



Florida State University Undergraduate Handbook For Meteorology

<http://www.met.fsu.edu>
<http://www.eoas.fsu.edu>

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This document is meant to assist those interested in studying for a bachelor's degree in meteorology at Florida State University. Unofficial and continuously evolving, this handbook seeks to describe our degree program in more detail than the official FSU *General Bulletin* (the "college catalog") issued annually; see <http://registrar.fsu.edu/bulletin/>. See also the Meteorology Web site: <http://www.met.fsu.edu>. The program in meteorology is part of the Department of Earth, Ocean, and Atmospheric Science (EOAS), which also offers undergraduate degrees in environmental science and a joint degree in science teaching. See <http://www.eoas.fsu.edu/Earth-Ocean-and-Atmospheric-Science/Undergraduate-Education>

To arrange a visit to FSU's Visitor Center, see <http://www.fsu.edu/~visitor>. To arrange a visit to the EOAS Department, contact Ms. Vinette Burns (vburns@fsu.edu, (850) 644-8582). The personnel involved in the meteorology program in EOAS are listed at <http://www.met.fsu.edu/index.pl/personnel>.

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Overview of Florida State University and Tallahassee

Florida State University (FSU) is one of eleven public universities supported by the State of Florida and one of the three state universities (along with the Universities of Florida and South Florida) assigned primary responsibility for graduate education and research in addition to undergraduate instruction. The present enrollment at Florida State University (undergraduate and graduate) is approximately 40,000. You can see a cross-section of FSU's freshman class for various years, including a breakdown of applicants' SAT and ACT scores, by going to http://www.ir.fsu.edu/surveys.cfm?ID=common_data. Click in the box to the right of the year of interest, and select "(C) First-time, first-year (freshman) admission."

FSU is located in Tallahassee, the capital of Florida, with a population of approximately 250,000. The economy of the city centers on state government and higher education with a minimum of industry and air pollution. Tallahassee is also home to Florida A & M University and Tallahassee Community College. The climate is semi-tropical during four summer months and mildly continental and pleasant during the remainder of the year.

Meteorology at FSU

The FSU Meteorology Department was founded in 1948, making it one of the oldest meteorology programs in the nation. On Earth Day, 22 April 2010, the Departments of Geological Sciences, Oceanography, and Meteorology merged to form the Department of Earth, Ocean, and Atmospheric Science (EOAS). This merger was an administrative move that had no effect on any of the degree programs in meteorology. FSU offers the most extensive undergraduate and graduate programs in meteorology of any university in the southeastern United States. Current enrollments in meteorology are roughly 150 undergraduate students and 80 graduate students. International students are drawn to both the undergraduate and graduate programs. The faculty pursues research in diverse areas of dynamical, physical and synoptic meteorology and climatology.

Outside of class, meteorology students participate in local and national forecasting contests. They form intramural sport teams and often sit together at FSU football home games. The North Florida chapter of the American Meteorological Society, selected by the national AMS organization as the top local chapter in the country for 2004-2005, 2007-2008, and 2008-2009, sponsors activities of professional interest and various recreational events. We also have a student chapter of Chi Epsilon Pi, the meteorology honor society. Internship opportunities exist for students in a variety of job areas. Students should initiate internships after conferring with academic advising staff or faculty.

Members of the department benefit from cooperative research interests involving meteorology and oceanography, the Center for Ocean-Atmosphere Prediction Studies (COAPS), the Geophysical Fluid Dynamics Institute, and the Departments of Mathematics and Computational Science. The Tallahassee Office of the National Weather Service is located in the same building with the meteorology program.

Our computing facilities provide access to meteorological data and numerical forecasts using the full suite of meteorological software developed by UNIDATA (<http://www.unidata.ucar.edu>) in two computer lab rooms. In addition, the department houses the office of the State Climatologist of Florida and Florida Climate Center (http://www.coaps.fsu.edu/climate_center). The department also maintains an atmospheric instrumentation laboratory to support education and research and a well-equipped broadcast studio for students interested in weathercasting. This TV studio is also the site for live weekday evening weather broadcasts over FSU's cable television station to surrounding counties. More information on weathercasting appears on p. 18.

Present employment opportunities for meteorologists include forecasting (National Weather Service, energy trading, airlines, etc.), television weathercasting, working in industry or for consulting firms (providing specialized forecasts, seasonal outlooks, or air pollution studies), water management, forecasting for the military, teaching science and math, and research (university, government, or industry). Since the federal government and military employ many meteorologists, the job market tends to vary according to the national political climate. Students are encouraged to broaden their employment opportunities by augmenting their meteorology training with courses in one or more areas such as computer science, statistics, hydrology, actuarial mathematics, chemistry, business, etc. At present, supply and demand are in rough balance for our graduates, and we do not anticipate any drastic change in this relationship. Nearly all of our graduates find satisfactory jobs within a few months after graduation. Our better undergraduates typically go on to complete graduate degrees either here at FSU or at various schools around the country. All meteorology graduates should be flexible about where they live, because, outside of television and teaching, not every city has jobs for meteorologists.

Nearly all of our meteorology undergraduates pursue the Bachelor of Science (B.S.) degree rather than a Bachelor of Arts (B.A.) degree, which requires 9 additional humanities and history credits; for details, search for “Bachelor of Arts” in the FSU’s college catalog titled the *General Bulletin* (<http://registrar.fsu.edu/bulletin/>). All well-prepared students will have some room for elective coursework, but students planning to major in meteorology must arrange their programs carefully, starting with their freshman year. *Prospective meteorology majors who enter FSU as freshmen or transfer students should be counseled by a departmental faculty or staff advisor from the beginning.* Students who enroll elsewhere and plan to transfer to FSU at a later date are advised to study the material in this document closely. The preferred time to transfer to FSU is the fall of one’s junior year.

Meteorology is a quantitative science requiring extensive preparation in mathematics and physics. Freshmen entering the program are urged to prepare for and to take all relevant placement and exemption examinations. Prospective meteorology majors, whether enrolled at FSU or elsewhere, must complete most of their required calculus, chemistry, and physics courses during the first two years of college in order to complete the B.S. program in four years. It also is important to take the *appropriate* courses in calculus and physical sciences, because some courses in these areas are not acceptable for meteorology majors. For example, calculus courses should be for math and physics majors, not for business or biology majors. General physics courses need to be calculus-based, not algebra-based, and must include labs.

A student who starts with Basic College Algebra (MAC 1105) is behind the normal schedule. It is possible to get back on schedule by attending the summer session following the freshman year, provided mathematics coursework is taken and passed each semester. If this is not done, the physics sequence cannot be started until the second semester of the sophomore year and General Meteorology (MET 2700) must be delayed until the junior year.

Admission, finances, housing, and other general information about Florida State University

You should explore your college options in your junior year of high school, because you need to apply to FSU early in the fall of your senior year. There is a good general overview of Florida State University at http://en.wikipedia.org/wiki/Florida_state_university. Answers to many common questions about FSU can be found at <http://www.ir.fsu.edu/>, particularly in the category “Help and FAQs.” The FSU “college catalog,” called the *General Bulletin*, appears at <http://registrar.fsu.edu/bulletin/>. Here are some other important Web sites.

Admissions: <http://admissions.fsu.edu>

Applications by foreign students: <http://admissions.fsu.edu/international>

This Web site for foreign students who wish to study at FSU has links to many important sites, such as requirements for English language proficiency, the application process, costs for attending FSU, etc.

Residency: State law determines whether you will pay tuition at the in-state or out-of-state rate. State laws regarding residency requirements for tuition purposes and other laws regarding post-secondary fees are listed at http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch1009/PART02.HTM

Tuition and Other Financial Issues:

<http://controller.vpfa.fsu.edu/Student-Financial-Services/SFS-For-Students>

Financial aid: <http://financialaid.fsu.edu>

Scholarships

All freshman applicants who are admitted to FSU are automatically considered for merit-based scholarships.

Recipients are selected based upon high school grades and test scores. Because scholarships are limited, students with strong academic records should apply to FSU as early as possible. No special scholarship application needs to be made other than the regular application to FSU. Other scholarships at FSU are targeted at specific groups; see http://financialaid.fsu.edu/aid/scholarships_ugrad.html

For other scholarships, see:

Air Force ROTC <http://www.fsu.edu/~rotc>

American Meteorological Society (The application deadline is typically in early February.)

<http://www.ametsoc.org/amsstudentinfo/scholfeldocs>

National Weather Association (The application deadlines are as early as 15 April.)

<http://www.nwas.org/scholarships>

Honors Program: <http://honors.fsu.edu>

Housing: <http://housing.fsu.edu>

The time to apply for housing is as soon as possible after you are admitted. About three-quarters of freshmen live on campus. Some special housing options include the honors dormitory

(<http://www.housing.fsu.edu/housing/ungrad/honorscommunity.html>) and Living-Learning Communities

(<http://www.housing.fsu.edu/livlearn.html>), such as Women In Math, Science, and Engineering (WIMSE,

<http://www.fsu.edu/~wimse>). Most students choose to live off campus after the freshman year.

Mandatory health insurance

Florida State University requires that all students have health insurance that meets certain minimum standards.

For details, see <http://www.tshc.fsu.edu/insurance.htm>. The Web page for FSU’s Thagard Student Health Center is <http://www.tshc.fsu.edu/>.

Transfer credit evaluation

Call 850-644-5220 between 8 am - 5 pm Eastern Time and/or see

<http://www.fsu.edu/students/prospective/admissions/credit/transcredit.html>

Dawn Easom <deasom@admin.fsu.edu> handles transfer evaluations for out-of-state students. Transfer evaluations from in-state schools are easier and are handled by various people.

Campus safety: <http://www.police.fsu.edu/pdf/SafetyGuide.pdf>

Finding other information: To get information about FSU that is not obvious from the Web sites above, go to <http://www.google.com> and enter a search of the form:

key terms site:fsu.edu (← Note that there is no space between “site:” and “fsu.edu”)

where you should replace “key terms” by the topic that you want to research. That command will return Web sites ending in “fsu.edu” that contain the key terms for which you are searching. For example, at google.com, you could search for:

site:fsu.edu Nobel prize winners

Suggestions for students still in high school

In general, take as many “college prep” courses as you can in high school, particularly in math and science, including AP or IB (International Baccalaureate) courses. Pursue a foreign language as far as you can (3 or 4 years of high school courses), and use AP, CLEP, and/or FSU placement exams to exempt as much as you can of the foreign language requirement that all students in FSU’s College of Arts and Sciences must complete before graduation.

Some students enter FSU with 30 or more credits earned in high school through AP, dual enrollment, etc., and have completed much of their Liberal Studies and foreign language requirements. Such students can graduate in three years, with summer school being available to fill in any gaps. A decision to graduate in three years is personal, though. Some students entering with many college credits prefer to take four years to graduate, using the extra time to pursue a double major or simply giving themselves more time to grow. If you are in this situation and are a Florida resident, see also the section below about Bright Futures scholarships.

Suggestions for Florida students with Bright Futures scholarships

If you are Florida resident who has earned a “Bright Futures” scholarship, it will help pay for 120 credits. Retention of a Bright Futures scholarship requires a certain grade point average (GPA) that is checked each spring. If your GPA at the end of the spring term has dropped below the minimum allowed levels, you can take classes in the summer term to work to raise your GPA. Full-time students must earn at least 12 credits each fall and spring to retain their scholarships. Many students lose their Bright Futures Scholarship because the GPA drops. Adopt good study habits and attend all classes so that you will not lose your scholarship. If you do lose your scholarship, you can reapply to receive it one year later on the condition that you restore your GPA to specified levels. If you lose your Bright Futures Scholarship a second time, you are not allowed to reapply. For more information about the Bright Futures program, see <http://www.floridastudentfinancialaid.org/ssfad/bf/>.

Suggestions for students from out of state

Florida’s out-of-state tuition is not much higher than the in-state tuition for some states. Nonetheless, everyone wants to save as much money as possible. Out-of-staters can do that at FSU in two primary ways. One

is to maximize credits earned by testing (AP, CLEP, etc.). The other is to pursue FSU's First Year Abroad (FYA) program. Quoting from <https://international.fsu.edu/types/fya/fya.aspx>, "Upon completion of a minimum of 36 FSU credit hours at their European or Panama IP [International Program] study center with an FSU GPA of 3.0 or better, FYA students who are in good judicial standing are assessed in-state tuition rates for the remainder of their first undergraduate degree at Florida State in Tallahassee. For a typical four-year degree, the savings could total \$40,000 to \$50,000 dependent upon the student's study location." Contact FSU's International Programs office (<https://international.fsu.edu/index.aspx>) for more information. Be sure to specify that you will be pursuing a meteorology major, which restricts you to the centers in the Republic of Panama or Valencia, Spain, because those are the only centers that teach calculus and calculus-level general physics. Classes are taught in English, except for foreign language classes.

Suggestions for buying a personal computer

FSU requires that all students own either a desktop or laptop computer. FSU's recommended requirements are listed at <http://www.fsucs.com/>; click on "Accepted Students" and read the information there. A hard disk or laptop battery may die after 3 years or less, but the rest of a computer should last 6 years or more. A corrupted or failed disk is a disaster if your files are not backed up, so make sure that you back up your files daily. For backups, you can use a 2GB or larger USB memory stick, an external hard disk, or a DVD writer with rewritable DVDs.

For a meteorology student at FSU, it does not matter whether you have a Windows PC, Apple Macintosh, or Linux computer, and you can buy it anywhere. Budget roughly \$1000 for a computer and printer. You may spend less, or you may spend more. Computers often go on sale, so watch the advertising flyers in Sunday newspapers for sales. You will need software for word processing, spreadsheets, and presentations. Microsoft Office has become the standard and is highly recommended. Their "Home and Student Edition" for either PC or Macintosh is a great deal and can be installed on up to 3 computers. Check the price at amazon.com, and then see whether you can beat that at other vendors. As a free alternative, OpenOffice (see <http://www.OpenOffice.org>) is largely, but not completely, compatible with Microsoft Office and is available for PC, Mac, and Linux computers.

FSU students receive free email accounts from FSU and are eligible to apply for a computer account within our department once they begin taking courses toward a meteorology major. Application forms and our systems administration group are located in room 407 of the Love Building.

Requirements for the B. S. degree in meteorology

Undergraduate degree requirements are summarized below. Graduation requirements are a combination of rules imposed by the State of Florida, Florida State University, the FSU College of Arts and Sciences, and the Department of Earth, Ocean, and Atmospheric Science. For official details, see http://registrar.fsu.edu/bulletin/undergrad/info/undergrad_degree.htm and the *FSU General Bulletin*; current and earlier editions are on line at <http://registrar.fsu.edu/bulletin>. You may graduate under any set of rules documented in the *FSU General Bulletin* that is in force while you are enrolled at FSU. That way, any course plan you make toward earning a degree is still valid even if new rules are enacted.

Many of the rules for the College of arts and Sciences are listed at <http://artsandsciences.fsu.edu/Undergraduate-Students/Current-undergraduate-students/Academic-policies-for-undergraduate-A-S-students>. Here is one of the most commonly used pieces of information on that list.

Satisfactory/unsatisfactory grades: Students in Arts and Sciences are permitted to take foreign language and elective courses on a satisfactory/unsatisfactory (S/U) basis provided they have earned a minimum 2.5 FSU GPA. To do so, please obtain an S/U form in the FSU Registrar's Office, and then obtain dean's approval in the Arts

and Sciences Student Affairs Office in 010 LON. No courses used for major, minor, or liberal studies credit can be taken S/U.

A bachelor's degree in meteorology from FSU requires 120 semester hours, i.e., credits. The last 30 credits must be earned in residence at FSU and at least 60 credits must be earned at an accredited four-year college or university. Most meteorology students earn a Bachelor of Science (B.S.) degree. By taking 9 extra credits of history and humanities beyond Liberal Studies requirements, you can earn a Bachelor of Arts (B.A.) degree.

Officially, freshmen and sophomores are guided by the Division of Undergraduate Studies (<http://undergrad.fsu.edu>), but students wanting to major in meteorology need to declare meteorology as their major as soon as possible, preferably as soon as they enter FSU, so that they can be advised appropriately by faculty and staff within our department.

CLAST examination (Details: <http://admissions.fsu.edu/intl/sup.htm>)

Although the Florida legislature repealed the College-Level Academic Skills Test (CLAST) in 2009, students must still satisfy the two components of CLAST: verbal and math. Many if not most students satisfy CLAST requirements by their scores on the SAT or ACT. A score of 500 or higher on the verbal and math portions of the SAT will satisfy CLAST's verbal and math requirements. On the ACT, an English score of 21 or higher and a reading score of 22 or higher will satisfy the verbal requirement; an ACT math score of 21 or higher will satisfy the CLAST math requirement. Students who do not have sufficient scores on the SAT or ACT can satisfy CLAST by earning a 2.5 or higher GPA in ENC1101 and ENC1102 or 2.5 or higher GPA in their two required college math courses. No grade below C- is acceptable.

Summer school

The State of Florida requires that students who attend its state universities must earn at least 9 credits in one or more summer school terms at one or more of the 4-year universities in the State University System. The summer school requirement of 9 credits is part of, not in addition to, the 120 credits required for graduation. You are exempt from the summer school requirement if you enter FSU with 9 or more credits earned through AP, IB, AICE, CELP, or dual enrollment or if you transfer to FSU with 60 credits or more. A student who earns 0–8 credits in pre-college work must satisfy the entire 9-credit summer school requirement. In case of financial hardship, a student can petition to have the summer school requirement waived. We do not teach meteorology courses for majors during the summer because of our modest enrollments, so meteorology students can use the summer term to take math, chemistry, physics, liberal studies, foreign language, and electives.

Credit by examination

Details are at <http://www.fsu.edu/students/prospective/admissions/credit/hscredit.shtml>

Credit is allowed through the AP, IB, CLEP, and AICE examination programs. With adequate test scores, students can earn up to 30 credit hours toward Liberal Studies requirements and up to 45 credit hours toward undergraduate degree requirements. Sufficiently high scores on the verbal and math sections of the SAT or ACT earn credit for ENC1101 Freshman Composition and MAC 1105 College Algebra. Credits earned by examination do not count toward the 144 credit threshold beyond which you must pay a 50% tuition surcharge, nor are they subtracted from the 120 credits of support that some Florida student earn through the Bright Futures program.

Credit earned by examination is particularly attractive to out-of-state students because of the tuition they can save. Students sometimes enter with the equivalent of their freshmen year satisfied by tests, allowing them to graduate in 3 years if they choose. Occasionally, a student may even enter with an AA degree earned through dual enrollment while in high school, in which case it may be possible to graduate in as little as two years.

Some students who have earned AP credit for calculus or chemistry decline that credit in order to take the course at FSU to make sure that they have a strong foundation. A score of 3 on AP calculus AB is definitely not strong enough to accept the credit. A score of 4 or 5, though, indicates mastery at a level where you can go on to take the next higher level calculus course. Be aware that roughly half the students who take each of Calculus I, II, and III at FSU earn a D+ or lower, so you should not gamble with your math background. Work hard and steadily in whatever math course you take at FSU. \

Passing the AP physics exam will not let you skip any physics courses, though, because AP physics is taught using algebra, while we require calculus-level general physics. Therefore, it is good to take AP physics and score well on the exam, but you will still have to take PHY2048C and PHY 2049C.

Course requirements for B. S. degree in meteorology

Requirements for a Bachelor of Science (BS) degree in meteorology	Credits required
Liberal studies (36 credits are required, but the mathematics and science requirements of 6 and 7 credits, respectively, are satisfied by our required mathematics and physics courses listed below)	36-(6+7) = 23
Foreign language: three 4-credit courses	12
Oral competency in English: MET 3940 Weathercasting	1
Mathematics (multiple courses; see below)	21
Chemistry: CHM 1045 with CHM 1045L Gen Chemistry 1 with lab	3+1
Physics: PHY 2048C, PHY 2048L, PHY 2049C, PHY 2049L	10
Statistics: STA 3032	3
Meteorology (multiple courses; see below)	35
Electives	11
Total credits	120

Each line in the table is discussed separately below.

Liberal Studies (General education)

Details are at http://registrar.fsu.edu/bulletin/undergrad/info/undergrad_degree.htm

All students must satisfy FSU’s liberal studies requirements, often called “general education” requirements at other schools, involving basic courses in English, math, science, history, social studies, etc. The oral and computing competency requirements can be satisfied by courses within our department. A student who transfers to Florida State University from a Florida public community/junior college or senior institution will be deemed to have satisfied the University's liberal studies requirement if all general education requirements stipulated by the community/junior college or senior institution have been met and the student's transcript has been so marked

Foreign language

The College of Arts and Sciences, in which our department resides, requires that all undergraduates complete a 2000-level course in a foreign language (modern or ancient) or exhibit equivalent competency. For a student starting from scratch at FSU, that involves two 1000-level courses and a 2000-level course, with each course earning 4 credits. Students who seek to build on their high school foreign language are required to take a free placement test from the FSU Modern Language Department if that language is Spanish, French, or German to determine the course level at which they should start or whether they already perform at a sufficient level. (The latter is rare but does happen.) Students who seek to build on other high school foreign languages should talk with an FSU faculty member who teaches that language. Similarly students who grew up speaking a language

other than English can be evaluated to see whether they satisfy FSU's foreign language requirement. For details about FSU's foreign language placement evaluations, see <http://artsandsciences.fsu.edu/Undergraduate-Students/Current-undergraduate-students/Foreign-language-placement-and-guidelines>.

Oral competency in English

FSU's requirement for oral competency in English that can be satisfied by a speech course in high school with a grade of B or higher, by verified participation in debate at the high school or college level, or by an appropriate college-level speech course with a grade of C– or higher, such as MET3940 Weathercasting (1 credit).

Mathematics

The following mathematics courses are required for a B.S. in meteorology:
MAC 1114 Trigonometry (2 credits) and MAC 1140 Precalculus Algebra (3 credits)
(MAC1114 and MAC1140 should be taken the same semester.)
MAC 2311 Calculus with Analytic Geometry I (4 credits)
MAC 2312 Calculus with Analytic Geometry II (4 credits)
MAC 2313 Calculus with Analytic Geometry III (5 credits)
MAP 2302 Ordinary Diff. Eq. (3 credits) or MAP 3305 Engineering Mathematics I (3 cr)

When entering college, prospective meteorology majors should enroll in the highest level mathematics classes for which they qualify. Well-prepared high school graduates will already have completed the equivalent of MAC1114 and MAC1140 and perhaps calculus I (and maybe even more), allowing them to start with higher level courses. You must prove your competency in mathematics to be allowed to take courses above the most basic level. Competency in MAC 1105 Basic College Algebra can be established by a sufficient score on the ACT or SAT; see <http://www.math.fsu.edu/~basicmath/PlacementInfo.html>. You can prove competency in MAC1114 and MAC1140 by any of three ways: (1) score 3 or higher on the AP Calculus exam; (2) score high enough on the algebra and trigonometry portions of FSU's Advanced Mathematics Placement (AMP) test (see <http://www.math.fsu.edu/~grigor/AMP%20page.html>); or (3) score high enough on the CLEP Precalculus exam (see http://www.collegeboard.com/student/testing/clep/ex_pcal.html). There is no charge for FSU's AMP test, but it is only given on the FSU campus at a few dates during the summer. You do not earn college credits for MAC 1114 and MAC 1140 if you achieve sufficiently high scores on FSU's AMP test, but you can earn placement into MAC 2311 Calculus I. There is a charge to take the CLEP Precalculus exam, but it is given at flexible dates at many testing centers around the country. See <http://www.collegeboard.com/student/testing/clep/about.html> and http://apps.collegeboard.com/cbsearch_clep/searchCLEPTestCenter.jsp. If you score high enough on the CLEP test, you can earn 3 college credits. This is a particularly inexpensive way for out-of-state students to earn credits. If you register for MAC2311 Calculus I before you have demonstrated competency in both MAC 1114 and MAC 1140 through one of the 3 methods listed above, the Math Department will drop you from MAC 2311. It is common that incoming freshman meteorology majors have scored high enough on the SAT and/or ACT that they do not have to take MAC 1105 Basic College Algebra. It is also common that incoming freshmen have done well on precalculus algebra and trigonometry in high school, but they have not established proof of their competency by the time they register at FSU's summer orientation. In that case, they must sign up for both MAC 1114 and MAC 1140. If and when they can document their ability in both MAC 1114 and MAC 1140 through one of the three mechanisms above, they should drop those two courses and add MAC 2311 Calculus I.

Although an AP score of 3 is technically a passing score, we strongly discourage you from accepting AP Calculus credit if you earned a 3 on the AP Calculus test. A score of 3 is not strong enough; you need to take Calculus I in college. Sometimes students who pass the AP Calculus exam with a 4 or 5 ask whether they should retake Calculus I at FSU or whether they should start with MAC 2312 Calculus II. If you are at all uncomfortable with Calculus I, then you should take it at FSU, meaning that you should decline the AP Calculus credit, because

no college or university will ever let you earn credit twice for the same course. The reason to retake Calculus I if you are uncomfortable with it even if you earned a 4 or 5 on the AP Calculus exam is that almost half the students who take each of the 3 calculus courses at FSU earn a D+ or lower the first time they take those courses. Calculus I, II, and III are challenging courses, and you need to understand calculus well to succeed in your meteorology courses.

Students who start at FSU as freshmen should complete MAC 2311 Calculus I by the end of their first year so that they can take MET 2700 General Meteorology and PHY 2048C General Physics A with lab (PHY 2048L) in the fall of their sophomore year.

Twelve credits of mathematics at the calculus level or higher constitute a minor in mathematics, provided all grades are C– or better, so it is standard for meteorology majors at FSU to earn a minor in math. A meteorology student who starts with MAC 1105 Basic College Algebra is behind schedule but can catch up by taking MAC1105 in the fall, MAC1114 and MAC1140 in the spring, and MAC2311 in the summer. Realistically, though, students who have not had the equivalent of MAC1105 in high school typically struggle to earn a meteorology degree. **We strongly discourage you from majoring in meteorology if you struggle with math.**

Chemistry, physics, and statistics

The following chemistry and physics courses are required for a meteorology degree.

CHM 1045 General Chemistry I (3 credits) with CHM1045L Lab (1 credit)

PHY 2048C General Physics A with lab (5 credits) (Calculus 1 co- or prerequisite)

PHY 2049C General Physics B with lab (5 credits) (Calculus 2 corequisite)

STA 3032 Probability and Statistics for Scientists and Engineers (3 credits) (Calculus 2 prerequisite). Students may substitute STA 4321 Intro to Mathematical Statistics for STA 3032.

Required meteorology course for B. S. degree

MET 2700 General Meteorology (3 credits) Fall only

MET 2101 Physical Climatology (3 credits) Fall only

MET 2507C Weather Analysis and Forecasting (2 credits) Spring only

MET 3220C Meteorological Computations (3 credits) Spring only

MET 3300 Introduction to Atmospheric Dynamics (3 credits) Spring only

MET 4301 Atmospheric Dynamics I (4 credits) Fall only

MET 4302 Atmospheric Dynamics II (4 credits) Spring only

MET 4420 Atmospheric Physics I (3 credits) Fall only

MET 4450 Atmospheric Physics II (3 credits) Spring only

MET 4500C Synoptic Lecture-Laboratory I (3 credits) Fall only

MET 4501C Synoptic Lecture-Laboratory II (4 credits) Spring only

To graduate, a grade average of at least 2.0 is required for technical coursework, i.e., for meteorology courses numbered 2000 and higher and for required courses in math, statistics, chemistry, and physics. Further, a grade of C or higher is required in each of MET 2101, MET 2507C, MET 2700, and MET 3300. (If students cannot earn C's in the lower level courses, it is unreasonable to think they can finish their meteorology courses with a C, i.e., 2.0, average. We do not want students to have to pick a new major in their senior year because of GPA problems.) For students entering FSU in fall 2009 or later, each of the other required meteorology courses along with the required technical courses outside meteorology must be passed with a C– or higher. If a course is not passed with the appropriate C or C– grade, it must be retaken until it is passed with the necessary grade. Because meteorology courses are taught only once a year, retaking a class commonly delays graduation by a year. If a meteorology major earns more than 5 grades of D+ or lower in technical courses (meteorology, math, chemistry, and physics), the student must change to a different major.

All meteorology students, particularly those who wish to work for the Federal government, are encouraged to take MET4400C Meteorological Instruments and Observations (3 credits) and/or GLY4820 Physical Hydrology (3 credits). Students pursuing careers in broadcasting need to take MET3940 Weathercasting (1 credit) as soon as possible and courses in the Communications Department as they fit into their schedule.

Electives

Electives can add breadth to your background, thereby increasing your employability. They can also provide an opportunity to satisfy an interest outside meteorology. For example, a number of meteorology students have participated in music, such as FSU's marching band.

Recommended technical electives include any meteorology course at the 3000-level or higher, particularly MET 4400C Meteorological Instruments and Observations (3 credits) and MET4705 Operational Meteorology (2 credits), and courses in computer science, statistics, physical oceanography, communications, business, etc.

Minors that can accompany a meteorology major

Everyone is required to have a minor or a second major. Our required math courses constitute a minor, provided you earn at least a C- in each course. One additional course in physics beyond PHY2049C, typically PHY3101 Intermediate Modern Physics, constitutes a physics minor, provided you earn at least a C- in each course. Other minors that increase one's skills and employability include computer science, statistics, business, and communications (for those interested in TV weathercasting). Meteorology students sometimes choose double majors, the most common being mathematics, physics, computer science, and communications.

Typical meteorology schedule for a student who enters FSU as a freshman

The following tables show recommended year-by-year course schedules. Substantial deviations from these programs are common. Many students exempt some of these courses, and most non-meteorology courses are available during summer. The “Academic Map” for meteorology at <http://www.academic-guide.fsu.edu> should also be used as a guide to enroll in classes by the proper benchmark semester.

Meteorology courses are offered only once each year during the semester listed below. Course sequences must be carefully planned. *Failure to complete a prerequisite or a required course in the proper semester can result in delaying graduation by a full year. Our department rigorously enforces prerequisites for all its courses.*

A bachelor’s degree in meteorology requires 120 credits. To graduate in 4 years, this works out to at 14-15 credits per term plus 9 credits of required summer school, discussed earlier. The 9 credits of summer school are not included below because they can fall anywhere in one’s 4 years, and many students exempt them. No meteorology courses for majors are taught during summer because our enrollments are too small, but most other required courses (math, liberal studies, etc.) are taught during summer. The summer term is particularly useful:

- if you need to start with MAC1105 Basic College Algebra in the fall of the freshman year, so that you would take trigonometry and precalculus algebra in the spring and calculus 1 in the summer; or
- if you need to repeat a math course because a C– or higher was not earned the first time; or
- if you do not want to or cannot take 14-15 credits per term; or
- if you wish to study abroad; see <http://www.international.fsu.edu>.

You can petition to have the summer requirement waived if it poses a financial hardship. If you are excused from summer school, you must average at least 15 credits per fall and spring term to graduate in four years. It is recommended that you avoid (or at least minimize) electives until you have completed requirements for liberal studies and foreign language.

FRESHMAN YEAR

Fall Term	Hrs	Spring Term	Hrs
MAC 1114 Trigonometry	2	MAC 2311 Calculus 1	4
MAC 1140 Precalculus Algebra	3		
ENC 1101 Freshman comp	3	ENC 1102 or alternative	3
Liberal Studies	3	CHM 1045, CHM 1045L	4
Liberal Studies (or 2 nd semester of foreign language)	4	Liberal studies (or 3 rd semester of foreign language)	4
TOTAL	15	TOTAL	15

Students interested in weathercasting should take MET1010 during the fall of their freshman year so that they can register for MET3940 Weathercasting in the spring of their freshman year. Other meteorology students may also enroll in MET1010 during their freshman year. You will learn a lot in such a course, and the textbook is a very useful reference, but you must recognize that MET1010 does not satisfy any requirements for a major in meteorology.

SOPHOMORE YEAR

Fall Term	Hrs	Spring Term	Hrs
MAC 2312 Calculus 2	4	MAC 2313 Calculus 3	5
MET 2700 Gen. Meteorology	3	MET 3300 Intro to Atmos. Dyn.	3
MET 2101 Phys. Climatology	3	MET 2507C Weather Analysis and Forecasting	2
PHY 2048C Gen. Phys. A & lab	5	PHY 2049C Gen. Phys. B & lab	5
TOTAL	15	TOTAL	15

JUNIOR YEAR

Fall Term	Hrs	Spring Term	Hrs
STA 3032	3	MET 3220C Meteor. Comp.	3
MAP 2302 or MAP 3305	3	MET 4450 Atmos. Physics 2	3
MET 4420 Atmos. Physics 1	3	Liberal Studies & electives	9
Liberal Studies & electives	6		
TOTAL	15	TOTAL	15

SENIOR YEAR

Fall Term	Hrs	Spring Term	Hrs
MET 4301 Atmos. Dynamics 1	4	MET 4302 Atmos. Dynamics 2	4
MET 4500C Synoptic 1	3	MET 4501C Synoptic 2	4
Electives	8	Electives	7
TOTAL	15	TOTAL	15

Transfer students

Many students spend their first two years at community colleges or other institutions and transfer to FSU to complete a bachelor's degree in meteorology. It is not necessary to take any meteorology courses prior to transferring to FSU, since all required meteorology courses can be taken at FSU. We offer each meteorology course only once per year, so it is necessary to enter FSU in the fall to finish in two years.

Students attending Florida Public Community Colleges are urged to complete the Associate of Arts (AA) degree, which will automatically satisfy FSU's Liberal Studies (i.e., general education) requirements. Also, people with an AA degree from a Florida Public Community College only need a 2.0 or better GPA to transfer to FSU; all other transfer students need a 3.0 or better GPA. Even if you earn an AA degree, make sure you take a history course as part of your AA program, because FSU's College of Arts and Sciences (in which our department resides) requires a history course for a bachelor's degree, and this requirement is separate from the Liberal Studies requirements. There is essentially no space for electives during the two years of your AA program, because liberal studies (i.e., general education), math through calculus 2, chemistry (CHM1045 and CHM1045L), calculus-level general physics with lab (PHY 2048C and PHY 2049C), and 2 semesters of foreign language will occupy essentially all 60 credits required for an AA degree. It does not matter to us what non-technical courses you take to satisfy requirements in other areas such as humanities, social science, etc.

Transfer students who have not earned an AA degree from a Florida Public Community College will have their transcripts evaluated on a course-by-course basis. In that case, you should take courses that are as close as possible to those in FSU's Liberal Studies list discussed on page 9.

Also, try to complete the FSU Arts and Sciences foreign language requirement (see page 9) as part of your AA degree. That is possible if you take foreign language each year in high school so that you can start in college with the second or third level course. In any case, get as far as you can toward completing a 2000-level foreign language course before transferring to FSU.

In your first term in community college, you should take the highest level mathematics course for which you qualify in the sequence: MAC1105 Basic College Algebra, MAC1114 Trigonometry./MAC1140 Precalculus Algebra (MAC1114 and MAC1140 should be taken the same semester), MAC2311 Calculus I, MAC2312 Calculus II, MAC2313 Calculus III. Take at least one mathematics course each term until you transfer to FSU to complete as much math as possible before transferring. The math courses should be those for physics, engineering, and physical science majors, not those targeted toward biology or business majors. Ideally, you would complete the entire calculus sequence prior to transferring to FSU. This is possible if your high school math background has prepared you to take trigonometry and precalculus algebra (MAC1114 and MAC1140) or calculus 1 with analytic geometry (MAC2311) in your first term in community college. If you take calculus 1 your first term, you can even take ordinary differential equations (MAC2302) before transferring.

Our program requires calculus-level general physics with labs as appropriate for a physics major, so be sure to take that kind of physics sequence at your community college. Such physics is a two-semester or three-quarter sequence covering mechanics, heat and thermodynamics, sound, optics, electricity and magnetism. The courses include lecture and lab and *must* have a pre- or co-requisite of calculus 1. Again, it is best if the whole sequence is completed before transfer, but try to take at least the first course (mechanics) with lab before transferring.

Our required statistics course, STA 3032 Probability and Statistics for Scientists and Engineers (3 credits), has a prerequisite of calculus 2. Therefore, if you want to satisfy our statistics requirement through transfer credit, you must take a 3-credit probability-statistics course that has a calculus 2 prerequisite. A non-calculus statistics course may provide useful background before you take our required probability-statistics course, but it will not substitute for STA 3032. Students rarely satisfy our statistics requirement before transferring, which will cause no problem at all.

At the very least, you cannot transfer to FSU as a meteorology major unless you have completed general chemistry and lab (CHM1045 and CHM1045L) and calculus 1, but transfer students who have not completed the first two semesters of calculus, the physics sequence, and two foreign language courses before transferring to FSU will find it difficult to finish a meteorology degree at FSU in two years, although it may be possible if you go to summer school. Most math, physics, and liberal studies (general education) courses are available during summer, but meteorology courses for majors are NOT taught during summer because enrollments are not large enough. Also, FSU requires that you must earn at least 60 credits at a four-year college or university. That means that if you earn more than 60 credits at a community college, you still must take at least 60 credits at FSU or some other 4-year college or university.

Typical schedule for a transfer student with an AA degree

Here, we assume that you have satisfied all of FSU's liberal studies (i.e., general education) requirements and that you have completed the equivalent of MAC2311, MAC2312, CHM1045, CHM1045L, PHY2048C, PHY2048L, PHY2049C, and PHY2049L. We also assume that you have at most one foreign language course remaining; ideally, you will have finished FSU's foreign language requirement before you transfer to FSU. Lastly, we assume that you transfer 60 or more credits to FSU; that way, you are exempt from the summer school requirement, so no summer term is shown below, although it is an option for all students. Meteorology courses are taught only one semester per year, except for MET3520 Current Weather Discussion and MET3940 Weathercasting, which are taught each fall and spring. MET3940 is also taught most summers.

JUNIOR YEAR

Fall Term	Hrs	Spring Term	Hrs
MAC 2313 Calculus 3	5	MAP 2303 Ordinary Diff Eq. or MAP 3305 Eng Math I	3
MET 2700 General Meteorology	3	MET 2507C Weather Analysis and Forecasting	2
MET 2101 Physical Climatology	3	MET 3300 Intro to Dynamics	3
3 rd semester of foreign lang., STA 3032 Prob & Stat, or elective	4	MET 3520 Current Weather Discussion	1
		MET 3220C Met. Comp.	3
		Elective	3
TOTAL	15	TOTAL	15

SENIOR YEAR

Fall Term	Hrs	Spring Term	Hrs
MET 4301 Atmos Dynamics 1	4	MET 4302 Atmos Dynamics 2	4
MET 4420 Atmos Physics 1	3	MET 4450 Atmos Physics 2	3
MET 4500C Synoptic 1	3	MET 4501C Synoptic 2	4
MET 3940 Weathercasting	1	Electives	4
STA 3032 Prob & Stat or elective	3		
Electives	1		
TOTAL	15	TOTAL	15

Preparing for graduate school

Students intending to enter graduate school should take a course in partial differential equations (MAP 4341 or MAP 3306, 3 credits) and should consider additional coursework in physical sciences such as Modern Physics (PHY 3101, 3 credits) and perhaps General Chemistry II (CHM 1046 and CHM 1046L, 3+1=4 credits). Related coursework in geosciences could include physical oceanography, which deals with the dynamics of ocean currents. Additional computer science and/or statistics courses are also useful.

If you are considering graduate school, you will benefit greatly from research experience while you are still an undergraduate. There are several ways of doing this. You can volunteer to work in a professor's lab; you can write a senior thesis if you qualify for the FSU Honors Program; you can submit a research report to the American Meteorological Society's Father Macelwane undergraduate competition even if you are not in the Honors Program; and/or you can apply for a summer "research experience for undergraduates" (REU) at any of several universities or government research labs around the country.

Students interested in weathercasting

Weathercasting refers to the presentation of weather information on television, radio, and in written form such as Web blogs, Facebook, Twitter, etc. Students interested in weathercasting take all the same meteorology courses as do regular meteorology majors. In addition, they take MET3940 Weathercasting (1 credit) two to four times and participate in our cable TV operations, which are seen in surrounding counties on Comcast cable channel 4 and which are also simultaneously streamed on the Internet at <http://www.wfsu.org/flashwebcasts/4fsu.php> and <http://livestream.com/FSUWeather>. The latter site also has recordings of recent shows. The show airs live at 6:30–7:00 PM Eastern Time (6:30–6:45 PM Eastern Time during the summer term) from the second week of each term through the last week of each term with days off when the university does not have classes. The show is rebroadcast each evening beginning at 11:00 PM Eastern Time.

It takes time to develop as a weathercaster, so, if you are interested, it is best to get involved in our weathercasting activities as early as possible, preferably in your freshman year. If you are an incoming freshman interested in weathercasting, you should take MET1010 (3 credits) in your first term; then you qualify to take MET3940 Weathercasting in the following term. MET1010 is not required for a meteorology degree, but it is normally the only meteorology course that a freshman can take. The other way to qualify for MET3940 is to take MET2700 General Meteorology as a corequisite, which is the usual route for students who transfer to FSU. Transfer students do not normally take MET1010 at FSU, although they may take it or a similar course before they transfer to FSU. Even before you take MET3940, you can help with various tasks behind the camera, so contact Dr. Jon Ahlquist <ahlquist@fsu.edu> as soon as you reach FSU if you want to get involved in weathercasting.

It is also good for weathercasters to take as many communications courses as they can before they graduate. Some meteorology students minor in communications or get a double major in meteorology and communications. An internship at a commercial TV station for one or more semesters is highly recommended for people interested in weathercasting. Almost all TV stations require that interns sign up for internship credit through their universities. Unless there is some other consideration, sign up for only 1 credit for each internship experience, no matter how many hours you work at that internship. There is no reason to pay FSU any more than the absolute minimum when the activity is actually between you and a television station.

Students who are not quite done after 4 years

Occasionally, meteorology students are done with all of their technical coursework at the end of four years but still need one or two more non-technical courses. FSU allows up to 6 of your last 30 credits to be taken at some other college or university. In that case, you may choose to start working after four years and take your last few credits at another school in the city where you are working. You may even be able to find an appropriate online course from FSU to avoid this problem entirely. Note: It is very unlikely that you will be able to find a required meteorology course in another city, and FSU will NOT allow more than 6 of the final credits to be taken elsewhere.

Students interested in meteorology as a second undergraduate degree

If you already have a bachelor's degree, you can earn a second bachelor's degree in meteorology at FSU by completing the technical courses required for our meteorology program, plus a minor (usually mathematics). You will also need to complete the foreign language requirement and a 3-hour history course, if those courses were not taken during your first degree. The time required to earn a second degree will vary, but you can do it in two years if you have finished the equivalent of our requirements for chemistry, calculus, and calculus-level general physics with lab before entering FSU. The list of required classes would be similar to those for a transfer student, and you should apply as a transfer student. Like a regular transfer student, you will have to document your previous college experience in your application.

Students who have earned a bachelor's degree in communications sometimes earn a second bachelor's degree in meteorology if they want to be technically qualified as meteorologists for TV weathercasting. Occasionally they may ask about entering our graduate program instead of working for a second undergraduate degree, but they usually lack the math/physics background that would qualify them for graduate study. Also, they can finish a second bachelor's degree faster, cheaper, and more easily than they can earn a master's degree, and a master's degree counts for little more than a bachelor's degree at most television stations.

Minor in meteorology

A minor in meteorology consists of a minimum of 12 credit hours, not counting MAC 2311 Calculus 1 with Analytic Geometry (4 credits) and PHY 2048C General Physics A with lab (5 credits), which are required as pre- and co-requisites for MET2700. If you begin as a meteorology major but change to Environmental Science or something else, we encourage you to see if you have already satisfied a minor in meteorology. If not, you can see how many additional courses you need.

If you never major in meteorology, a minor in meteorology usually begins with these 4 courses:

MET 1010 Intro to the Atmosphere (3 credits)
MET 1010L Intro to the Atmosphere lab (1 credit)
MET 2700 General Meteorology (3 credits)
MET 2101 Physical Climatology (3 credits)

Students may then select one of two options to complete the minor, by taking *either*:

- Option 1*: 3 credits of MET 3000- or 4000-level MET courses *or*
- Option 2*: 2 credits of any combination of 3000-level meteorology courses (i.e., MET 3520 and/or MET3940)

plus OCE 1001 Elementary Oceanography (3 credits).

For option 1, the most straightforward approach is to complete one semester each of MET 2507C (2 credits), and either MET 3520 Current Weather Discussion (1 credit)

(1) *or* MET 3940 Weathercasting (1 credit). MET 3300 Intro to Dynamics (3 credits) or MET 3220C Meteorological Computations (3 credits) may also be chosen, but they have other mathematics and physics co- and pre-requisites.

For option 2, MET 3520 Current Weather Discussion (1 credit) and MET 3940 Weathercasting (1 credit) are repeatable courses, so a student may take both of these courses or one of these courses twice. OCE 1001 Elementary Oceanography (3 credits) then completes the minor.

Related degree programs

FSU Teach: Geosciences (<http://fsu-teach.fsu.edu/>)

“FSU Teach” is designed for people who want to become pre-college science teachers. Students double major in a science as well as in education. In connection with FSU Teach, our department offers a geosciences degree program that prepares people to become middle school Earth Science teachers. Documentation is being prepared. In the interim, contact Dr. Paul Ruscher (pruscher@fsu.edu) for further information.

Environmental Science (<http://www.eoas.fsu.edu/Earth-Ocean-and-Atmospheric-Science/Undergraduate-Education/Environmental-Science-Undergraduate-Degrees>)

Meteorology’s home department of Earth, Ocean, and Atmospheric Science also offers Bachelor of Science (B. S.) and Bachelor of Arts (B. A.) degrees in environmental science. The B. S. degree in environmental science is for students seeking a broad interdisciplinary major with rigor of mathematics and the physical sciences at its core. The B. A. degree in environmental science has lower mathematical requirements and a greater emphasis on the humanities. Among other career opportunities, either degree would be an option for someone interested in environmental law, either as an attorney or as a paralegal.

Career Information

Meteorology majors find employment in local, state, federal agencies (including the National Weather Service), private corporations, schools (as science teachers), and an array of other areas as applied meteorologists. Because of variations in degree requirements around the country, the federal government's definition of a meteorologist (GS-1340, see <http://www.opm.gov/qualifications/standards/IORs/gs1300/1340.htm>) is in terms of specific courses rather than as a meteorology degree. That Web site can help you pick electives to maximize your opportunities. Research positions typically require a master's degree or Ph.D.

Below is a representative listing of job titles and employers. Faculty members who teach meteorology are knowledgeable about internship and job opportunities in the field. FSU's Career Center (850-644-6431, <http://career.fsu.edu>) offers general information about career planning, preparing a resume and cover letter, interviewing, etc.

Representative Job Titles:

Weather Forecaster
Synoptic, Dynamic, or Physical Meteorologist
Climatologist
Emergency Management Meteorologist
Air Pollution Meteorologist
Broadcast Meteorologist
Industrial Meteorologist
Science/Math Teacher
Scientific Programmer
Environmental Scientist, Geoscientist
Physical Scientist

Representative Employers:

Federal government: National Weather Service, NASA, EPA, USFS, FEMA
Military: Air Force, Army, Navy
State agencies: Environmental/Air, Forestry, Emergency Management, Water Management Districts, etc.

Television stations
Industrial and engineering firms
Airlines
Insurance and energy companies
School districts (hiring science teachers)
Colleges and universities (primarily after M.S. or Ph.D.)
Research organizations such as:
National Aeronautics and Space Administration (NASA)
National Oceanic & Atmospheric Administration (NOAA), including
•Hurricane Research Division (HRD) in Miami
•National Hurricane Center (NHC) in Miami
•National Severe Storms Laboratory (NSSL) and Storm Prediction Center (SPC) in Norman, Oklahoma
•National Centers for Environmental Prediction (Washington DC area)
•National Climatic Data Center in Asheville, North Carolina

Selected meteorology staff and faculty

Ms. Vinette Burns, Academic Support Assistant (specializing in undergraduate questions)
403 Love Building
Phone (850) 644-8582
email: vburns@fsu.edu

Ms. Michaela Lupiani, Academic Program Specialist (specializing in graduate school questions)
424 Love Building
Phone: (850) 644-8580
e-mail: mlupiani@fsu.edu

Dr. Jon Ahlquist, Associate Professor, interim undergraduate program coordinator for meteorology and meteorology liaison with the FSU Honors Program
421 Love Building
Office: (850) 644-1558, Lab: (850) 644-7511 (Call the lab before the office.)
e-mail: ahlquist@fsu.edu

Dr. Paul Ruscher, Associate Professor, meteorology liaison with FSU Teach
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Dr. Philip Sura, Assistant Professor, Graduate Program Director for Meteorology
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Dr. Lynn Dudley, Professor and Chair, Dept of Earth, Ocean, and Atmospheric Science
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More information about meteorology at FSU can be found at our department Web site, <http://www.eoas.fsu.edu>. Then click on "Meteorology."

Important Rules and Dates on which They Were Enacted

The rules below apply to students who began at FSU in the fall of the beginning date or more recently

Approximately fall 1999	C or better must be earned in required 2000 and 3000-level meteorology courses: In all required 2000 and 3000-level meteorology courses (MET 2101, 2507C, 2700, 3300), students must earn a C or better. The reason for this is that students must earn a 2.00 or higher GPA in their required technical coursework to graduate. The 4000-level courses are harder than the 2000 and 3000-level courses, so if students cannot earn at least a C in each of the lower level courses, it is unreal to believe that they can earn even higher grades in the 4000-level courses, which would be necessary to raise their technical GPA to the 2.00 level.
Fall 2003	Five D/F rule: A student who has earned more than five (5) grades of D+ or lower in required technical courses (chemistry, mathematics, physics, statistics, and/or meteorology) will not be allowed to remain in the meteorology major. See http://registrar.fsu.edu/bulletin/archive/2003_2004/depts/meteorology.htm .
Fall 2008	Minimum grade of C/C- minus required in all required technical courses: In all required technical courses (chemistry, mathematics, physics, statistics, and/or meteorology), a grade of C- or better must be earned. In all required 2000 and 3000-level meteorology courses (MET 2101, 2507C, 2700, 3300), students must earn a C or better, which continues the rule that has been in place since approximately fall 1999. See http://registrar.fsu.edu/bulletin/archive/2008_2009u/depts/meteorology.htm .
Fall 2009	Required statistics course: STA 3032 Applied Statistics for Engineers and Scientists is required. STA 4321 is allowed as a substitute. (STA 4321 is required for students who have a double major in applied mathematics.) See http://registrar.fsu.edu/bulletin/archive/2009_2010u/depts/meteorology.htm , and look under "Coursework and Requirements."
Fall 2009	Excess hours surcharge: A 50% surcharge is imposed on tuition for credits that exceed 20% of what is required for a student's major. For meteorology and most majors, this applies to all credits beyond 1.2 x 120 credits = 144 credits. For more information, see http://registrar.fsu.edu/excess_hours .
Fall 2011, applies to all students who entered in fall 2008 or later	Clarification that grades of C- or better must be earned in any required 4000-level meteorology courses (MET4301, 4420, 4500C) before going on to a course that has one of those courses as a prerequisite (Met 4302, 4450, 4501C). This was the intent of the rule enacted in fall 2008.