an engineering field, and should submit Graduate Record Examination (GRE) scores from both the General Test and the Subject Test in Physics.

General admission requirements and the process of applying are presented in the *Graduate Information and Regulations* section of this catalog.

CURRICULUM

The graduate program is a continuation of the space sciences undergraduate curriculum at Florida Tech; students who have had a different undergraduate curriculum may have to take senior-level undergraduate courses to make up deficiencies. With the approval of the department, students

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2001-2002 catalog
with revisions