EXHIBIT B
1/21/2020

Belmont High School
2020 - 21 Program of Studies

School Committee Presentation
January 7, 2020

NEW COURSE PROPOSALS

- AP Computer Science Principles
- The Beauty of Math
- Game Theory
- American Pop Culture
- Beginner Instrumental Skills
- Latin Percussion Ensemble

Science

AP COMPUTER SCIENCE PRINCIPLES

Description: The AP Computer Science Principles course is the equivalent to a first semester introductory college computing course. In this course, students will develop computational thinking skills vital for working with large data sets to analyze, visualise, and draw conclusions from trends. The course engages students in the creative aspects of the field by allowing them to develop computational artifacts based on their interests. Students will also develop effective communication and collaboration skills by working individually and collaboratively to solve problems, and will discuss and write about the impacts these solutions could have on their community, society, and the world.

Intended Audience: 10-12

Type: Advanced Placement, Full Year, 5 credits

Rationale:

- Expanding our Computer Science offerings
- Bridges between Intro to Comp Sci and AP Computer Science A
- Offering an additional AP that is open to more students

Staffing/Budget Implications:

- Neutral - we are hoping that we will run: 1 section of Intro to Computer Science, 1 section of APCSP, and 2 sections of AP Computer Science A next year

Math

THE BEAUTY OF MATH

Description: This course explores the math behind art and music, and the branches of math developed for aesthetic reasons. Topics will include Greek ratios, Baroque music, fractals, and origami. The course will include project-based learning.

Intended Audience: Grade 12 students completing four-year math requirement; students interested in the arts and/or mathematics

Type: CP; Semester course; 2.5 Credits

Prerequisite: None

Rationale:

- Expand senior math elective choices
- Engage students who might otherwise consider themselves not “math people”
- Honor and acknowledge non-Western contributions to mathematics
- Encourage activation of right-brain during traditionally left-brain activity. [Note: Studies show that mathematically gifted students demonstrate increased neural bilaterialization when working on mathematics (O'Boyle 2008, Desco et al 2011, Zhang, Gan, & Wang 2016.)]

Staffing/Budget Implications:

- Possible 0.1FTE increase, can be absorbed by current staff who are currently 0.6 or 0.8 FTE

GAME THEORY

Description: Game theory is the formal science of decision-making, supported by mathematical analysis. Students will study “games” of competition and cooperation through matrices and game trees. We will conduct labs to collect real data and compare to theoretical predictions. Students will learn applications of game theory throughout history.

Intended Audience: Grades 11-12, especially seniors filling four-year math requirement.

Type: Honors; Semester Course; 2.5 Credits

Prerequisite: Algebra 2 H2 or H1, & Positive Decision Making

Rationale:

- Build students' decision-making skills to incorporate strategies of risk-aversion, strategy dominance, expectation values, equilibria.
- Expose students to an area of continued cutting-edge research in mathematics, economics, and sociology.
- Applications of game theory are vast, including Jamaican fishing, the Cold War, medical school internship matching, voting systems, and public television fundraising.

Staffing/Budget Implications:

- Possible 0.1FTE increase, can be absorbed by current staff who are currently 0.6 or 0.8 FTE

Visual & Performing Arts

BEGINNER INSTRUMENTAL SKILLS

Description: An opportunity for students to learn to play an instrument, ideally as a gateway into the BHS Band and Orchestra programs.

Intended Audience: All students, Grades 9-12, especially students from groups that have traditionally been underrepresented in instrumental ensembles.

Type: CP or Honors; Full Year; 5 Credits

Prerequisite: None

Rationale:

- The many benefits of studying a musical instrument are well researched and accepted by the scientific and education communities. Students who did not enter the band or orchestra programs in Grade 4 or 5 currently have no pathway towards participation in these ensembles. This course would allow students to explore instrumental music “later in life”. Some may choose to enroll in band or orchestra the following years, while other may simply view it as a fun challenge to explore for one year during this course.

Staffing/Budget Implications:

- Funding for scholarship instruments
- Subject to enrollment in course

LATIN PERCUSSION ENSEMBLE

Description: A percussion ensemble for beginners and experienced musicians. Repertoire and instrumentation will focus on the music of Latin America. Students will learn to play a variety of percussion instruments and the music of a variety of Latin cultures.

Intended Audience: All students, Grades 9-12, especially those from groups who have traditionally been underrepresented in the music program

Type: CP; Full Year; 5 Credits

Prerequisite: None.

Rationale:

- Latin percussion ensembles are a part of the curriculum in many school districts, and particularly in urban districts. Students learn to play engaging music, developing challenging technical skills and interpreting complex rhythms based on the cultural music of Latin America. The ensemble format of this class fosters a collaborative and supportive environment for joyful music-making.

Staffing/Budget Implications:

- Possible 0.2 FTE increase, can be absorbed by current staff who are already at 0.8 FTE.

MEDIA ARTS 3

Description: This course will be a continuation of the Digital Art and Animation course programming.

Intended Audience: 11-12, students who have completed Media Art 2

Type: Honors; Full Year; 5 Credits

Prerequisite: Digital Art 1 & Digital Art 2

Rationale: 2019-20 is first year of Digital Art/Animation 2, students completing this course will be given opportunity to continue progression with the addition of this next level.

Staffing/Budget Implications: Neutral/Will depend on enrollment

Integrated Studies

AMERICAN POP CULTURE

Description: A collaborative course taught by one Social Studies teacher and one VPA teacher focused on American Popular Culture ranging from the early 20th century to current day. Students will explore the most culturally impactful radio, film, television, music, theater and literature of the past 100 years and their connection to the social issues of that time. A heavy emphasis will be placed on the cultural contributions of under-represented artists - women, African-American, Latin American, LGBTQ.

Intended Audience: Grades 10-12 (Preference given to 11-12)
Type: Honors, elective for VPA or SS credit, Full year; 5 credit
Prerequisite: Grade 9 Social Studies

Rationale:

- A course that directly explores important pop culture and how it reflects our society is missing from our curriculum. A study of 20th century film, for example, provides students a window into how art imitates life, and vice versa. Themes of social justice will be most prevalent in the choice of curriculum and repertoire for this course.

Staffing/Budget Implications:

- Possibly 0.2 in VPA, which can be absorbed by current 0.8 staff
- Social Studies impact depends on enrollment.

Additional Changes

Additional Changes

Courses not offered in 2020 -21:

- History of Pop Music*
- Music in Television and Film*
- Guitar and/or Electronic Music**
- Making Social Change

*These would be replaced by American Pop Culture

**If new music courses run, these may be withdrawn.

Courses/Programs being removed from POS:

- Global Certificate Program
- Digital Citizenship*
- Sculpture 3**
- Ceramics 3 Honors**
- Intro to Design & Engineering (semester)

* The curriculum from this course will be incorporated into the PE Wellness/Positive Decision Making course

** These courses will be integrated into 3D Art 3

Additional Changes (cont.)

Description/Name changes to current courses：

- Change Intro to Computer Science to Gr. 9 -12
- Incorporate language changes to reflect capstone requirement (Eng. 12/12H)
- Inclusion of a Math Pathways page to replace sequencing chart
- Additional language to Independent Study description
- Ceramics 3H/Sculpture 3 name changes to 3D Art 3
- Digital Art 2 & Animation 2: Integrate into Media Art 2

- Addition of Dual Enrollment information