

Freshman Curriculum & Instruction Update

**Grade Weighting &
Science Curriculum Sequencing**

November 2020



Tracking is Inherently Problematic

- Tracks ensure unequal education, often more closely aligned to race and socioeconomic status than abilities or performance.
- Historically, tracking has been deliberately implemented to separate students of color from their white peers.
- Significant variance occurs between non-honors and honors sections, specifically related to cognitive skills required, and the level and quality of student participation and interaction.

Burris, C. C. (2014). *On the Same Track: How Schools Can Join the Twenty-First-Century Struggle against Resegregation*. Boston, MA: Beacon Press.

Oakes, J. (1980). "Tracking and Inequality Within Schools: Findings from a Study of Schooling," paper presented at the Annual Meeting of the American Education Research Association, Boston, April 7-11, 1980.

Oakes, J. (2005). *Keeping Track: How Schools Structure Inequality* (2nd ed.). New Haven, CT: Yale University Press.

Tinkering Doesn't Work

- Educators have consistently struggled to divorce the practice of tracking from the inequities it produces.
 - Students of color and those with low socioeconomic backgrounds remain more likely to be placed in lower-level classes;
 - Wealthy, white students are more likely to be placed in upper-level classes, even when controlling for prior achievement.

Archbald, D., & Farley-ripple, E. N. (2012). Predictors of Placement in Lower Level Versus Higher Level High School Mathematics. *The High School Journal*, 33–52.

Archbald, D., Glutting, J., & Qian, X. (2009). Getting into Honors or Not: An Analysis of the Relative Influence of Grades, Test Scores, and Race on Track Placement in a Comprehensive High School. *American Secondary Education*, 37(2), 65–81. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=39231004&site=ehost-live>

Detracking is a Research Based Best Practice

- Detracking has been demonstrated to work. A meta-analysis of detracking studies concluded that detracking should be encouraged. Additionally, they reported that
 - students in schools that have detracked saw, on average, no negative effects for average or high ability students.
 - students who had previously been denied access to honors courses consistently saw positive gains.

Rui, N. (2009). Four decades of research on the effects of detracking reform: Where do we stand? - A systematic review of the evidence. *Journal of Evidence-Based Medicine*, 2(3), 164–183. <https://doi.org/10.1111/j.1756-5391.2009.01032.x>

Veldman, D. & Sanford, J. (1984). “The Influence of Class Ability Level on Student Achievement and Classroom Behavior,” *American Educational Research Journal* 21, no. 3: 629-44.

Detracking is not a Panacea

- In order to find success in “leveled-up” spaces, attention needs to be given to a variety of factors...
 - expectations for students who had been denied access to honors
 - existing social barriers
 - drifting instruction toward the middle
 - “re-tracking” in otherwise heterogeneous spaces

Burris, C. & Garrity, D. (2008). *Detracking for Excellence and Equity*. Alexandria, VA: Association for Supervision and Curriculum Development.

Harris, D. M. (2012). Varying teacher expectations and standards: Curriculum differentiation in the age of standards-based reform. *Education and Urban Society*, 44(2), 128–150. <https://doi.org/10.1177/0013124511431568>

Rubin, B. & Noguera, P. (2004). Tracking Detracking: Sorting through the Dilemmas and Possibilities of Detracking in Practice. *Equity and Excellence in Education*, 37(1), 92-101. <https://doi.org/10.1080/10665680490422142>

Discussing Earned Honors

- Internal concerns that...
 - current approach in Models sequence is not scalable
 - earned honors allows platform for bias and mixed-expectations to be structured into the system
 - we would be maintaining a de-facto “tracked” experience
 - earned honors would shift our focus away from rigorous learning for all
- Data from other schools is mixed

Consultation & Professional Partnership

Carol Ann Tomlinson, UVA

- Professor and Chair of Educational Leadership, Foundations, and Policy
- Leads Differentiation Instruction Cadre for ASCD
- Co-Director of UVA's Institutes on Academic Diversity (IAD)

“Teach Up” for Excellence

- Human difference is desirable
- Students come from different places & learn at different rates
- We must cultivate a growth mindset, and...
- Adopt a culturally responsive practices
- Rigorous learning is the foundation
- Flexible routines are essential
- Be analytical: “teachers are students of their students”

Grade Weighting--Recommendation

- ★ We will no longer be pursuing an “earned honors” approach.
- ★ Beginning in the fall of 2021, the common freshman English, history, science, and world language courses (80-85% of our students) will be designed, taught, and assessed at the honors level.

Science Scope & Sequence Revision Recommendation



Our Goals

- ★ Authentic Alignment to Next Generation Science Standards (NGSS)
- ★ Achieve more consistency in student knowledge & skill outcomes arising from 9th Grade curriculum
- ★ Provide Intentional Opportunities for Access & Acceleration into AP, Dual Credit, & Career Preparation Programming for ALL students
- ★ Maintain academic supports for students who enter Reading, Writing, or performing Math significantly below grade level

The Process

The Team

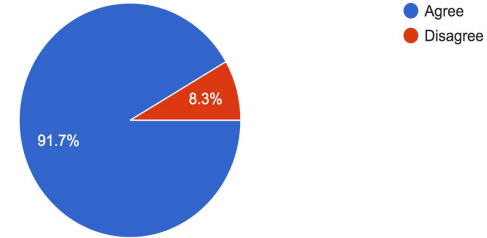
- ★ *9 Teachers + 1 Librarian with representation from Biology, Chemistry, Physics, & Earth/Space.*

The Meetings

- ★ *11 hour long sessions all outside of the school day*
- ★ *Countless hours of independent research & comparison to other models from across the country*
- ★ *Consultation with Representatives from College Board*
- ★ *Spanning the entire 19-20 School Year culminating with presentation to and feedback from entire Science faculty*

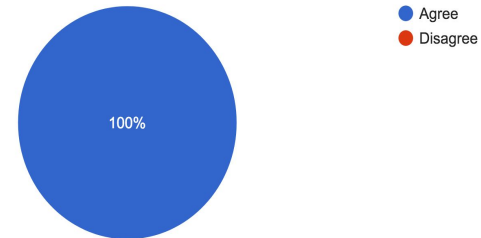
The Physics-Chemistry first course sequence proposed last Friday is a change in the right direction for our students?

24 responses



I believe that we have the collective capacity as a division to successfully implement the proposed Physics-Chemistry first course sequence starting in the 2022-2023 school year.

24 responses

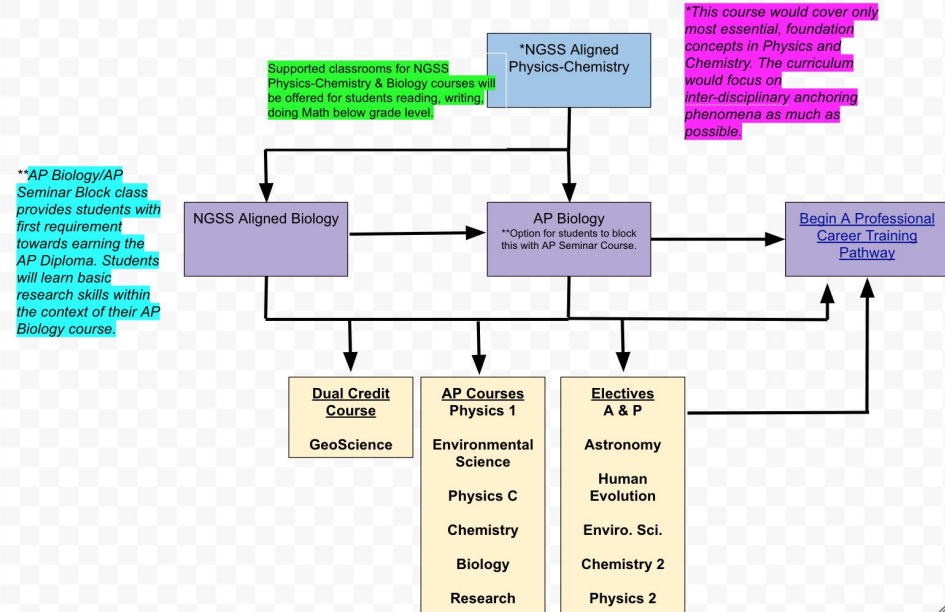


The Recommendation

Key Features

- ★ Move from four 9th Grade Course Options to two
 - Physics-Chemistry
 - Physics-Chemistry Supported
- ★ 9th Grade physical science foundation & 10th Grade Biology for ALL
- ★ Earlier Access To AP Course, Additional AP Course Options, & Opportunity to obtain AP Diploma
- ★ Prioritize Student Choice of Courses that Align with Career Aspirations in 11th and 12th Grade

OPRF Recommended New Science Sequence



Closer look at 9th Grade Key Features

- ★ All 9th Grade Students Take Physics-Chemistry Course
 - Aligned with Next Generation Science Standards Approach to Students Getting 1 Year of Physical Science & 1 Year of Life Science
 - Students Obtain Basic Chemistry Foundation Before Studying Molecular Concepts in Biology
 - Systematic Attempt to Generate More Consistency in 9th Grade Student Knowledge & Skill Outcomes

Closer look at 10th Grade Key Features

- ★ All 10th Grade Students Take Biology
 - Assures that All students get Biology, Chemistry, and Physics
 - Earlier access to AP Biology for advanced & motivated Science students
 - Option with AP Seminar course to further develop research skills & begin pathway towards attainment of AP Diploma

Closer look at 11th Grade Key Features

- ★ Choice & College Level Options for All
 - Dual Credit GeoScience for Students Not Considering STEM as a their College/Career Focus
 - Multiple AP course options for Students Thinking About STEM as a Potential College/Career Focus
 - Career Preparation Courses in Automotive, Construction, Engineering, & Healthcare

More About 11th & 12th Grade Key Features

- ★ Earlier & Additional Options for Advanced & Motivated Science Students
 - Additional AP Courses
 - Physics 1 to replace Honors Physics
 - Revision of IRDI to AP Research
 - Earlier Access Means Students Can Take More AP Science classes without doubling up in any given year
 - Access to [AP Capstone Diploma Program](#)

Professional Development, & Curriculum Writing

★ *Professional Development*

- *Constructivist & Inquiry Based Science Instruction Training*

★ *Curriculum Writing*

- *If approved, we have remainder of 20-21 and 21-22 to write the curriculum for the Physics-Chemistry course*
- *Additional revisions to Biology Curriculum for NGSS Alignment*
 - *Currently 1 of 2 schools in Biological Sciences Curriculum Study (BSCS) field test for NGSS Aligned Course/Instruction*

For Approval

The revised science curriculum sequence that starts with Phys/Chem as the freshman year curriculum and Biology as the sophomore year curriculum.