



# **Davis Division Academic Senate**

## **Request for Consultation Responses**

### **Systemwide Review: Area "d" Requirement**

**June 4, 2010**

Based on a request from the Davis Division, BOARS has examined a request to include the area "d" requirement. The enclosed item represents BOARS consideration and is presented for systemwide review

# **Academic Freedom & Responsibility**

**April 28, 2010 2:47 PM**

There is no apparent academic freedom issue in this request.

# Administrative Partners (DANN TRASK)

**June 3, 2010 5:39 PM**

The L&S Executive Committee members provided comments on this request via e-mail as we were unable to meet to discuss this item. The views of the committee are mixed.

- Supporters agree that the proposal to expand the Area “d” laboratory science admissions requirement to include courses in Earth, Environmental and Space Sciences is an important step toward improving student preparation. Instructors of courses in paleo-climatology and climate change note how very little the students understand the potential hazards and climate/water resource issues that directly affect them. They add that legal and ethical decisions are being and will continue to be made about issues of climate change, water availability, energy resources, and earth hazards over the coming decades and that these require a well-informed citizenry and decision-makers.
- Other members of the Executive committee, particularly those teaching in science and math, do not recommend changing the area “d” requirement. They argue that Earth and Space Science courses teach little, if any, physics or chemistry principles, let alone real biology. Many of the classes are for 9th grade students and do not require prerequisites in chemistry or physics. These courses do not prepare high school students for university-level science; they mostly act to increase students’ involvement in current science issues without providing a real understanding of the science behind the issues. This is great for involvement, but not for college-level preparation.

Bill McCarthy, Chair  
Executive Committee  
College of Letters and Science

# Admissions & Enrollment

**May 10, 2010 2:36 PM**

At its May 4, 2010 meeting the Davis Division Academic Senate Committee on Admissions and Enrollment discussed the proposal to expand the Laboratory Science eligibility requirement (area “d”) to include earth, environmental, and space sciences (EESS). Prior to the meeting, committee members reviewed the packet of materials that accompanied the proposal. Also, during the meeting, the Committee hosted three members of the faculty from the UCD Department of Geology (Professors Howard Day, Eldridge Moores, and Dawn Sumner), who requested an opportunity to address the Committee in connection with the proposal. The three representatives addressed the Committee for about 20 minutes, during which they spoke passionately and convincingly of the societal need for greater scientific literacy in general, and a deeper appreciation for EESS knowledge in particular.

The Committee noted that the stated objective of UC's a-g curriculum requirement is to ensure an adequate minimum level of preparation for study in any major at the University. The Committee believes that biology, chemistry, and physics are basic to the study of all scientific subjects at the university level, including EESS subjects. This point of view is well-articulated and well-supported by the packet materials, including the survey of UC science and engineering department chairs.

The Committee also perceives value in delivering college-preparatory basic science curricula in ways that students find interesting and engaging, e.g. by framing the material in the context of EESS (and perhaps other) subject areas. Our visitors spoke persuasively on this point. Committee members expressed support for efforts at curricular innovation at the high-school level that aspire to combine both basic-science rigor with “real world” implications.

However, the Committee is skeptical that this end would be substantially furthered by adding “earth, environmental, and space sciences” after “biology, chemistry, and physics” in the area “d” policy language. Specifically, the Committee noted that the current policy language already appears to embrace certification of courses in other science subjects (including EESS subjects), provided that they engage basic science content at a sufficiently rigorous level. The rationale for the proposed language change would therefore appear to be confined to simply encouraging high schools to innovate in their science curricula. This message could, and should, be transmitted by UC in ways that do not diminish the clarity of a carefully-constructed policy statement.

The Committee is concerned that the encouragement the proposal apparently seeks would come at a high price: under the proposed language change, high schools might reasonably conclude that the ubiquitous ninth-grade, non-rigorous Earth Science courses typically taught in high schools would now be approvable for credit in the “d” area. The Committee believes that these courses would make poor substitutes for college-prep courses in biology, chemistry, and physics, and does not support any change that might lead to “d” credit for these courses. Further, even if the proposed language did succeed in spawning a modest number of new, rigorous EESS offerings at selected high schools, these would inevitably come at the expense of redirection of resources and enrollment away from more traditional college-prep science courses. Further, the Committee is skeptical that large numbers of high schools would be in a position to redirect resources from their current ninth-grade Earth Science courses – which do, after all, fulfill an important function by offering pathways for non-college-bound students to satisfy science graduation requirements – in order to support new, rigorous, college-preparatory EESS offerings.

In summary, the Committee is not persuaded that the proposed language change furthers the goals of the “d” area policy. The Committee generally concurs with the 2005 and 2008 BOARS reviews, and does not support making the change.

# **Graduate Council**

**May 18, 2010 10:21 AM**

*No response at this time.*

# Undergraduate Council

**June 17, 2010 1:00 PM**

The Undergraduate Council reviewed and discussed the proposal to expand the Area “d” laboratory science admissions requirement to include courses in Earth, Environmental and Space Sciences. The current UC “a-g” subject requirement includes 2-3 years of a laboratory course in biology, chemistry or physics, known as the “d” requirement. The current proposal is to include a fourth category, Earth, environmental, and space sciences, as one of the fields of study that would count towards satisfying the d requirement.

Reactions to the proposal at UGC were mixed, with perhaps a slight majority feeling that the proposal to support earth science as a “d” area subject was reasonable because of the close intersection between earth science and biology, physics, and chemistry. Also, because earth science studies includes such timely and interesting topics as climate change, earthquakes, and dinosaurs, the inclusion of earth science studies in high school may draw students into the sciences who might otherwise not be attracted. However many on UGC thought that earth science was not a lab science course and so is better left in the “g” category where it is now.

The primary concern is that most earth science courses are not as rigorous as those in the traditional d areas; this appears to be the primary concern of BOARS. This is a particular concern if existing high school Earth Science courses currently listed in the “g” category (elective) were simply shifted to the “d” category (laboratory science). UGC thinks it imperative that the inclusion of earth science as a d requirement be accompanied with an improvement in the quality of high school Earth Science courses. The subsequent improvement in earth science courses at the high school level may be an asset to the proposal.

It is also a concern that students would elect earth sciences simply as a way to avoid Chemistry and Physics while minimally satisfy the a-g requirements. There was concern that the proposed change may have no effect on the quality of Earth Science courses in high schools and UC ends up enrolling more humanities and social science majors who take an Earth Science course in the place of a Chemistry or Physics course with the same status. However others on the UGC felt that if the proposal were approved there would not be a significant change in either the demographics or the overall academic preparedness of UC enrollees.

In conclusion, UGC is concerned about possibly lowering academic standards and suggests a first step would be to see what courses high schools might develop to be a “d” area earth science course. One novel suggestion was to craft the “d” requirement statement in such a way as to not specifically exclude appropriate Earth Science and integrative science courses. Perhaps the wording in the proposal could be simplified to “two years of laboratory science, one in a physical science and one in a life or biological science.”