<p align="center">THE UNIVERSITY OF NORTH CAROLINA ASHEVILLE</p>

<p align="center">FACULTY SENATE</p>

Senate Document Number   SD5924S

Date of Senate Approval   05/02/2024

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Statement of Faculty Senate Action:

APC Document 48 (ATMS):   **Change offering pattern for ATMS 230;**
                                          Establish new course, ATMS 235,
                                              Python for Atmospheric Scientists

Effective Date: Fall 2024

1.   **Delete:** On page 94, the offering pattern for **ATMS 230**:

> **230**   **Fortran for Meteorologists (3)**
> Basic Fortran 90 computer programming tailored for meteorological applications. Topics include algorithm development, program writing and execution, and data manipulation. Prerequisite: MATH 167 or equivalent. Spring.

    Add: On page 94, in place of deleted entry:

> **230**   **Fortran for Meteorologists (3)**
> Basic Fortran 90 computer programming tailored for meteorological applications. Topics include algorithm development, program writing and execution, and data manipulation. Prerequisite: MATH 167 or equivalent. See department chair.

2.   **Add:**   On page 94, new course, **ATMS 235, Python for Atmospheric Scientists**:

> **235**   **Python for Atmospheric Scientists (3)**
> An introduction to coding and data analysis in Python with an emphasis on meteorological and environmental applications. Topics may include data types, programming logic, loops, and conditional statements. No prior coding experience is expected or required. Fall.

Impact: *Python for Atmospheric Scientists* will satisfy the computer programming requirement for atmospheric sciences majors. Since this course is a permanent replacement for what has been offered as a special topics course for the last two years, the addition of ATMS 235 will have no impact on current students, funding, or staffing needs. ATMS 235 will replace ATMS 230, so we are changing the offering pattern of ATMS 230 in anticipation of the deletion.

The following items address the requirements for new or revised course proposals:
1. This course fulfills the embedded computer programming requirement for all atmospheric sciences concentrations, which is currently fulfilled by either CSCI 183 or the soon-to-be retired ATMS 230. This is a modern replacement for ATMS 230 and is intended for all atmospheric sciences majors and other interested students.
2. Information about the course:
    a. The student learning outcomes include the following:
        ● Learn to execute Python code interactively and from scripts
        ● Gain fluency with built-in Python data types and common scientific packages
        ● Analyze real-world data sets using Python
    b. In its last offering as a special topics course in 2023, this class had 11 students.
    c. The class meets for 2.5 hours per week.
    d. This is a lecture course.
    e. There are no specialized space or material needs beyond classroom computers for students. The Department of Atmospheric Sciences has computers available in RRO 238 and RRO 209 and most students bring their own laptops to class.
    f. This course is 3 contact hours and 3 faculty workload hours.
3. Dr. Evan Couzo will teach this course. Dr. Godfrey has similar expertise and could also teach the course if necessary.
4. The course will be offered every fall semester.
5. This proposal assigns a permanent course number to an existing special topics course that already provides an alternative to the computer programming requirement previously satisfied by ATMS 230. The proposed course will have no impact on the ability of the department to deliver the existing curriculum.
6. This is a unique course that is not part of the UNC Common Numbering System (CNS), nor is there a need to add it to the UNC CNS.

Rationale: It has become clear that the atmospheric sciences curriculum would benefit from a modernization of the technical skills offered to students in the major. Python has become the dominant programming language for data analysis and visualization within the atmospheric sciences, while Fortran remains important mainly for numerical weather prediction models. Tools specific to the atmospheric sciences, such as the MetPy collection of Python tools for reading, visualizing, and performing calculations on weather data, are not covered in other courses offered outside the Department of Atmospheric Sciences. The department recently introduced Python-based tutorials via Jupyter notebooks in the ATMS 203/204 sequence for second-year students, but a formal Python course remains only a special topics elective. ATMS 373, *ST: Introduction to Python Programming*, has been offered by Dr. Evan Couzo every Fall since 2022 in lieu of ATMS 230, *Fortran for Meteorologists*, which has not been offered since Spring 2022, and with no immediate plans to offer the course in the future, may ultimately be removed from the catalog. Dr. Couzo will continue to offer ATMS 235 as a permanent part of the curriculum every fall. Dr. Christopher Godfrey has similar programming experience and could teach the course if necessary. Atmospheric sciences majors may also opt to complete CSCI 183 to fulfill their computer programming requirement.