UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration (NOAA)
NATIONAL WEATHER SERVICE
Western Region
Silver Spring, Maryland 20910-3282

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FROM: Layne Washington
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SUBJECT: UCLA Degree Alignment with 1340 Education Requirements

This memorandum documents National Weather Service (NWS) support of the undergraduate Bachelor of Science (B.S.) Degree in Atmospheric and Oceanic Science (AOS) at the University of California Los Angeles (UCLA). I have conducted a review of the current course requirements for the AOS degree with a Meteorology track to validate alignment with the individual occupational requirements for the Federal General Schedule 1340 (Meteorology) Series basic educational degree requirements. Specifically, the program should mirror the Office of Personnel Management's (OPM's) course requirements outlined below and linked here:

Degree: meteorology, atmospheric science, or other natural science major that included:

1. At least 36 quarter (24 semester) hours of credit in meteorology/atmospheric science including a minimum of:
    a. 9 Quarter (Six semester) hours of atmospheric dynamics and thermodynamics;*
    b. 9 Quarter (Six semester) hours of analysis and prediction of weather systems (synoptic/mesoscale);
    c. 4.5 Quarter (Three semester) hours of physical meteorology; and
    d. 3 Quarter (Two semester) hours of remote sensing of the atmosphere and/or instrumentation.
2. 9 Quarter (Six semester) hours of physics, with at least one course that includes laboratory sessions.*
3. 4.5 Quarter (Three semester) hours of ordinary differential equations.*
4. At least 13.5 Quarter (Nine semester) hours of course work appropriate for a physical science major in any combination of three or more of the following: physical hydrology, statistics, chemistry, physical oceanography, physical climatology, radiative transfer, aeronomy, advanced thermodynamics, advanced electricity and magnetism, light and optics, and computer science.

**There is a prerequisite or corequisite of calculus for course work in atmospheric dynamics and thermodynamics, physics, and differential equations. Calculus courses must be appropriate for a physical science major.*

A custom crosswalk of these requirements is provided below, with OPM requirements on the left and UCLA applicable courses on the right. Note that course credit totals may exceed OPM requirements, but the list is designed to show relevant courses that must, in some combination, at least equal OPM minimum quarter hour requirements.

General Schedule (GS) **1340 Series (Meteorology)**	**UCLA** **B.S. Atmospheric and Oceanic Sciences:** **Meteorology Track** **(Course Code, Title, (Quarter Hours))**
At least 36 quarter (24 semester) hours of credit in meteorology/atmospheric science including a minimum of:	
• **9 quarter hours** (Six semester hours) of atmospheric dynamics and thermodynamics;	AOS 101. Fundamentals of Atmospheric Dynamics and Thermodynamics (5.0) *and either:* AOS C144/222. Atmospheric Boundary Layer (4.0)* *or* AOS 188. Special Topics in Atmospheric and Oceanic Sciences (4.0), a.k.a “Intermediate Atmospheric Dynamics”* **Recommend including syllabus for the selected course as the title alone is not indicative of atmospheric dynamics/thermodynamics*
• **9 quarter hours** (Six semester hours) of analysis and prediction of weather systems (synoptic/mesoscale);	AOS C110. Advanced Dynamic and Synoptic Meteorology (4.0) AOS 181. Analysis and Prediction of Weather Systems (5.0)
• **4.5 quarter hours** (Three semester hours) of physical meteorology;	AOS 104. Fundamentals of Air and Water Pollution (4.0) AOS 145. Atmospheric Physics: Radiation, Clouds, and Aerosols (4.0)
• **3 quarter hours** (Two semester hours) of remote sensing of the atmosphere and/or instrumentation.	AOS C160. Remote Sensing of Atmosphere and Oceans (3.0)
• **Up to 7 additional credit hours** to meet 36 credit hour total requirement	*Select two of the following:* AOS 90. Introduction to Undergraduate Research (4.0) AOS 112. Climate Change Assessment (4.0) AOS 210. Planetary Atmospheres and Climates (4.0) AOS 51. Fundamentals of Climate Science (4.0)*

	AOS 102. Climate Change and Climate Modeling (4.0)* GEOG 116. (4.0) Climatology* EPSS 153. Oceans and Atmospheres (4.0)* **Note: Cannot be used if counted in another section*
• **9 quarter hours** (Six semester hours) of physics, with at least <u>one course that includes laboratory sessions</u>.	*Select two of the following:* PHYS 1A. Physics for Scientists and Engineers: Mechanics (5.0) PHYS 1B. Physics for Scientists and Engineers: Oscillations, Waves, Electric and Magnetic Fields (5.0) PHYS 1C. Physics for Scientists and Engineers: Electrodynamics, Optics, and Special Relativity (5.0) *May also consider enrolling in:* PHYS 4AL or 4 BL. Physics Laboratory for Scientists and Engineers (2.0)
• **4.5 quarter hours** (Three semester hours) of ordinary differential equations * There is a prerequisite or corequisite of calculus for course work in atmospheric dynamics and thermodynamics, physics, and differential equations. Calculus courses must be appropriate for a physical science major.	*Select two of the following:* MATH 33B. Differential Equations (4.0) AOS 180. Numerical Methods in Atmospheric Sciences (4.0)* MATH 135. Ordinary Differential Equations (4.0) MATH 136. Partial Differential Equations (4.0) **Recommend including syllabus as the title alone is not indicative of differential equations*
• At least **13.5 quarter hours** (nine semester hours) of coursework appropriate for a physical science major in any combination of <u>**three** or more</u> [different categories] of the following: physical hydrology, statistics, chemistry, physical oceanography, physical climatology, radiative transfer, aeronomy, advanced thermodynamics, advanced electricity and magnetism, light and optics, and computer science.	*Select four of the following from three (or more) categories:* **Advanced Electricity and Magnetism Courses:** PHYS 110A or 110B. Electricity and Magnetism (4.0) **Chemistry Courses:** CHEM 20A. Chemical Structure (4.0) CHEM 20B. Chemical Energetics and Change (4.0) CHEM 103. Environmental Chemistry (4.0) **Computer Science Courses:** AOS M171. Advanced Computing in Geosciences (4.0) **Physical Climatology Courses:** AOS 51. Fundamentals of Climate Science (4.0)

	AOS 102. Climate Change and Climate Modeling (4.0) GEOG 116. (4.0) Climatology **Physical Hydrology Courses:** C&EE 150. Introduction to Hydrology (4.0) **Physical Oceanography Courses:** AOS 103. Physical Oceanography (4.0) EPSS 153. Oceans and Atmospheres (4.0) **Statistics Courses:** C&EE 110. Introduction to Probability and Statistics for Engineers (4.0) STATS 12 or 13. Introduction to Statistical Methods (5.0) STATS 101A. Introduction to Data Analysis and Regression (4.0) **Note: Above list of courses can be used if not counted in another section.*

Following the review of UCLA's AOS Meteorology Track course plan, I find that the content with the recommendations outlined above and named below, meets the positive education requirements of a Federal General Schedule 1340 (Meteorology) position.

To further enhance the alignment of the undergraduate program with the Federal General Schedule Meteorology Series (1340) and improve the outcome of the qualification reviews, the following is recommended:

- Consider creating an internal document with school letterhead that includes the above table. This document could then be used as part of the student's application to Federal positions.
- Consider "Requiring" versus "Recommending" courses that will be applicable to Federal and/or NWS positions.
- Include the above table on UCLA website that makes this OPM-aligned course list available to degree students; link course descriptions.

If you have any questions, I can be reached at layne.washington@noaa.gov.

Thank you,

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