Date: November 1, 2017

Committee members present: Alana Kimball, Chair; Maureen Redmond-Scura; Jennifer Patterson; Pam Wicks

Other Board members present: Tom Croteau, Jim Richards, Clint Cogswell

Others present: Terri Forsten, Superintendent; Donna Palley, Assistant Superintendent; Tom Sica, Concord High School (CHS) Principal; Tom Crumrine, CHS Assistant Principal; Lise Bofinger, CHS Science Facilitator; Rebecca Malloy, Phil Clarner, Lyn Vinskus, Tyler Radel, CHS Teachers

Alana Kimball opened the meeting at 5:34 p.m. Assistant Superintendent Donna Palley provided an overview of the agenda: Science courses at Concord High School; 2018-2019 draft school calendar, RMS report card; and PACE opportunities.

Concord High School teachers and administrators introduced themselves upon request by Clint Cogswell. In attendance were Tom Crumrine, Tom Sica, Rebecca Malloy, Lise Bofinger, Phil Clarner, Lyn Vinskus and Tyler Radel.

Mr. Crumrine led the conversation on the Science course proposal, introducing the course review and revisions which the Science department has vetted. Lise Bofinger spoke about the inclusion of Earth-Space Science and Engineering, as they had not been included prior to this review.

Board members were provided a handout on the high school Science proposal (see notes below). The most significant change was that freshman and sophomore students would participate in an integrated Science 9 and Science 10 that would incorporate biology, chemistry and physics.

Jennifer Patterson asked how these courses would be structured, as there appears to be a change from three separate year-long courses to two year-long courses, and how students who move in midway through their high school years would be supported. Ms. Vinskus noted that there is some content that would be changed to more closely align with the “Next Generation Science Standards.” The District’s goal is for students to work in Science as a whole content area rather than teaching “siloed” topics. Ms. Bofinger noted that scheduling courses for new students would continue to be considered on an individual basis, as it has always been with incoming students. Ms. Malloy noted that these integrated courses would better support student learning; as Science would be an integrated topic, she would no longer have to tell her biology students that they would “learn that in chemistry.” In this new integrated course process, teachers would purposefully develop units of study that integrate Science topics naturally.
Mr. Croteau asked the teachers how they would work to decide what to release in their newly-designed courses. Teachers responded to this question by noting that not all students need to become experts in multiple topics in biology, chemistry or physics. These courses would provide students with the elements they need to have as high school graduates. Teachers are confident that the electives would continue to provide students who are “scientists,” and have a strong interest in the sciences, an opportunity to develop their scientific skills.

Mr. Richards stated his concern about whether this new program would move to a general science program, and lower the District’s standards for students overall. Mr. Crumrine noted that these integrated courses would be the opposite of “dumbing it down;” they would be integrated, project-based studies. Science 9 and 10 would comprise rigorous studies; students would have many opportunities for individualization and personalization and would be able to move forward with Advanced Placement courses if they wish.

Mr. Cogswell summarized the course proposals, stating that students would benefit from integrated Science studies as they would be problem-based classes, integrating all Sciences. Ms. Patterson noted the changes she has seen in the Science curriculum and how courses have grown and developed over time. She said she supported this proposal and understood how it reflects how Science studies are being taught at the college level. She said she would like to change the name to better describe course content. Ms. Redmond-Scura noted that this change sounded good as it reflected the importance of including Engineering in Science studies. Ms. Palley noted the inclusion of Earth-Space Science studies, too.

Ms. Kimball asked about teacher credentials connected to this change. Mr. Crumrine stated that the New Hampshire Department of Education permits teachers to teach outside their area of certification if they are teaching most of their time in their area of certification. Many District Science teachers hold multiple certifications.

Board members asked whether there would be a need for new textbooks or materials. Ms. Palley noted that the Science department has always had a light reliance on textbooks; they would predict an ongoing need for supplies and materials as they move to more project-based, engineering-connected learning. Ms. Palley shared that this is happening across the District in all grades as teachers are using more project-based learning activities.

Mr. Croteau commended the teachers for their work and their leadership. Pam Wicks noted that this course sequence would support students who struggle in Science. She said she was impressed with these changes and with the ongoing depth of the high school Science courses. Ms. Kimball also commended the team for its work on this area; she also recommended that six years from now the administration ask CHS graduates how well this new course process worked.

The Instructional Committee voted 4-0 to support the change to the Science course of studies at CHS (moved by Ms. Redmond-Scura; seconded by Ms. Patterson).
Superintendent Forsten presented the draft 2018-2019 school calendar, which been sent for review to District administrators and CEA leadership, noting that this is always a topic that garners significant conversation. Superintendent Forsten highlighted the two professional days in August to begin the school year. The draft calendar includes a 3-4-5-day start as students begin the year (8/29-8/31, 9/4-9/7, 9/10-9/14). The Committee discussed the January professional day and how that can present a scheduling difficulty for parents. Overall, there was positive feedback about the proposed calendar. This draft will continue to be revised and will be brought to the committee again in November before Board consideration in December.

Ms. Palley presented an overview of the new middle school report card, noting some similarities between this report card and the new report card at the elementary level. She explained that the middle school would be using a four-point scale to assess student learning, to indicate competency. Ms. Redmond-Scura asked what would happen with students who are not meeting the competency as indicated by a 1 (student is making limited or no progress toward grade-level competency) or 2 (student is progressing toward grade-level competency). The Committee discussed the difference between quarterly and trimester reporting. Several questions were asked about competencies and how teachers assess in an ongoing manner how students grow and develop their competency skills throughout the year. This represents a substantial change in grading practices; the process is very different and is promoting conversations in the District about teaching, learning and assessing. The Instructional Committee had a good conversation about the change and asked for feedback about the new reporting system. Superintendent Forsten said that the Middle School Team will be presenting at the December Board meeting, at which time feedback from our middle school students, staff and parents could be requested.

Ms. Palley offered an update on PACE and associated opportunities for staff and students. Performance task development teams, grades 3-10 plus arts, CTE (19 groups). The administration is interested in developing student demonstration and exhibition opportunities. Several staff are piloting student-led parent conferences, and the administration is considering the development of learning portfolios. Like performance task development teams referred to earlier, several K-2 teachers are engaged with the development of performance assessments. In a pilot, some teachers are personalizing learning using a multi-age collaborative learning design, developing units and assessments; this is focused on “progressing when ready.”

The Committee voted 4-0 to adjourn (motioned by Ms. Patterson, seconded by Ms. Redmond-Scura).

The meeting adjourned at 7:45 p.m.

Respectfully submitted,

Alana Kimball, Chair
Terri Forsten, Recorder
Handout – High School Science Proposal

SCIENCE 9 & 10

Graduation required courses 1.0 credit each

COURSE/PROGRAM DESCRIPTION

- Three credits of Science (same as the current level)
- Two sequential years of integrated Science called Science 9 and 10
- A third year of Science that can be earned through semester or year-long opportunities

COURSE/PROGRAM OBJECTIVES

Prepare all students to be scientifically literate graduates of Concord High School while maintaining a high interest level in Science electives.

COURSE COMPETENCIES AND STANDARDS

NH K-12 Model Science Competencies. These competencies are based on the Next Generation Science Standards (NGSS).

Cross-Cutting Concepts

- Patterns—Students will demonstrate the ability to observe and describe patterns in natural and human-designed phenomena and use those patterns to support claims about the observed or predicted relationships among phenomena.
- Cause and Effect—Students will demonstrate the ability to investigate, explain and evaluate potential causal relationships by using evidence to support claims and predictions about the mechanisms that drive those relationships.
- Scale, Proportion, and Quantity—Students will demonstrate the ability to describe and represent the significance of changes in observable and non-observable phenomena in terms of relative scale, proportion and quantity.
- Systems and System Models—Students will demonstrate the ability to investigate and analyze a natural or human-designed system in terms of its boundaries, inputs, outputs, interactions and behaviors, and use this information to develop a system model that can be used to understand and empirically evaluate the accuracy of models to represent the underlying system.
- Energy and Matter in Systems—Students will demonstrate the ability to analyze evidence from a variety of sources (investigations, models) to predict, connect and/or evaluate the cycling of matter and flow of energy within and between systems in order to understand, describe or predict possibilities and limitations of systems.
- Structure and Function—Students will demonstrate the ability to use evidence to support claims about the relationship among structure and function of natural and human-designed objects.
• Stability and Change of Systems—Students will demonstrate the ability to investigate and analyze static and dynamic conditions of natural and human-designed systems in order to explain and predict changes over time.

• Nature of Science—Students will demonstrate the ability to work collaboratively and individually to generate testable questions or define problems, plan and conduct investigations using a variety of research methods in various settings, analyze and interpret data, reason with evidence to construct explanations in light of existing theory and previous research, and effectively communicate the research processes and conclusions.

POTENTIAL PARTICIPANTS
This course is designed for ninth and tenth graders. It is designed to occur sequentially, but students are able to double up with electives beginning in the tenth-grade year.

RATIONALE
CHS students currently take Biology, Chemistry, and Physics as the required classes on the route to graduation. CHS teachers do a wonderful job of teaching these courses and students of all abilities do their best to master them. Yet, we have known for years that the Bio, Chem, Physics sequence leaves out a good deal of what makes a student scientifically literate—most notably Earth-Space Science and Applied Engineering.

The proposed Science 9 and 10 sequence is the conclusion of a coherent Science K-12 approach that addresses seven crosscutting concepts during every year in school.

• More choice for students
• After the two required years, students choose a third year of Science that interests them
• Highly motivated students can move more quickly to electives they are interested in; they can double up in tenth grade if they choose to
• Science 9 and 10 plus a third credit will result in students who are more broadly scientifically literate
• Important areas of Science that have not been taught at the high school will be included

NATURE OF THE PROPOSED COURSE/PROGRAM
An integrated Science 9 and 10 course sequence that builds on the integrated K-8 program in the earlier grades.

The following additional information must be supplied in the special instances noted.

1. Explanation and rationale for any course that serves as a prerequisite.
   The K-12 Science Curriculum Committee and the CHS Science department agree that the proposed sequence of required classes will serve students at all levels better than the current sequence.
2. Explanation of any fieldwork or internship associated with the course.

PROJECTED ENROLLMENT
All ninth graders will take Science 9 and all tenth graders will take Science 10. All students will take one additional credit of Science. On balance, this means that the expected Science enrollment is the same.

STAFFING AND FINANCIAL IMPLICATIONS
This sequence of courses can run based on current resources.

OTHER CONSIDERATIONS
a. Is the proposed change likely to affect other Departments or course offerings? NO
   If yes, list department/course offerings:
   b. Has the Department been consulted? YES
   c. Has the dept. approved? YES

Current Science Course Flowchart
Proposed Science Course Flowchart

CHS SCIENCE COURSE FLOWCHART 1=1CR YEAR 1/2=1/2CR SEMESTER

ALL 9TH GRADERS TAKE SCIENCE 9

ALL 10TH GRADERS STUDENTS TAKE SCIENCE 10

10TH GRADE STUDENTS CAN DOUBLE UP IF THEY WANT TO

ALL STUDENTS TAKE A THIRD CREDIT FROM ELECTIVES

PHYSICS OF ENGINEERING 1/2
ANIMAL BEHAVIOR AND ECOLOGY 1/2
AP BIOLOGY 1
AP PHYSICS 1
AP PHYSICS II
AP CHEMISTRY 1
HUMAN PSYCHOLOGY 1/2
EARTH AND SPACE SCIENCE 1/2

CHEM X 1/2
CHEMISTRY OF LIFE 1/2
AP PHYSICS I
ANATOMY AND PHYSIOLOGY 1
ASTRONOMY 1/2