

COLLEGE OF ATMOSPHERIC AND GEOGRAPHIC SCIENCES



Administrative and Academic Office

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Administrative Officers

Berrien Moore, III, Ph.D., Dean and Director National Weather Center
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General Information

The mission of the College of Atmospheric and Geographic Sciences is to provide a world-class academic experience that promotes inclusion, innovation and research, resulting in advanced education and successful career in the private sector, academia, government agencies, and non-governmental organizations.

The college is composed of academic and research units:

Academic Units

- Department of Geography and Environmental Sustainability
- School of Meteorology

Research Units

- Advanced Radar Research Center (ARRC)
- Center for Autonomous Sensing and Sampling (CASS)
- Center for the Analysis and Prediction of Storms (CAPS)
- Center for Spatial Analysis (CSA)
- Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)
- Oklahoma Alliance for Geographical Education (OKAGE)
- Oklahoma Climatological Survey (OCS)
- South Central Climate Adaptation Science Center (SC-CASC)

Programs Offered

- Department of Geography and Environmental Sustainability
 - Environmental Sustainability: Culture & Society, B.A.
 - Environmental Sustainability: Culture & Society, B.S.
 - Environmental Sustainability: Planning & Management, B.A.
 - Environmental Sustainability: Planning & Management, B.S.
 - Environmental Sustainability: Science & Natural Resources, B.A.

- Environmental Sustainability: Science & Natural Resources, B.S.
- Geographic Information Science, B.A.
- Geographic Information Science, B.S.
- Geography: Geohumanities, B.A.
- Geography: Physical & Social Sciences, B.A.
- Geography, B.S.
- Climate Adaptation, Minor
- Environmental Sustainability, Minor
- Geographic Information Systems, Minor
- Geography, Minor
- Hydrologic Science, Minor
- Physical Geography, Minor
- Environmental Sustainability: Planning & Management, B.A./M.R.C.P.
- Environmental Sustainability: Planning & Management, B.S./M.R.C.P.
- Geographic Information Science, B.A./M.R.C.P.
- Geographic Information Science, B.S./M.R.C.P.
- Geography: Physical & Social Sciences, B.A./M.R.C.P.
- Geography, B.S./M.R.C.P.
- Geography & Environmental Sustainability, M.A.
- Geography & Environmental Sustainability: Environmental Systems, M.S.
- Geography & Environmental Sustainability: Geospatial Technologies, M.S.
- Geospatial Technologies, Graduate Certificate
- Geography & Environmental Sustainability, Ph.D.
- School of Meteorology
 - Meteorology, B.S.
 - Meteorology Upper Division Major Elective Course List
 - Meteorology, Minor
 - Weather and Climate, Minor
 - Meteorology, B.S./M.B.A.
 - Meteorology, B.S./Data Science and Analytics, M.S.
 - Meteorology, M.S.
 - Meteorology, Ph.D.

Programs & Facilities

The College of Atmospheric and Geographic Sciences occupies state of the art classroom, laboratory, and research space in multiple locations on the OU campus. The Department of Geography and Environmental Sustainability is headquartered in the Sarkeys Energy Center (SEC) on the OU Main Campus, while the School of Meteorology calls the National Weather Center (NWC) its home on the OU Research Campus. The college's research units are strategically located across the SEC, NWC, as well as in Partner's facilities on the OU Research Campus. Each unit is situated to take full advantage of collaborations that will advance the international leadership role of OU in the atmospheric and geographic sciences.

The Sarkeys Energy Center

The Department of Geography and Environmental Sustainability and the Oklahoma Alliance for Geographical Education (OKAGE) are housed on floors four, five, and six in the Sarkeys Energy Center (SEC). Classrooms, computer labs, and laboratory facilities are also located in the building.

The National Weather Center

The National Weather Center (NWC) houses University of Oklahoma components and a confederation of state and federal organizations that work together on educational, pure and applied research, and operational activities. The Atmospheric and Geographic Sciences Dean's Office, the School of Meteorology, the Cooperative Institute for Mesoscale Meteorological Studies, the Center for Analysis and Prediction of Storms, the Center for Spatial Analysis, the Natural Hazards and Disaster Prevention Center, and the Oklahoma Climatological Survey are the University of Oklahoma components of the Weather Center. The federal agencies that are part of the Weather Center include: the National Severe Storms Forecast Laboratory, the Storm Prediction Center, the National Weather Service Office (Oklahoma City), the WSR-88D (NEXRAD) Radar Operations Center, and the Warning Decision Training Branch. The National Weather Center programs offer a rich educational and research environment for students pursuing undergraduate and graduate study in meteorology, climate, hydrology, remote sensing, and computer applications. The NWC also houses the NWC Library, which contains almost 4,000 meteorology books and hundreds of government documents in its collection and access to over 50 atmospheric science journals. The NWC Library supports the research, education, outreach and operations missions of all of the entities in the NWC and also supports the wider meteorology community in Norman. For more information, visit the NWC Library's website.

Advanced Radar Research Center (ARRC)

The Advanced Radar Research Center is involved in many aspects of radar research applied to studies of the atmosphere. Topics range from sophisticated radar signal processing to precipitation microphysical studies.

Center for the Analysis and Prediction of Storms (CAPS)

Center for the Analysis and Prediction of Storms develops and demonstrates techniques for the numerical analysis and prediction of high-impact local weather and environmental conditions, with emphasis on the assimilation of observations from Doppler radars and other advanced in-situ and remote sensing systems.

Center for Spatial Analysis (CSA)

The Center for Spatial Analysis at the University of Oklahoma is a multidisciplinary university research center specializing in the study and application of geospatial science and technology. CSA is composed of three working units that focus on research and development, outreach and training, and applications and services. Through efforts in each of these units CSA seeks to advance the geospatial vision of the university and contribute to education, research, and economic development in the State of Oklahoma. Housed in Two Partners Place, CSA is a member of the National Weather Center program and the OU Research Campus, an affiliate member in the Oklahoma NASA Space Grant Consortium, and a partner to the Center for Applied Social Research. Visit their website for further information.

Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)

Cooperative Institute for Mesoscale Meteorological Studies provides a mechanism to link the scientific and technical resources of the University of Oklahoma and the National Oceanic and Atmospheric Administration (NOAA) to create a center of research excellence in mesoscale meteorology, regional climate studies, and related subject areas.

Oklahoma Alliance for Geographical Education (OKAGE)

Oklahoma Alliance for Geographical Education is an organization for geography educators in Oklahoma, and is affiliated with the National Geographic Society and its national network of state geographic alliances and national geography organizations.

Oklahoma Climatological Survey (OCS)

120 David L. Boren Blvd., Suite 2900 Norman, OK 73072-7305
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Oklahoma Climatological Survey was established in 1980 to provide climatological services to the people of Oklahoma, conduct research on the impacts of climate on human activities, and serve as a support facility for the State Climatologist. OCS has a legislative mandate to acquire, process, and disseminate climate and weather data and information for use by the state's citizens. In addition, the Survey maintains an extensive array of climatological information, conducts research on both land-air interactions and applied climatology, educates hundreds of Oklahoma decision-makers annually, and operates the Oklahoma Mesonet, Oklahoma's weather network. OCS is located in the National Weather Center, part of the Norman Research Campus.

Oklahoma Mesonet

The Oklahoma Mesonet consists of over 100 automated observing stations that continuously monitor numerous important weather and soil variables. The Oklahoma Mesonet Program is administered jointly by the University of Oklahoma and Oklahoma State University.

South Central Climate Adaptation Science Center

The South Central Climate Adaptation Science Center is a partnership between the US Geological Survey and a consortium of seven member institutions consisting of the University of Oklahoma (OU), Texas Tech University (TTU), Louisiana State University (LSU), the Chickasaw Nation (CN), the Choctaw Nation of Oklahoma (CNO), Oklahoma State University (OSU), and NOAA's Geophysical Fluid Dynamics Lab (GFDL). The consortium has broad expertise in the physical, biological, natural, and social sciences to address impacts of climate change on land, water, fish and wildlife, ocean, coastal, and cultural resources.

PARTICIPATION IN THE HONORS PROGRAM

Eligible undergraduate students are encouraged to participate in the University-wide Honors Program described elsewhere in this catalog. Specially designed Honors courses and seminars provide the Honors student with small classes and opportunities for interaction with the University's best and brightest faculty members, both within the student's major field of study and in other courses used to satisfy curricular requirements.

RESEARCH OPPORTUNITIES

Undergraduate students are encouraged to work with faculty on research projects. These student research projects can be an important component of the Honors Program and/or a source of part-time income and scholarship support. Such research participation provides the student with important experience in his or her discipline in addition to meeting normal academic requirements. For more information on undergraduate research, visit the University's Undergraduate Research website.

Faculty-supervised research is an important component of the College of Atmospheric and Geographic Sciences graduate program. Many graduate students are supported financially through research assistantships funded by federal and private industry grants and contracts. Other graduate students are supported financially through teaching assistantships awarded by their academic units. Faculty-supervised student research leading to master's theses and doctoral dissertations is an integral component of the overall graduate degree requirements.

Computing Services

The College of Atmospheric and Geographic Sciences has made a major commitment to integrate and expand computer and network technology in its courses and programs. The college provides a specialized Media lab for exclusive use by its majors in the National Weather Center, Room 3650. This lab contains equipment geared toward the special needs of students majoring in the College of Atmospheric and Geographic Sciences and includes an HP DesignJet 800ps 42" Poster Printer. The college also maintains three state-of-the-art computer labs in Sarkeys Energy Center. The college is a partner in the University of Oklahoma SuperComputing (OSCER-OU SuperComputing Center for Education and Research Center).

Storm Chasing Policy

The University of Oklahoma's College of Atmospheric and Geographic Sciences does not condone or encourage storm chasing by students. Anyone who chooses to chase storms does so at their own risk and should not imply that their activities are connected with the University. The only possible exception is when students are officially included in storm intercept activities conducted as part of well-planned and safety-trained scientific projects lead by faculty or scientists in the National Weather Center research units. Storm chasing is not part of the School of Meteorology course curriculum nor should such activities take precedence over the academic activities of the School such as coursework and attending classes and seminars.

Undergraduate Study

BACHELOR OF ARTS

The **Bachelor of Arts** degrees emphasize the social applications of the discipline. Students pursuing a bachelor of arts will acquire knowledge and skills in language, statistics and social understanding, including policy making.

BACHELOR OF SCIENCE DEGREES

The **Bachelor of Science** degrees emphasize the science and engineering sides of the discipline. Students pursuing a Bachelor of Science degree will acquire knowledge and skills in math, physics and computation.

Accelerated Bachelor/Master Degrees

Several accelerated dual-degree programs are offered through collaboration with the Department of Geography and Environmental Sustainability housed in the College of Atmospheric and Geographic Sciences and the Division of Regional and City Planning, an academic unit in the College of Architecture. These accelerated programs are designed for exceptional students who wish to begin earning the Master of Regional and City Planning in the second semester of their junior year of their Bachelor programs.

The School of Meteorology offers accelerated dual-degree programs in collaboration with the Price College of Business, offering exceptional students pursuing an undergraduate degree in meteorology to also

pursue a Master of Business Administration. Meteorology majors may also choose to pursue a Master of Science in Data Science and Analytics through the Gallogly College of Engineering.

MINORS

The College of Atmospheric and Geographic Sciences offers students the option of declaring a minor subject. Minors in the college are available in environmental sustainability, climate adaptation, geography, geographic information systems, hydrologic science, physical geography, weather and climate, and meteorology.

SECOND BACHELOR'S DEGREES

A student who has completed the requirements for a bachelor's degree may receive a second bachelor's degree upon the completion of the curriculum prescribed for the second degree, provided that the work completed includes at least 30 additional credit hours of upper-division geography, environmental sustainability, geographic information science, or meteorology, applied science and elective courses appropriate to the field of the second degree. These courses must be over and above the credit hours required for the first degree.

Admission to the College

Students are admitted to the College of Atmospheric and Geographic Sciences from University College once they declare a major in geography, environmental sustainability, geographic information science, or meteorology, and complete the following requirements:

- a minimum of 24 semester hours of college credit.
- a minimum combined retention grade point average of 2.25.

Students transferring into the University of Oklahoma from another institution must have a minimum of 24 semester hours of college credit and a minimum 2.50 retention grade point average to be directly admitted to the College of Atmospheric and Geographic Sciences.

Academic credit from any division of the University of Oklahoma – Norman campus, Health Sciences Center, OU-Tulsa, and Claremore, or Professional and Continuing Studies – is considered resident credit at the University of Oklahoma. Grades and hours earned at any of these divisions are included in the OU retention and cumulative grade point averages for purposes of admission or readmission to the University, and to the individual colleges within the University.

Student Advisement

The Atmospheric & Geographic Sciences Dean's Office and your academic advisor will:

- Work with you to establish realistic goals and objectives.
- Encourage you to be responsible for your own academic progress and to realize your full potential as a student at the University of Oklahoma.
- Understand and communicate the Atmospheric and Geographic Sciences curriculum, graduation requirements, and University of Oklahoma policies and procedures.
- Be accessible for meetings by appointment.
- Respond promptly to your e-mails and telephone calls.
- Make referrals to resources outside the college when needed.
- Help you monitor your progress toward graduation.
- Assist you with any problems of an academic nature.

As a student in the College of Atmospheric and Geographic Sciences, you are expected to:

- Learn the requirements for your degree program, which are posted on the college website and in the OU General Catalog.
- Become familiar with Degree Navigator, the University's online system that monitors progress toward the completion of your degree.
- Become knowledgeable about University policies and procedures, e.g., drop/add deadlines, enrollment, how to apply for financial aid.
- Set a projected graduation date and develop a semester-to-semester plan to complete your degree.
- Stay up to date with college events and opportunities by reading Monday Memo, the college's weekly online newsletter which is emailed to your OU email account every Monday during the spring and fall semesters.
- Meet with your academic advisor at least once every semester.
- Schedule a degree check in the A&GS Dean's Office (NWC, Room 3630) by the first semester of your junior year.
- Save a copy of every paper or major assignment, along with all official University documents (e.g., receipts) until you are cleared for graduation.
- Be responsible for your actions and decisions.

Students in the Department of Geography & Environmental Sustainability are advised by a professional academic counselor, who also works with majors to establish faculty mentoring.

Students in the School of Meteorology are advised by a faculty advisor, and also have access to a professional academic counselor in the School's main office.

In addition to the advisor in your academic unit, the Dean's Office (NWC, Room 3630) is available to assist students with degree checks, transfer equivalencies, and any problems of an academic nature. Students may call (405) 325-3095 to schedule an appointment.

Please note that the responsibility for meeting graduation requirements lies with the student and not with the advisor, the school/department, or the Dean.

College Grade Point Average Requirements

To remain in good standing in the College of Atmospheric and Geographic Sciences, students must maintain a 2.25 combined retention grade point average in all coursework attempted, a 2.25 grade point average in all coursework attempted in the major area, and a 2.25 retention grade point average in all coursework attempted at OU.

Academic Contract

Students whose major, combined retention or OU retention grade point averages fall below 2.25 are placed on academic contract. Students on academic contract are denied enrollment privileges through the College of Atmospheric and Geographic Sciences following any semester in which satisfactory scholastic progress toward a 2.25 has not been made.

Grade point deficiencies must be made up through reenrollment in major courses in which the student had a last-recorded grade of D or F. Should all D or F grades in curriculum courses be raised to a C or above, and the student still has grade point scholastic deficiencies, the student may then enroll in non-major courses. For the freshman and sophomore years any course may be used, but for the junior and senior years, the courses must

be numbered 2000 or above, unless the course so elected is approved as an elective in the last two years of the student's major curriculum.

After a student has been reinstated in the University following an unsatisfactory scholastic record, the student must apply to the Dean of the College of Atmospheric and Geographic Sciences for reinstatement in the college. The Dean will determine whether to readmit the student and may prescribe the conditions for reinstatement in the college in accordance with the policies established by the faculty and the Dean.

Additional Academic Regulations

- Any departure by a student from the curriculum requirements and scholastic rules must be approved by a petition and must not conflict with existing University regulations.
- Full-time students may enroll in 12-19 hours of coursework. Enrollment in more than 19 credit hours is permitted only with the approval of the student's advisor and the Dean of the College of Atmospheric and Geographic Sciences. Permission to carry more than 19 hours will depend primarily on the student's scholarship record and his/her ability to carry increased loads.
- Academically superior students are encouraged to contact the Honors College office to investigate their participation in the University's Honors College.
- Pass/no pass enrollments may not be used to satisfy College of Atmospheric and Geographic Sciences requirements.

Ten-Year Limitation Rule

Credit in a student's major that is more than 10 years old may not be applied toward a bachelor's degree unless it is validated by the major department or by each department if the student's major is interdisciplinary.

COLLEGE HONOR ROLL

The College of Atmospheric and Geographic Sciences Honor Roll is compiled at the close of each fall and spring semester. It includes students who have completed at least 12 grade point hours (excluding courses graded S/U or P/NP) and have earned an average of 3.50 or higher during the semester. Part-time students enrolled for both the fall and spring semesters of an academic year will be included on the spring semester honor roll provided that, as a result of combining the work completed during the fall and spring semesters, they earn at least 12 grade point hours (excluding courses grade S/U or P/NP) with no withdrawals and an average of 3.50 or better.

College Requirements for Graduation

Graduation Grade Point Average

A minimum 2.25 must be maintained in the major, on all OU work attempted, and on the student's combined retention grade point average to earn a bachelor's degree through the College of Atmospheric and Geographic Sciences.

Distinction and Special Distinction Degrees

The faculty may recommend that the degree "With Distinction" be conferred on graduates who have a retention grade point average at OU of 3.50 or higher and "With Special Distinction" on students who have an OU retention grade point average of 3.75 or higher.

Graduate Study

Refer to the Graduate tabs within the Department of Geography and Environmental Sustainability and the School of Meteorology pages of this catalog for information concerning graduate programs.

Scholarships and Financial Aid

The College of Atmospheric & Geographic Sciences and its academic units offer a number of scholarships. The college also offers research grant opportunities to A&GS upperclassmen. Students are encouraged to file the Free Application for Federal Student Aid, apply for scholarships, and other resources on the University's Financial Aid Services website.

Career Opportunities

Environmental Sustainability

Climate change, habitat destruction, pollution and the overuse of natural resources have contributed to a human environment that may no longer be sustainable. Only by using modern scientific methods and by integrating scientific research with an understanding of the global economy and governmental institutions can we expect to understand and manage a natural environment that will be sustainable, supporting and enhancing the quality of life for generations to come. Skilled professionals educated in the principles of environmental sustainability are essential to the effective management of the natural environment. These professionals will be qualified for numerous sustainability-related positions in government, the private sector, the non-profit sector, and education. Because many managers in these sectors have only a vague understanding of sustainability, persons with degrees in environmental sustainability are positioned very well to achieve important leadership positions, setting agendas for long-run sustainability at the local, regional, national, and global levels.

Geographic Information Science

Location-based data are central to 80 to 90 percent of all governmental information and to a wide range of business endeavors. Students who major in geographic information science study the science and technology of gathering, analyzing, interpreting, distributing and using geographic information. The U.S. Department of Labor declared geospatial technology as one of the twelve targeted industries that are high growth, high demand, and economically vital for the nation. Lending itself to both physical and social sciences, geospatial technology is applied across a broad range of sectors. Career opportunities span academia, government, industry and non-governmental organizations and include careers in agriculture, forestry, urban planning, land use, soil mapping, energy & utilities, redistricting, identifying and monitoring surface and ground water, flood damage assessment and relief measures, and consumer industries like in-car navigation systems.

Geography

More geographers than ever before are being hired in dozens of different fields. All levels of government hire geographers, who work for local and state economic development or planning offices, conduct research in recreation and park use, or map land use from satellite images. Many geographers at the federal level work for the Environmental Protection Agency, the Central Intelligence Agency, the U.S. Geological Survey, and the Department of State. Geographers also conduct marketing studies, plan transportation routes, understand international markets, advise businesses on the best location for new stores, work in real estate and urban planning, and determine environmental risks associated with site locations. From electric companies to wind-power farms, from

forestry to telecommunications, real-time mobile interactive geographic technologies and databases are emerging as the backbone of large-scale management systems for industries with distributed assets and mobile workforces.

Meteorology

Meteorologists are highly trained atmospheric professionals who not only report on the weather, but also forecast it, prepare warnings, study the ozone and pollution levels, brief pilots on hazardous conditions, monitor rainfall and flood levels, and conduct research into specific weather phenomena like severe storms and tornadoes. Although a large number of meteorologists are employed by the media and the National Weather Service, the demand for meteorologists from engineering and environmental firms, private weather forecasters and consultants, and over a dozen federal agencies indicates that the need for professional meteorologists will continue to increase. Employers include all branches of the military, airlines and cargo haulers, the National Aeronautics & Space Administration (NASA), utility and insurance companies, ocean shipping firms, commodity trading firms, federal and state research laboratories, and meteorological software companies.

Courses

AGSC 2014 The Earth System 4 Credit Hours

(Crosslisted with GEOL 2014) An integrated overview of earth sciences emphasizing earth materials, the oceans and atmosphere, the solar system, and earth's evolution. The interrelationship among the different earth systems will be emphasized. Topics will be explored through a learning-cycle approach. The lab component includes both in-class experiments and one field-based research project. Laboratory (Sp) [III-LAB].

AGSC 2970 Special Topics/Seminar 1-3 Credit Hours

1 to 3 hours. Prerequisite: May be repeated; Maximum credit nine hours. Special topics course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research, and field projects. (Irreg.)

AGSC 3011 Career Planning & Development for A&GS Majors 1 Credit Hour

Prerequisite: Junior standing or permission of instructor. Provides students with instruction in the career planning process directly related to their major and, ultimately, the world of work. Research shows that the majority of people lose their jobs because of poor work ethic, not because of aptitude. Course teaches appropriate skills desired by employers across AGS disciplines. Through lecture, discussion, individual projects and guest speakers, the interactive curriculum will cover topics such as behavioral interviewing techniques, self-directed job search strategies and career opportunities in multiple job sectors. As the course progresses, students will develop a career portfolio which includes a career assessment, class notes, handouts, cover letters and resumes (including electronic versions).

AGSC 3440 Mentored Research Experience 3 Credit Hours

0 to 3 hours. Prerequisites: ENGL 1113 or equivalent, and permission of instructor. May be repeated; maximum credit 12 hours. For the inquisitive student to apply the scholarly processes of the discipline to a research or creative project under the mentorship of a faculty member. Student and instructor should complete an Undergraduate Research & Creative Projects (URCP) Mentoring Agreement and file it with the URCP office. Not for honors credit. (F, Sp, Su)

AGSC 3960 Honors Reading 1-3 Credit Hours

1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers topics not usually presented in the regular courses.

AGSC 3970 Honors Seminar 1-3 Credit Hours

1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Subjects covered vary. Deals with concepts not usually treated in regular courses. (Irreg.)

AGSC 3980 Honors Research 1-3 Credit Hours

1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted Honors candidate to work at a special project in the student's field. (F, Sp, Su)

AGSC 3990 Independent Study 1-3 Credit Hours

1 to 3 hours. Prerequisite: permission of instructor and junior standing. May be repeated once with change of content. Independent study may be arranged to study a subject not available through regular course offerings. (F, Sp, Su)

AGSC 4960 Directed Readings 1-4 Credit Hours

1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students who need opportunity to study a specific problem in greater depth than formal course content permits. (Irreg.)

AGSC G4970 Seminar 1-3 Credit Hours

1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Subjects covered vary. Deals with interdisciplinary concepts in atmospheric and geographic sciences not usually covered in regular courses. (Irreg.)

AGSC 4990 Special Studies 1-4 Credit Hours

1 to 4 hours. Prerequisite: Permission of instructor, upper-division standing. Contracted special problems study for topics not currently offered in regularly scheduled courses; may include library and/or laboratory research and field projects.

AGSC 5960 Directed Readings 1-3 Credit Hours

1 to 3 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit twelve hours. Directed readings and/or literature reviews under the direction of a faculty member. (F, Sp, Su)

AGSC 5970 Special Topics/Seminar 1-3 Credit Hours

1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Subjects covered vary. Deals with interdisciplinary concepts in atmospheric and geographic sciences not usually treated in regular courses. (Irreg.)

AGSC 5990 Independent Study 1-3 Credit Hours

1 to 3 hours. Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)