

STAFF SUMMARY SHEET

| | TO | ACTION | SIGNATURE (Surname), GRADE AND DATE | | TO | ACTION | SIGNATURE (Surname), GRADE AND DATE |
|---|------|---------|-------------------------------------|----|----|--------|-------------------------------------|
| 1 | DFB | sign | <i>Putnam, O-6, 21 Apr 14</i> | 6 | | | |
| 2 | DFER | approve | <i>Solte, AD 22, 21 May 14</i> | 7 | | | |
| 3 | DFB | action | | 8 | | | |
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| SURNAME OF ACTION OFFICER AND GRADE | SYMBOL | PHONE | TYPIST'S INITIALS | SUSPENSE DATE |
| Lt Col Maresh | DFB | 333-3722 | rwm | Not Applicable |

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| SUBJECT | DATE |
| Clearance for Material for Public Release | 20140521 |
| USAFA-DF-PA- <i>332</i> | |

SUMMARY

1. **PURPOSE.** To provide security and policy review on the document at Tab 1 prior to release to the public.

2. **BACKGROUND.**

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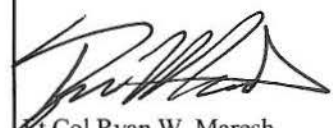
Title: Curricular Assessment and Revision at a Military Service Academy

Release Information: This manuscript will be submitted for consideration for publication in the follow-up report to the American Association for the Advancement of Science publication Vision and Change in Undergraduate Biology Education: A Call To Action.

3. **DISCUSSION.** N/A

4. **VIEWS OF OTHERS.** N/A

5. **RECOMMENDATION.** Sign coord block above indicating document is suitable for public release. Suitability is based solely on the document being unclassified, not jeopardizing DoD interests, and accurately portraying official policy.


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Tab
 1. Copy of manuscript

Curricular Assessment and Revision at a Military Service Academy

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Goal/s: The Department of Biology at the US Air Force Academy (USAFA) strives to provide a modern, rigorous program in the biological sciences while also meeting the institutional mission of preparing future officers.

Project Overview: The publication of the *Vision and Change in Undergraduate Biology Education (V&C)* report provided the opportunity to assess our success in meeting departmental and institutional goals and to consider improvements to our curriculum.

Self-study and Methods for Achieving Consensus: We began by assessing our program and then comparing the V&C core concepts and competencies with our own goals for knowledge, skills, attitudes and values. The assessment of our program consisted of a progressive series of self-evaluations, strategy sessions, and implementation plans. An *ad hoc* Curriculum Task Force consisting of representative faculty was organized to compare the existing biology curriculum with the recommendations of the V&C report. The task force then consolidated the collected opinions of faculty from small-group discussions and formulated a series of options for curricular change.

The Curriculum Task Force report was initially met with significant resistance. Although task force members solicited input during their deliberations, many faculty members were reluctant to share their concerns when the entire department was assembled. To move forward, we arranged a series of full department discussions facilitated by members of our standing curriculum integration and assessment team. All faculty members attended these meetings, and after sharing concerns and identifying the gains we could achieve by synergizing our curriculum with the V&C report, we could begin the next phase of the process.

A second task force was formed to create new learning goals that incorporated the V&C recommendations. Creating new learning goals involved direct acknowledgment of the unique USAFA goals for attitude and values, departmental constraints (e.g., fiscal, manpower), and the need for faculty agreement. Using large and small discussion groups, on-line reviews of proposed changes, and sharing of iterative results, the task force created new goals that were approved by the entire department.

Results of Self-study: Although there was some overlap between the original department goals and expectations of cadets and the recommendations of the V&C report, there were also significant differences in logical organization and emphasis. The department took a subject-based approach to core concepts, and the expected conceptual knowledge was a list composed primarily of various subdisciplines. In contrast, the V&C report advocated an approach that facilitates a reinforcement of core concepts across the curriculum. The report also recommended a set of core competencies that

went beyond those expected of cadets, including a greater emphasis on interdisciplinary knowledge and modeling/simulation. The quantitative literacy core competency is also an important Academy-wide outcome. Applying the core concepts of the V&C report to the content of individual biology courses produced more cross-course coverage than the subject-based conceptual knowledge of the original learning goals. It also allowed us to synchronize our departmental goals with broader institutional outcomes. The V&C core competencies were covered by existing courses, but our revamped goals now specifically address quantitative reasoning and simulation/modeling both within our biology courses and the broader USAFA core curriculum.

Impacts to Date: The immediate impact of the self-evaluation process was a revision of the departmental learning goals. The new goals follow closely the V&C recommendations, and they include "Core Concepts for Biological Literacy," "Core Competencies and Disciplinary Practices," and "Core Attitudes and Values." Moreover, these goals remain consistent with the Academy's outcomes. The department is now in the process of aligning its curriculum with the new goals. Initially, course directors are being asked to focus on these goals, rather than limiting discussion to their specific subdiscipline. Soon, we will establish a new mix and sequence of biology courses for cadets.

Unexpected Challenges: A challenge that may be unique to the military service academies is the relatively high turnover of faculty. It is typical for officers to be limited to a three-year teaching rotation. Even senior officers are subject to transfer or occasional overseas deployment. It follows that the continuity of any plans for curricular revision is largely dependent on explicit documentation and the small number of more permanent civilian faculty members. Moreover, the curriculum must allow for the ever-changing disciplinary strengths that accompany each annual turnover of instructors. A challenge that is probably shared with many undergraduate institutions is the delicate balance between the needs of students majoring in biology and the rigorous demands on all students, regardless of major. Indeed, the USAFA core academic curriculum requires 32 three-semester-hour core courses and five semester hours of physical education courses for 101 total semester hours of core curriculum.

Dissemination: Revised departmental learning goals and expectations will be incorporated into our "Biology Majors' Handbook," and each course will explicitly link course learning goals and outcomes to the department goals and expectations. In acknowledgement of a dynamic educational environment and our primary institutional goal to produce officers and leaders of character for the U.S. Air Force, the evaluation of our success in achieving these goals will be revisited at regular intervals via our normal curriculum assessment and review process.

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