ATTACHMENT NO. XI-E: New Course Proposal

Potential motion: Move to Approve the New Course Proposal

Recommended action: Approve the motion.

Anatomy and Physiology is the only new course proposal for 2021-2022.

COURSE PROPOSAL - NORTH BOONE CUSD 200

Proposed Course Name: Anatomy and Physiology

Old Course Name (if applicable):

Submitted By: Andrew Baden

Implementation Date: Fall 2021

Length of Course: Full Year

Open to which grade levels: Sophomore-Senior

Prerequisites: Biology

Pass/Fail Option: No

Credit: 1.0 Credit Hour

If the course meets a graduation requirement, which one does meet?
Science Credit

Where does this course fit into department sequence?

This course would be an opportunity for a 4th year science credit for students who are interested in studying life science or health sciences in subsequent education. It would need a prerequisite of Biology, but could be taken as a Soph-Senior in tandem with any of the other offered courses and would not interfere with the following sequence of Chemistry, Physics, or Earth Science.

What is the potential impact of this course on the other department offerings?

This course should not negatively impact the number of students taking the other Soph-Junior year science courses, and could even be taken in tandem with one of them or as a senior year science elective. Overall I believe that this course will bolster our science numbers at the high school level, and it will drive further interest in life science beyond as well.

Course Description:

This course is designed to provide students with an opportunity to investigate the human body by studying both the structure and function of its interacting body systems.

Special Notes (i.e., extended periods, team teaching, etc.):

Submit the Completed form to the Building Principal who will forward to the Superintendent

COURSE PROPOSAL - NORTH BOONE CUSD 200

RATIONALE, OBJECTIVES, STRATEGIES

1. Course Rationale

A) What is the evidence of student need for this course? What student data shows that students are interested in this course?

The most critical need for this course is due to the fact that we currently offer no science courses at the high school level beyond the bare minimum needed to satisfy graduation requirements. We have a student body with a large number of students who go on to post-secondary education in the health science or life science fields who have no opportunities for enrichment in that area here at North Boone High School. The only alternative is to take these courses off-campus, which is not feasible for all students. The students who are unable to go off-campus for further science education beyond the bare minimum for graduation requirements simply do not have the opportunity to do so here with our course offerings as-is. We currently have a minimalist offering of science courses, and I believe that as a school district we strive to be better than just doing the minimum for our student body.

Most notably, according to Zhang et al., when science students are exposed to practical education in the medical field, there are numerous benefits including an increased performance in science assessment as well as an increased interest in pursuing a career in that field beyond high school. (https://journals.sagepub.com/doi/full/10.1177/2374289516685323).

B) What departmental needs/goals would this course meet?

A goal for the department is to increase interest in the sciences to drive up enrollment numbers in science classes particularly in the Sophomore-Senior age group. In order to reach this goal we need additional course offerings which could be taken in tandem with other science courses, as an elective, or as a senior level course. The current structure has students take one science class each year from Freshman-Junior, with no electives or fourth year science offering. The addition of an Anatomy/Physiology class would sufficiently meet this goal by serving as both a Soph-Junior elective and 4th year science offering.

C) What institutional needs/goals would this course meet?

The health sciences are an ever-growing field in the economy, and most jobs in that field require further education beyond the secondary level. This course would serve as both a conduit to that field for students who are interested in it as well as an opportunity for students to experience a course with rigor similar to a college-level course in the field. This would serve our institutional goals in two ways. First it is a more trade-specific course than the general science offerings currently available, so students are able to gain real, actionable knowledge in a field of interest. Secondly, it is an academically rigorous

course that is applicable to any student who has an interest in pursuing higher education and serving to prepare them for collegiate courses.

2. Course Priority Standards: List 5-6 standards that will be the focus of the curriculum. These standards are priorities because they meet the following criteria:

- Have leverage across content areas
- Have endurance
- Are assessed
- Show readiness for the next grade level course

HS-LS1-2
HS-LS1-3
HS-LS1-7
HS-LS2-3
HS-LS3-1

3. List the main topics to be taught.

This class would focus on the body systems and how each interacts to maintain homeostasis and function as a whole. The body systems covered would include:

-Histology
-Skeletal
-Muscular
-Integumentary
-Digestive
-Respiratory
-Circulatory
-Lymphatic
-Nervous

4. What types of student assessment procedures will be used? How will the assessment be used to guide instruction?

Assessment would be a two part system, including both a practical and traditional academic assessment for each unit covered. Due to the nature of the topics, much of the material will be visual and hands-on. This is the reason that practical assessments such as labs, dissections, and models will be a necessity for this course.

5. List resources needed and approximate costs to implement this course. Include staff development, materials, textbooks, additional staff, equipment, technology resources, facilities, and fees.

I believe that due to my anatomy and physiology class offered at the middle school, I could implement this course at little to no cost to the school outside of what I get in my yearly science budget. The blueprint for the class is already in place, I would just need supplies and consumables needed for labs, which I believe will be able to be cost effective enough to fit in my budget and covered by the increasing amount of available resources virtually. I would be willing to work with the school to provide the most cost effective text/online textbook possible as I believe I can offer a course that meets NGSS standards, drives interest in science for the student body, and creates a rigorous academic curriculum that will prepare students for both career and college readiness with what I can offer already.

Another aspect that greatly improves the effectiveness of this course in a budget friendly way is the great number of virtual simulations and labs that can now take the place of more traditional labs at a much lower cost while increasing effectiveness. According to the Journal of Research in Technology Education, not only does the implementation of technology and simulated labs increase student performance compared to traditional methods (https://www.tandfonline.com/doi/abs/10.1080/15391523.2001.1078233).

The possible textbook options that I think are satisfactory are as follows:

Option 1: At the higher end is the HMH textbook which is top of the line, NGSS aligned, and includes some supplemental material online. That total price tag for 25 units would be around $3,600.

Option 2: My second choice, which is textbook only but which I think would be more than serviceable is from B.E. Publishing and would cost just under $1,600 for 25 units.

Option 3: Another option which I think is very interesting although may not be suitable for our needs is using the textbook from OpenStax. If you're unfamiliar with the institution it is based out of Rice University, and they produce licensed college textbooks used at universities around the country, and they are provided online only at no cost. I realize it is very non-traditional, but if funding is in any way a hindrance to the implementation of A/P, this is a suitable option.

https://openstax.org/books/anatomy-and-physiology/pages/preface

Overall I think that option #2 is the most reasonable for our needs, but I am open to discussion in whatever way will help to bring this class to the students at our school.

Include any additional information pertinent to your course.

Submit the Completed form to the Building Principal who will forward to the Superintendent

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Signatures: Form must be signed before it can be presented to the Curriculum, Instruction, and Assessment Committee.

Building Principal: _____ Date: 10/29/20

Curriculum Director: _____ Date: 10/29/20

Superintendent: _____ Date: 10/29/2020

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