

WESTPORT BOARD OF EDUCATION

REVISED AGENDA *

(Agenda Subject to Modification in Accordance with Law)

PUBLIC SESSION/PLEDGE OF ALLEGIANCE:

7:30 p.m., Staples High School, Cafeteria B (Room 301)

ANNOUNCEMENTS FROM BOARD AND ADMINISTRATION

PUBLIC QUESTIONS/COMMENTS ON NON-AGENDA ITEMS (15 MINUTES)

MINUTES: November 27 and 28, 2017

DISCUSSION:

- 1. Proposed Course Additions
 - Food in Literature, Writing, and Practice, *pages 1-7* (Encl.) Mr. James D’Amico
Ms. Julie Heller,
Ms. Kim Herzog,
Ms. Cecily Gans
 - Children’s Literature, *pages 9-15* (Encl.) Ms. Julie Heller,
Ms. Barb Robbins,
Ms. Kim Herzog
 - Digital Foundations - UCONN ECE (Early College Experience), *pages 17-23* (Encl.) Mr. Tom Scavone,
Ms. Carla Eichler
 - Introduction to Embedded Systems Programming, *pages 25-31* (Encl.) Dr. AJ Scheetz,
Ms. Clare Woodman
 - Accelerated Science 1 and 2, *pages 33-38* (Encl.) Dr. AJ Scheetz
 - Advanced Statistics in the Social Sciences, *pages 39-46* (Encl.) Mr. Andrew Hill

- 2. FY 2018 Preliminary Budget Discussions with Board of Finance, RTM Education, and Finance Committee Chairs Dr. Colleen Palmer
Mr. Elio Longo

ADJOURNMENT

*A 2/3 vote is required to go to executive session, to add a topic to the agenda of a regular meeting, or to start a new topic after 10:30 p.m. The meeting can also be viewed on cable TV on channel 78; AT&T channel 99 and by video stream @www.westportps.org

PUBLIC PARTICIPATION WELCOME USING THE FOLLOWING GUIDELINES:

- Comment on non-agenda topics will occur during the first 15 minutes *except* when staff or guest presentations are scheduled.
- Board will not engage in dialogue on non-agenda items.
- Public may speak as agenda topics come up for discussion or information.
- Speakers on non-agenda items are limited to 2 minutes each, except by prior arrangement with chair.
- Speakers on agenda items are limited to 3 minutes each, except by prior arrangement with chair.
- Speakers must give name and use microphone.
- Responses to questions may be deferred if answers not immediately available.
- Public comment is normally not invited for topics listed for action after having been publicly discussed at one or more meetings.

**STAPLES HIGH SCHOOL
NEW COURSE PROPOSAL FORM**

Course Title: “Food in Literature, Writing, and Practice”

Credit: 0.50 = Semester; double-period with current schedule

*2-period class, double period

Credit Area(s): English & Culinary

Course Proposed by: _____ Administration _____ Board of Education

_____ Student(s) _____ K-12 Curriculum Review

_____x_____ Department _____ Other (specify)

Course Catalog Description:

Food writing is about putting food in context through experimentation with cooking and a variety of writing styles. This co-taught course enables rigorous analysis and practice in reading and writing high-quality, challenging material, while also experimenting in the test kitchen, given students’ areas of study. Students will express their writers’ voices through creating and maintaining a digital portfolio, inspired by their experiences in the test kitchen. Through the study of mentor texts, students will study and create recipes, write research-based feature articles, craft personal essays and memoirs, conduct interviews, engage in menu writing and the creation of food and restaurant reviews, and learn how to incorporate photography and videos into their writing. Students will have the opportunity to develop and perfect their recipes and menus using the course’s test kitchen. It will be through students’ experiences in the kitchen that they will be able to authentically adapt, develop, and hone their food writing abilities to effectively communicate with their audience.

*In November 2016, English classes surveyed 294 students and provided a course description (noted here), then asked for the students’ likelihood of taking this course, on a scale of 1-10. Of the students surveyed, 52.3% of participants rated their interest as a “7” or above.

Prerequisite(s):

English 1, English 2; none for Culinary

COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

English: 17; Culinary: 3

How does this course fit into the course offerings?

(Is it a stand alone, is it part of a sequence or is it replacing another course?)

This class is a stand-alone class for English and could take the place of Culinary 1.

Who is your target audience?

All students interested in blending experimental, hands-on learning with literacy skills.

Has your department discussed the pros and cons of this submission?

Yes for both departments.

What percentage of the department voted “yes” to bring this course forward?

100%

RATIONALE:

How does this course contribute to the department’s goals and objectives?

One of our department goals is focused on increasing planning and instruction across disciplines. As such, this collaborative course is in direct support of this goal as it will allow students to express their writers’ voices through creating and maintaining a digital portfolio, which will act as their digital portfolio for the duration of the course. This portfolio will be comprised of a collection of recipes, research-based feature articles, personal essays and memoirs, interviews, menus, reviews, photographs, and videos.

Food writing is about putting the food in context through experimentation with cooking and by employing a variety of writing styles. Another department goal this course supports, then, is that of helping students develop into sophisticated, thoughtful writers. Essentially, good writing is the basis for good *food* writing as it also demands clarity of expression, employment of a unique style and distinct voice, a thorough knowledge and understanding of structure, and a command of the rhythm and selection of language. In support of this goal, students will study mentor texts from a variety of sources including literary nonfiction food writers, food blogs and portfolios, national food magazines, newspaper columns, cookbooks, restaurant reviews, film, and television; these texts will serve as models for their writing.

Because food is so intricately intertwined with culture, this course will also support the department goal of increasing the diversity of voices to which students are exposed.

What is the need this course addresses?

This course addresses the need for more cross-curricular options for students as identified through the NEASC evaluation. It also provides more opportunity for students to engage with literary nonfiction as both readers and writers. As research indicates, because much of this reading will be dictated by student interest, students will be challenged to pursue the readings and tackle more challenging texts (Wigfield & Guthrie, 2000). Additionally, this course supports student creativity and differentiation as students engage in active learning that is personalized to meet their needs and interests. Finally, being able to make mistakes and learn from them in a safe, low-stakes environment will help students to develop both resilience and stamina.

How does this course support the recommendation of the latest K-12 review?

This course supports the Global Thinking lens of 2025 as well as the Westport 2025 initiative in general. In addition, this offering is directly in line and in support of the Common Core State Standards as well as recommendations from last year's NEASC evaluation. Exposing students to styles of writing in the literary nonfiction food genre will allow them to approach these skills through an engaging, interactive, and cross-curricular manner.

How does this align to your current department accepted standards?

This class will hinge on several key anchor standards, including the reading of both informational and narrative texts; the creation of informative, explanatory, narrative, and argumentative pieces (CCSS-ELA-Literacy.WHST.11-12.4-5); the development and application of domain-specific vocabulary (CCSS.ELA-LITERACY.RL.11-12.4); the sharing of information through a variety of media and formats (CCSS-ELA-Literacy.WHST.11-12.6; CCSS.ELA-LITERACY.SL.11-12.5); and participation in collaborative discussions (CCSS.ELA-LITERACY.SL.11-12.1).

How does this course support the Staples Mission Statement?

This course extends the community of the classroom and the school through cross-discipline connections to real audiences, thus inspiring learning. Because there are so many options that could be pursued depending on interests and inspirations, students will be inspired to be individuals and think creatively. This naturally supports and fosters students' sense of integrity, as genuine engagement with content in which they have chosen and enjoy leads them to being more likely to struggle authentically with challenges they may face on their path towards success. Certainly, there is no better path to empathy than that of developing a deep connection to others; exploring and indulging in the recipes and foods of many cultures is a major part of forming that connection.

How does this course support the goals of the Westport 2025 initiative?

This course provides ample opportunities for students to develop all capacities on the Westport 2025 lens in myriad ways. Becoming food writers will require students to creatively problem-solve recipe issues. Similarly, this experimentation will extend to active learning in the kitchen as they develop and adapt recipes for their intended audience, embracing the necessity of risk-taking and unexpected changes and results. Students will need to think critically about their purpose and audience while developing their voices as food writers through each piece they write. Perhaps the most important domain on which this course focuses is communication: food writing as a genre enables the author to engage with a global community across disciplines, to learn from successes and challenges, to connect with a broader audience, to advocate for ideas, and to work with others for a common goal. Through their portfolios, students will be creating written and visual content (including videos, photos and audio pieces) to enhance their voice and purpose and to become a part of this larger community of food writers and readers. Additionally, this course is extremely relevant to various career opportunities that students will be seeing in their contemporary world.

Establish a flow chart of courses and indicate where this course will fit in.

9th Grade English → 10th Grade English → Junior/Senior Elective Program*
Any student interested in Culinary may take this course - no prerequisites required.
*Where Food Literature will fit in

STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Interpreting, analyzing, evaluating and synthesizing, questioning and curiosity, observing and imagining possibilities, risk-taking and tolerating ambiguity, and agility and adaptability.

Civic Expectations:

Engage in real-world problem solving, engage in global issues, engage in multiple perspectives, work across disciplines

Social Expectations:

Reflecting, considering purpose and varied media to express ideas, influencing and negotiating to reach goals, collaborating strategically

Course Content: Themes, Topics and Literature

What is food writing? How do we establish our voices as food writers? How do food writers engage their audience? How do we adapt to unexpected obstacles that occur in the kitchen? As students engage with the content of this course, they will delve into these questions to understand and appreciate the nuances of food writing as a genre and become contributing members to the food community. The course will use content from a variety of written and visual texts (novels, cookbooks, articles, blogs, vlogs, films, television, documentaries) as model texts and as a tool to help students develop a vocabulary of the literary and aesthetic elements of different genres of food writing. Through an exploration of food literature and experimentation in the kitchen, students will establish their voice as food writers who will be able to appeal to a wide audience. Students will also examine the popularity of the “foodie” culture and the rise in food-based literature. To track their progress and progression as food writers, students will create a digital portfolio through the use of current technologies, photography, and videography.

Student Learning Outcomes:

Skills (what students will be able to do):

Students will be able to:

- Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (CCSS.ELA-LITERACY.RI.11-12.4).
- Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging (CCSS.ELA-LITERACY.RI.11-12.5).
- Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - craft nonfiction, memoir, and personal essays in relation to food
 - write a critical review of a restaurant
 - adapt and create recipes and menus to showcase on their digital portfolio
- Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information (CCSS.ELA-LITERACY.W.11-12.6).
 - photograph and/or videotape their process in the kitchen in a way that appeals to their audience
- Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest (CCSS.ELA-LITERACY.SL.11-12.5).

- establish their voice as food writers

Knowledge (what students will know):

Students will know:

- the stylistic techniques needed in various genres of food writing
- how to establish a purpose, voice, and audience in their writing, dependent on genre

Assessment(s):

Digital portfolio in the form of a digital portfolio

- individual pieces of writing
 - memoir
 - review/critique
 - Research-based nonfiction article
 - adapted recipe
 - menu
- Video content
 - How-to recipe that demonstrates adaptation/creation
 - Interview with local eatery
- Images
 - Photos of food created in test kitchen
 - Images of local eateries for reviews/critiques
 - images/graphic design of menu/s

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

This will be a co-taught course with an English teacher and a culinary teacher. Such instructor collaboration enables a balance for students in the expertise of reading, writing, application and experimentation. In Culinary, this will take the place of a Culinary 1 course, and so this will not create a further staffing need; in English, this should not create further staffing needs.

Budget Requirements:

Equipment, materials, textbooks? Please distinguish between a one time only and a yearly expense.

Textbook: *Will Write for Food: The Complete Guide to Writing Cookbooks, Blogs, Reviews, Memoir & More* (one time only); *Like Water for Chocolate* (one time only)
Culinary: The budget for one section of a Culinary 1 class will be transferred to this class, thus eliminating the need for any additional budgetary needs for this course to run.

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

8

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

There is classroom availability as of now, utilizing the culinary dining room and kitchen 182.

Are there physical needs or limitations for this course? (water, power, room size, etc.)

In order for this course to be successful, we will need access to a test kitchen. We have determined that the best location for this class to meet would be in the culinary dining room and kitchen 182.

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STAPLES HIGH SCHOOL
NEW COURSE PROPOSAL FORM

Course Title: “Children’s Literature”

Credit: 0.50 = Semester/1

Credit Area(s):

Course Proposed by: Administration Board of Education
 Student(s) K-12 Curriculum Review
 Department Other (specify)

Course Catalog Description:

Students in “Children’s Literature” will analyze fables, folk stories, fairy tales, picture books, and early chapter books. Students will consider literary, cultural, and psychological implications of literature for children. In addition, students will explore the impact of early reading experiences on their individual reading identities and moral development using Jim Trelease’s *The Read-Aloud Handbook* as a seminal text on childhood literacy. Learning experiences will include read-aloud sessions with elementary children, picture book presentations, and the composition of an original children’s book. Literature analyzed will include works such as *The Grimm Folk Tales*; *Andersen’s Fairy Tales*; *Aesop’s Fables*; *Alice’s Adventures in Wonderland*; *The Lion, the Witch, and the Wardrobe*; *James and the Giant Peach*; and *Harry Potter and the Sorcerer’s Stone*. These texts will be paired with selected critical readings from more complex texts, such as von Franz’s *The Interpretation of Fairy Tales*, Bettelheim’s *The Uses of Enchantment*, and Orenstein’s *Cinderella Ate My Daughter*, to name a few.

*In November 2016, English classes surveyed 294 students and provided a course description then asked for the students’ likelihood of taking this course, on a scale of 1-10. Of the students surveyed, 59.5% of participants rated their interest as a “7” or above.

Prerequisite(s):

English 1, English 2

COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

17

How does this course fit into the course offerings?

(Is it a stand alone, is it part of a sequence or is it replacing another course?)

This is a stand-alone course as part of the English electives offerings

Who is your target audience?

This is the perfect course for juniors and seniors interested in exploring elementary education as a career, working with children, or simply pursuing a passion for literature in all its forms. This class is a differentiated course accessible to all learners.

Has your department discussed the pros and cons of this submission?

Yes

What percentage of the department voted “yes” to bring this course forward?

81.8% (22 respondents)

RATIONALE:

How does this course contribute to the department’s goals and objectives?

One of our departmental goals is to engage all learners through differentiation of instruction and by offering a wide array of choices. “Children’s Literature” would offer students yet another authentic choice, and it also provides a variety of reading levels of nonfiction and fiction with a choice of ways to demonstrate learning. Another department goal that this course addresses is that of helping students build interdisciplinary connections. Students who take this course are likely to also be those who choose to take the “Child Development” course offered by the Social Studies Department.

What is the need this course addresses?

In order to be truly college and career-ready, students in grades 11 and 12 should be taking as many semester electives as possible. Students need to be able to employ the skills of analysis, evaluation, problem-solving, and creative thinking in a variety of settings, and this course would afford them that opportunity. Finally, this course would allow students to be a bit more prepared for any role in their adult lives in which they would be interacting with children.

How does this course support the recommendation of the latest K-12 review?

“Children’s Literature” is a class that allows for cognitive engagement, as students will recognize and reread beloved titles and create works of their own for an authentic audience. Assessment is differentiated, including written, speaking and listening activities, and builds the Westport community through collaborating with the children in both our local elementary schools and the Little Wreckers preschool located at Staples High School. This class will also have the opportunity to provide cross-disciplinary studies with the new “Child Development” course in offered through the Social Studies Department. We are also hoping to add in a service learning component for students that would include such options as working with the public library on future programs, sharing projects and experiences with the local community, and exploring opportunities to discuss the course’s thematic content with local authors and illustrators.

How does this align to your current department accepted standards?

This course encourages students in becoming lifelong readers. It also encourages the practice of rereading texts through literary, cultural, and psychological lenses, among others. Additionally, this course practices the skills associated with visual literacy and includes multimodal writing.

How does this course support the Staples Mission Statement?

Due to the authentic engagement created through the reading of recognizable, beloved texts, there will be student-buy in. Students will be inspired to learn through the rereading of these texts, using theoretical frameworks to push past original understandings as they develop new understandings of known literature. As such, their integrity with reading and with learning will be continually developing in this course. This course specifically nurtures empathy by exposing students to a variety of readers, both in the classroom and in the community, and works to support each child’s reading identity.

How does this course support the goals of the Westport 2025 initiative?

This course will embrace the critical, creative, and collaborative aspects of the Westport 2025 initiative by incorporating authentic learning experiences and opportunities to showcase

student understanding. One of the many ways this course will support these goals is through its summative assessment, which involves students synthesizing and evaluating their learning to create their own picture book to present to their elementary reading buddy.

Establish a flow chart of courses and indicate where this course will fit in.

English 1 → English 2 → Junior/Senior Elective Program*
*Where “Children’s Literature” will fit

STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Students will engage in the skill work of interpreting, analyzing, evaluating and synthesizing; questioning and curiosity; observing and imagining possibilities; risk-taking; and adaptability.

Civic Expectations:

Students will engage with global issues, explore multiple perspectives, and work across disciplines.

Social Expectations:

Students will be reflective as they consider purpose and varied media to express ideas, how to influence others and negotiate to reach goals, and how to collaborate strategically.

Course Content:

The course will explore various pieces of literature such as Jim Trelease’s *The Read-Aloud Handbook*; The Grimm Folk Tales; Andersen’s Fairy Tales; Aesop’s Fables; *Alice’s Adventures in Wonderland*; *The Lion, the Witch, and the Wardrobe*; *James and the Giant Peach*; and *Harry Potter and the Sorcerer’s Stone*. Additionally, the reading of the children’s literature will be matched with selected critical readings from more complex texts, such as von Franz’s *The Interpretation of Fairy Tales*, Bettelheim’s *The Uses of Enchantment*, and Orenstein’s *Cinderella Ate My Daughter*, to name a few. Many more texts will be used, including but not limited to book club texts, picture books, and informational texts.

Student Learning Outcomes:

Skills (what students will be able to do):

Students will be able to:

- Apply a variety of lenses and theoretical frameworks for understanding children's literature
- Evaluate and synthesize images and words for a specific purpose and audience
- Interact and collaborate with peers and children to support the development of reading identities
- Engage in thoughtful read-aloud sessions

COMMON CORE STATE STANDARDS:

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience (CCSS.ELA-LITERACY.WHST.11-12.4).

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience (CCSS.ELA-LITERACY.WHST.11-12.5).

Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information (CCSS.ELA-LITERACY.WHST.11-12.6).

Draw evidence from informational texts to support analysis, reflection, and research (CCSS.ELA-LITERACY.WHST.11-12.9).

Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences (CCSS.ELA-LITERACY.WHST.11-12.10).

Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain (CCSS.ELA-LITERACY.RL.11-12.1).

Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed) (CCSS.ELA-LITERACY.RL.11-12.3).

Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.) (CCSS.ELA-LITERACY.RL.11-12.4).

Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact (CCSS.ELA-LITERACY.RL.11-12.5).

Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively (CCSS.ELA-LITERACY.SL.11-12.1).

Knowledge (what students will know):

Students will know:

- Elements of craft embedded in children's literature
- Theoretical frameworks for understanding children's literature
- Steps involved in a successful read-aloud

Assessment(s):

- Multimodal writing assessments (formative and summative)
- Multi-genre Reading Journey
- Portfolio of Read-Aloud Sessions
- Creation of Children's Picture Book
- Potential service-learning component

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

No

Budget Requirements:

Equipment, materials, textbooks? Please distinguish between a one time only and a yearly expense.

Core Texts:

Jim Trelease's *The Read-Aloud Handbook*; The Grimm Folk Tales; Andersen's Fairy Tales; Aesop's Fables; *Alice's Adventures in Wonderland*; *The Lion, the Witch, and the Wardrobe*; *James and the Giant Peach*; and *Harry Potter and the Sorcerer's Stone*.

Supplemental Texts:

Picture Books for Classroom Library; Book Club Book Titles

Bettelheim's *The Uses of Enchantment*

All one-time expenses

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

15

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

Yes

Are there physical needs or limitations for this course? (water, power, room size, etc.)

No

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UConn ECE

Digital Foundations

OVERVIEW

- **A full year honors digital media (graphic design, animation & video) course**
 - *Students can earn UConn ECE credit.*
 - *We will follow UConn set curriculum for their Digital Foundations class*
- **Aligned with newly adopted CT Arts Standards**
 - *Media Arts is now a specific, stand-alone discipline within the new state and national standards*
 - *We will be working to align with the International Society for Technology in Education (ISTE) standards.*
- **Expanding opportunities for deeper study of digital arts media**
 - *Students now repeat advanced classes or do independent study. They are not able to advance their skills optimally.*
- **Science, Technology and Art (STEAM) problem based learning**
 - *Students will work in small groups for some projects.*
 - *Every unit will have a real world problem to address.*
- **Emphasis on Creative Problem Solving and Design Thinking**
 - *Students will keep a reflective journal that documents their design process, from initial brainstorming to final product. They will reflect upon their progress and how they addressed/solved any problems.*
 - *This is part of the process of developing Artistic Literacy.*
- **This is a UConn ECE pilot program. It is already being offered at Stamford HS, AITE High School in Stamford, Wilton & Bethel.**
 - *UConn Stamford has resources and opportunities they are willing to share with us including field trips, PD opportunities, etc.*

Reference Links:

[Link to UCONN Digital Media & Design \(DMD\) Program](#)

[Sample Syllabus - Stamford HS](#)

**STAPLES HIGH SCHOOL
NEW COURSE PROPOSAL FORM**

Course Title: Digital Foundations - UCONN ECE (Early College Experience)

Credit: 1.0 HONORS

Credit Area(s): Arts

Course Proposed by: Administration Board of Education
 Student(s) K-12 Curriculum Review
 Department Other (specify)

Course Catalog Description:

Students will engage with a variety of real-world, media-based projects, where the focus is on identifying new ways to share and communicate information visually. Students will have the opportunity to further their software and digital media skills with an emphasis on creative thinking, problem-solving, and collaboration. Students will explore a variety of print, video and animation media throughout the semester. This is a full year course where students have the opportunity to earn UCONN Early College Experience credit in Digital Foundations.

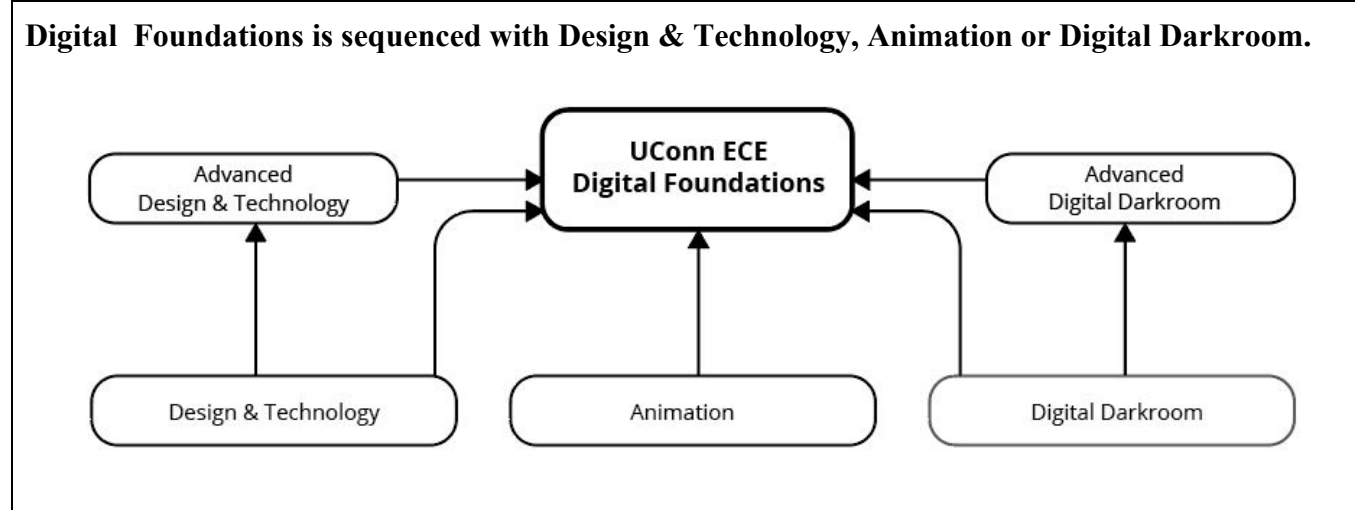
COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

28 elective classes supporting traditional visual art and technology-based media arts.

How does this course fit into the course offerings?

(Is it a stand alone, is it part of a sequence or is it replacing another course?)



Who is your target audience?

Senior or junior students who are interested in continuing to explore design, digital media and visual communication beyond what we currently offer.

Has your department discussed the pros and cons of this submission?

Pros:

- Work collaboratively on real-world design problems.
- Uses the **design thinking** which shifts emphasis to process rather than final product (Artistic Literacy).
- Opportunity to earn UCONN ECE credit.

At this point, no cons have been identified.

RATIONALE:

How does this course contribute to the department's goals and objectives?

Digital Foundations will cover topics relative to the ever-changing environment of digital media. This is now a specific, stand-alone discipline within the new CT Visual and Media Arts Standards. Students will use creative thinking and problem-solving skills to accomplish goals both individually and as a member of a team. The UCONN Early College Experience provides a possible pathway to careers in the Media Arts.

What is the need this course addresses?

Our digital art classes are some of the most popular courses we offer. Students who are interested in digital art and media often take the same class several times due to the lack of more advanced opportunities. Students will be provided an opportunity to work collaboratively on real world design problems, and employ the practice of design thinking. In addition, students will have the opportunity to earn UCONN ECE credit.

How does this course support the recommendation of the latest K-12 review?

NA

How does this align to your current department accepted standards?

- Students will demonstrate mastery of digital media concepts and fundamentals, including use of software, storytelling, and communication via social media.
- Students will work collaboratively in response to real world design problems.
- Students will work independently to produce original ideas in response to a real world problem.
- Students will be able to communicate ideas through use of media and oral presentation.
- Students will evaluate ideas and explain ideas as part of a weekly progress report.
- Students will judge the progress made by peers and formulate suggestions in order to help improve the work.
- Students will use a reflective journal that focuses on documenting their process, reflecting on the project's strengths/weaknesses and implementing strategies to rectify any design problems.

How does this course support the Staples Mission Statement?

The Staples High School community inspires learning, fosters integrity and nurtures empathy.
The new approach regarding “design thinking” will inspire learning. The collaborative nature of the course will foster integrity. The real world problem solving addressed in the course will nurture empathy.

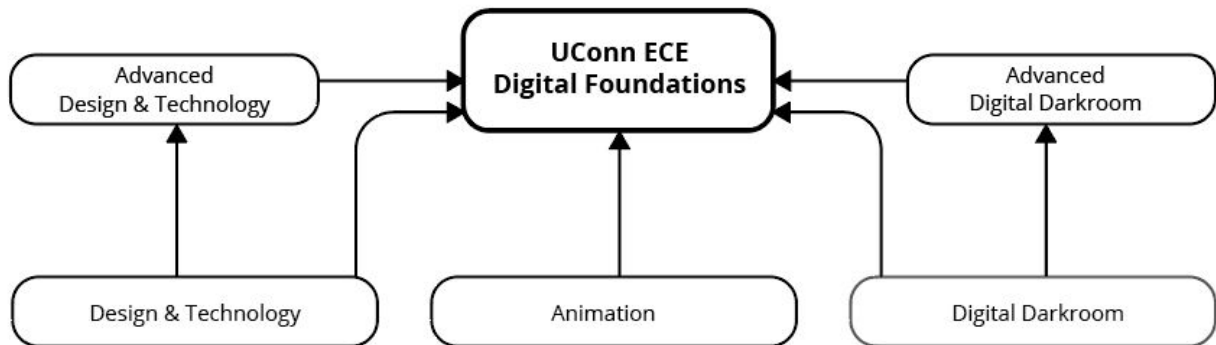
How does this course support the goals of the Westport 2025 initiative?

The course is designed around meaningful, relevant challenges faced in the real world. Students will work collaboratively, make knowledge-based decisions, and ask questions motivated by curiosity (inquiry). Students will use:

- *Critical thinking* during the process of solving the design problem and will keep a reflective journal in order to record and reflect upon their process.
- *Creative thinking* in order to solve the design problem in an attractive and engaging way, while still meeting the requirements of the project.
- *Communication* skills when considering how to best communicate their message to their targeted audience. Students will be required to work together in teams, therefore they will be practicing communication skills with peers.
- *Global thinking* when they are presented with several real-world design projects throughout the semester.

Establish a flow chart of courses and indicate where this course will fit in.

Digital Foundations will follow Design and Technology, Digital Darkroom, or Animation. Students will need instructor recommendation to enroll in the course.



STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Students will:

- Collaborate with peers in order to solve a real-world problem.
- Understand how to choose the most effective visual strategy considering the topic and audience.
- Create visual sequences in order to communicate a narrative.
- Present their ideas to an audience at any stage of the creation process.
- Evaluate ideas and explain decisions made by themselves and/or their team.

Civic Expectations:

Students will demonstrate:

- Citizenship regarding their behavior in class with peers as well as in the larger school community.
- An understanding of the digital world they live in, and how to be in that world.
- A sense of ethics regarding the approach to the problem and how the solution is executed.

Social Expectations:

Students will work cooperatively with respect for each other, the school, and themselves.

Course Content: Themes, Topics and Literature

Course Essential Questions (from the new National Media Arts Standards)

1. How can ideas for media arts productions be formed to be effective and original?
2. How are complex media arts experiences constructed?
3. How are creativity and innovation developed within and through media arts productions?
4. How does time, place, audience and context affect presenting choices for media artworks?
5. How do people relate to, and interpret media works?
6. When and how should we evaluate and critique media artworks to improve them?

Student Learning Outcomes:

Skills (*what students will be able to do*):

- Strategically use generative (brainstorming) methods to formulate multiple ideas, refine artistic goals and increase the originality of approaches in media arts creation processes.
- Integrate various arts, media and content into a unified production.
- Develop and refine a range of creative innovation abilities, such as design thinking and risk taking, in addressing challenges and constraints within their media arts productions.
- Evaluate media art works and production processes at decisive stages using specific criteria.
- Evaluate and integrate personal and external resources to inform the creation of media artworks, such as personal memories, interests and cultural experiences.

Knowledge (what students will know):

- Digital media concepts and fundamentals, including software applications, still and visual images, storytelling and communication.
- How to create a visual storytelling sequence.
- Skills to effectively collaborate with a creative team at all stages of the problem solving process.
- Skills to present information to a specific, intended audience.

Assessment(s):

A combination of authentic and performance-based assessments:

Participation 30%

Projects 30%

Challenge Project 20%

Reflective Process Journal 20%

Final Exam TBD - Sharing activity, critique and/or exhibition.

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

We may adjust based upon student need.

Budget Requirements:

Equipment, materials, software. Please distinguish between a one time only and a yearly expense.

One time purchase, excluding wear and tear, and necessary updates

- 3 Cameras: Nikon D700 - approx \$1500
- Various other camera equipment (tripods, memory cards, backdrops) - approx \$1,000

The district already supplies and maintains the Digital Arts Mac lab and Adobe software.

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

15

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

Yes

Are there physical needs or limitations for this course? (water, power, room size, etc.)

It will need to be held in the Digital Arts Lab 1003

An additional room or space with tables available. (1007)

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STAPLES HIGH SCHOOL
NEW COURSE PROPOSAL FORM

Course Title: Introduction to Embedded Systems Programming

Credit: 0.5

Credit Area(s): Science

Course Proposed by: Administration Board of Education
 Student(s) K-12 Curriculum Review
 Department Other (specify)

Course Catalog Description:

Introduction to Embedded Systems Programming

Embedded systems are special-purpose systems in which the computer is programmed to perform pre-defined tasks for the device it controls, unlike a general-purpose computer such as a laptop. Students programming in embedded systems will be exposed to a wide range of computer science disciplines such as computer architecture, memory system design, compilers, scheduler/operating systems, and real-time systems. Students will learn to program 8x51 microcontrollers using C and C++, and will learn assembler code, digital logic and electronic circuit analysis through the debugging process. Students will create projects that include UART (serial) communication, Analog to Digital Conversions for input, such as temperature or audio data and controlling Bit Ports to drive output.

By taking this course, students will have the opportunity to connect concepts from Introduction to Programming and Advanced Placement Computer Science to the hardware and firmware constraints of the devices they are using and develop a well-rounded vision of the computing ecosystem.

Prerequisite(s):

Introduction to Programming. A recommendation from the Introductory Programming teacher is also required.

COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

Twenty nine

How does this course fit into the course offerings?

(Is it a stand alone, is it part of a sequence or is it replacing another course?)

This course is designed to follow Introduction to Programming and to be a counterpart to Introduction to Web Programming. This course will introduce infrastructure and device programming, skills needed to develop the next generations of devices such as driverless cars, or virtual reality headsets, as well as new operating systems, compilers and programming languages needed for next generation hardware.

Unit	Essential Questions	Standards	Content
Learning C and manipulating bits - the fundamental building block of all digital electronic devices.	What is a 'bit' ?	(HS-ETS1-2). Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.	Students will learn binary and bit manipulation using C to process images in preparation for using i/o devices requiring bit signals.
Introduction to microcontroller	What is a microcontroller? How is programming it different from programming on a desktop or laptop computer?	(HS-ETS1-4) Use mathematical models and/or computer simulations to predict the effects of a design solution on systems and/or the interactions between systems.	Students build programs to run on a simulator on their own computers. During this process students will learn about computer architecture including registers, memory, and the CPU.
Microcontroller Peripherals: UART, A/DC, Parallel Ports	How are microcontroller commands translated to physical actions?	(HS-ETS1-4) Use mathematical models and/or computer simulations to predict the effects of a design solution on systems and/or the interactions between systems.	Students build programs to activate peripheral devices responsible for communications, displays, and sampling data (such as sound or temperature). Initial testing will be in the simulator
Build a complete embedded system using physical hardware and programming.	How do the pieces work together to create a complete system?	(HS-ETS1-2). Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.	Students build programs to run circuits of their own design using hardware, after first testing in the simulator.
Additional Topics: RTOS - real-time operating system. IoT - internet of Things. Advanced 32-bit Microcontrollers.	How are microcontrollers used in computing today? What are future trends for microcontrollers and how they are used?	HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Students will investigate topics according to interest and apply concepts learned in course to gain understanding.

Who is your target audience?

Any student who has completed Introduction to Programming and demonstrated strong programming skills in the process. A recommendation from the Introductory Programming teacher is also required.

Has your department discussed the pros and cons of this submission?

Yes.

What percentage of the department voted "yes" to bring this course forward?

100%

RATIONALE:

How does this course contribute to the department's goals and objectives?

The department's general goal is to produce graduates who are informed consumers of science information and who are well prepared to pursue a career in STEM if they choose to do so. This course introduces students to a vital area of computer science/engineering that is not easily accessible through general programming and computer science courses and programs. This affords the student the opportunity to explore more diverse college majors and STEM careers.

What is the need this course addresses?

This course addresses the need to satisfy student's desire for additional programming courses through their high school career, with unique and important content, not easily accessed through other means.

How does this course support the recommendation of the latest K-12 review?

How does this align to your current department accepted standards?

Please see the table above. This course aligns directly with the new state science standards, the NGSS.

How does this course support the Staples Mission Statement?

The Staples High School community inspires learning, fosters integrity, and nurtures empathy.

This course will fulfill all elements of the Staples Mission Statement through real-world and career connections through the study of embedded systems programming. Students will engage in inquiry, explore problems and solutions.

How does this course support the goals of the Westport 2025 initiative?

Creative→ Students will be encouraged and indeed taught to ask questions about the way structures and devices operate, to attempt to answer those questions, and to look for unexpected results.

Communication→ During collaborative learning, students will advocate for their ideas but also work together to come to solve problems and build solutions.

Critical Thinking→ Students will be asked to connect their new learning to create a new understanding. They will base decisions on what they need to learn next based on prior knowledge, and they will break down ideas into their most fundamental/mechanistic level.

Global Thinking→ Students will always be working on meaningful problems since they will see the coherence between what they are trying to figure out and what they have already learned. Through collaborative learning, they will gain an understanding of the problem through discussion of different points of view.

Establish a flow chart of courses and indicate where this course will fit in.

Introduction to Programming 1 semester	Introduction to Web Programming 1 semester	Advanced Web Programming 1 semester
	AP Computer Science Principles 1 year	Introduction to Embedded Systems Programming - Preferred Sequence after APCSP 1 semester
	Introduction to Embedded Systems Programming - Alternate Sequence 1 semester	

STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Students will be expected to engage in nonfiction reading and writing in this course.
 Students will be expected to work across disciplines and use prior knowledge to drive conclusions and solutions.
 Students will be expected to collaborate, communicate, and connect ideas.

Civic Expectations:

Perseverance in spite of difficulties; supporting each other when stuck.
 Communicating and Critiquing Conclusions
 Taking Informed Action/Advocacy

Social Expectations:

Collaborating to research and solve problems
 Work with real-world issues, explore careers in the field

Student Learning Outcomes:

Skills (what students will be able to do):

Analyze and interpret data, particularly when debugging programs and systems.
Use mathematics and computational thinking to design algorithms and models for their systems.
Constructing explanations and designing solutions

Assessment(s):

- Problem Sets - Stand-alone Programs, Simulations, and actual circuitry
- Performance-based assessments

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

We do not anticipate any impact on staffing..

Budget Requirements:

Equipment, materials, textbooks? Please distinguish between a one time only and a yearly expense.

Some equipment will be necessary for running this course. While most of the programming will be done on a simulators, it is important for students to actually run their programs in a microcontroller managing actual devices. Development kits are in the \$150-\$250 range, and students would be pair programming. These would be a one-time purchase.

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

15

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

We will be drawing from the same student population, so there should be minimal impact on science instructional space.

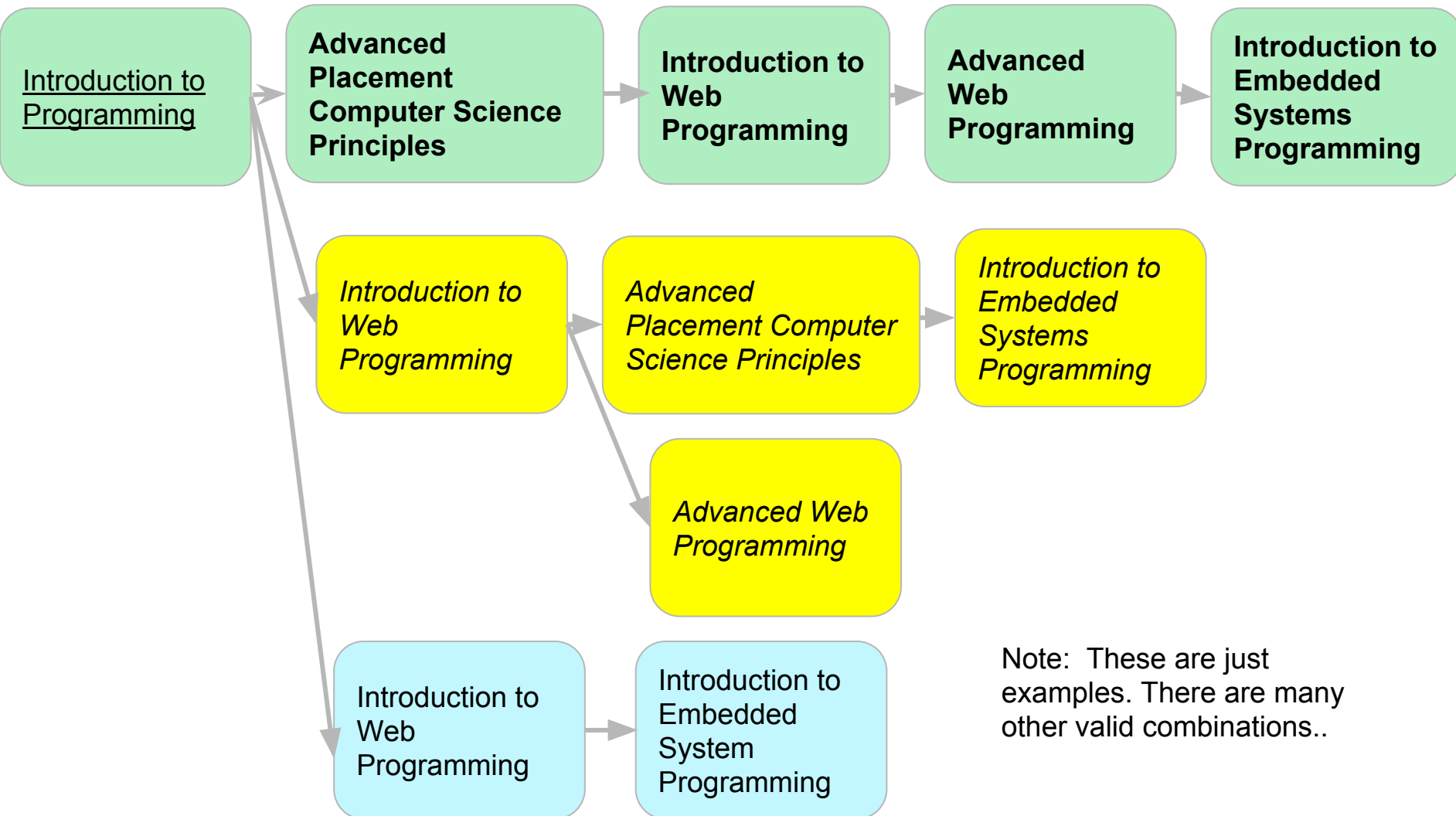
Are there physical needs or limitations for this course? (water, power, room size, etc.)

Three Sample Computer Science Course Sequences.

Green is an example of the optimal path with AP early in the path.

Yellow is an example with two simultaneous classes

Blue is an example without any AP CSP course.



Note: These are just examples. There are many other valid combinations..

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NEW COURSE PROPOSAL FORM

Course Title: Accelerated Science 1 and 2

Credit: 2.0

Credit Area(s): Science

Course Proposed by: Administration Board of Education

Student(s) K-12 Curriculum Review

Department Other (specify)

Course Catalog Description:

Accelerated Science 1 and 2

This is a two-year science course designed to give students broad exposure to science concepts in Biology, Chemistry, Earth Science and Physics within an integrated framework aligned to the new CT Science Standards (CT-NGSS). Students study big ideas such as “What is it all made of?” and “How do humans influence the flow of energy and matter on Earth?” Students generate the questions they need answers to in order to build their understanding. Students collaborate and engage in argument from evidence, develop and revise models, and carry out investigations to come to an understanding of the world around them. This course is for students who like to look at the big picture. It also compacts the curriculum of three years of traditional science into two, allowing students to take a broader range of science courses their junior and senior years.

Prerequisite(s):

Recommendation for A-level Biology

COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

Twenty nine

How does this course fit into the course offerings?

(Is it a stand alone, is it part of a sequence or is it replacing another course?)

This course is designed to substitute for A-level Biology, Chemistry, Earth Science and Physics. It fits into the current course offerings by allowing students to compact three years of science into two years. Students are then free to take any of the numerous AP/elective science courses the department offers.

YEAR 1

Unit	Essential Questions	Standards	Content
Unit 1: Matter, Energy, Forces, & Fire (quarter 1)	What is it all made of and how does it interact? <i>What is fire?</i>	PS1 (matter) PS3 (energy) PS4 (waves)	Structure and properties of matter. Energy in chemical systems. Bonding and chemical reactions.

	<p><i>How does the substructure of atoms explain the properties of substances we observe.</i></p> <p><i>How does the electromagnetic force explain the behavior and interaction of atoms?</i></p> <p><i>What is energy and how is it related to matter?</i></p>		<p>Fundamental Forces – electromagnetic Energy</p> <p>Electromagnetic Radiation</p>
<p>Unit 2: The history of the universe and our planet. (quarter 2)</p>	<p>Where did all of this come from, and if we weren't there to see it, how do we know?</p>	<p>ESS1 (universe & solar system)</p> <p>ESS2 (earth systems)</p> <p>PS2 (forces & motion)</p> <p>PS1, PS2, PS4</p>	<p>Nuclear Chemistry</p> <p>Chemistry of the Universe</p> <p>Fundamental Forces – strong force, weak force, gravity</p> <p>Kepler's Laws, Planetary Motion</p> <p>Physics of Earth Systems</p> <p>Chemistry of Abiotic Systems</p> <p>Dynamic Earth Systems</p>
<p>Unit 3: From non-living to living. Defining living systems. (quarter 3)</p>	<p>What is life?</p> <p>If you were to create a living system, what would it require?</p>	<p>LS1 (molecules to organisms)</p>	<p>Matter and Energy in Living System</p> <p>Cell specialization and homeostasis</p>
<p>Unit 4: Life ever changing. Unity and Diversity in nature. (quarter 4)</p>	<p>How does life change?</p> <p>How are all living things similar?</p> <p>How are all living things different?</p> <p>Why are they both similar and different?</p> <p>How do twins come about?</p>	<p>LS3 (heredity)</p> <p>LS4 (evolution)</p>	<p>DNA and Inheritance</p> <p>Natural Selection</p> <p>Evolution</p>

YEAR 2

Unit	Essential Questions / Concepts	Content	Skills
<p>Unit 5: Life Interacting: Matter & Energy in Natural Ecosystems (quarter 5)</p>	<p>How does the flow of energy and matter determine the structure of an ecosystem?</p>	<p>LS2 (ecosystems)</p>	<p>Matter and Energy in Living System</p> <p>Matter and Energy transformations in ecosystems</p> <p>Interdependent relationships in ecosystems</p>
<p>Unit 6: The Human Factor I: Early technology, tools, weapons, & materials. (quarter 6)</p>	<p>What early technologies defined humanity?</p> <p>How did early tools give humans an advantage?</p> <p>How do these early tools work?</p> <p>Why are certain materials better suited for particular tasks?</p>	<p>PS2 (forces & motion)</p> <p>PS1 (matter)</p> <p>PS3 (energy)</p>	<p>Forces and Motion</p>
<p>Unit 7: The Human Factor II: Modern technology, tools, weapons, & materials. (quarter 7)</p>	<p>What technologies define modern civilization?</p> <p>What made the industrial revolution ... revolutionary?</p> <p>What is the foundation of the current information revolution?</p>	<p>PS4 (waves & technological applications)</p> <p>PS1, PS2, PS3</p>	<p>Electricity & Magnetism</p> <p>Wave Properties</p> <p>Nuclear Chemistry</p>
<p>Unit 8: The Human Factor III: Matter & Energy in Human Dominated Ecosystems (quarter 8)</p>	<p>How do humans influence the flow of energy and matter in ecosystems?</p> <p>What is the impact humans have on the function of ecosystems?</p>	<p>ESS3 (earth & human activity)</p>	<p>Human activity and energy</p> <p>Human activity and climate</p> <p>Human activity and biodiversity</p> <p>Human activity and sustainability</p>

Who is your target audience?

Any incoming freshman who wants to study science in a way that allows him or her to see the bigger picture and engage with science through inquiry.

Has your department discussed the pros and cons of this submission?

Yes. The department is generally supportive as they see this course as a way of maintaining maximum student choice. The main con is that this course represents a departure from our traditional, tried and true, approach to science education and that such a change may generate unintended consequences.

What percentage of the department voted “yes” to bring this course forward?

We did not have a formal vote on this course. However, the preK-12 curriculum committee voted unanimously to move forward with this course. In general, the department is supportive, but they objected to the number of sections we ran. At this point, the student feedback is overwhelmingly positive and in some respects, the departmental vote at this point is moot.

RATIONALE:

How does this course contribute to the department’s goals and objectives?

The department’s general goal is to produce graduates who are informed consumers of science information and who are well prepared to pursue a career in STEM if they choose to do so. To that end, the current course fosters creative thinking in students and encourages them to see connections between many different phenomena in their own lives much like a well informed consumer of science or a scientist might.

What is the need this course addresses?

This course addresses our need to focus on teaching students how to think about science and see its interconnectedness. It also addresses the need to maintain maximum choice for our students by allowing them to progress rapidly through the core science program so that they may explore science electives/AP’s in an informed way.

How does this course support the recommendation of the latest K-12 review?

As noted above, the preK-12 science curriculum committee voted unanimously to approve this course.

How does this align to your current department accepted standards?

Please see the table above. This course aligns directly with the new state science standards, the CT-NGSS. At this point, it is the only course in the department that does so.

How does this course support the Staples Mission Statement?

The Staples High School community inspires learning, fosters integrity, and nurtures empathy.

This course will fulfill all elements of the Staples Mission Statement through real-world and career connections through the study of science. Students will engage in inquiry, explore problems and solutions in the field, and build a deeper sense of understanding of science.

How does this course support the goals of the Westport 2025 initiative?

Creative→ Students will be encouraged and indeed taught to ask questions about phenomena, to make bold attempts to answer those questions, and to look for unexpected results.

Communication→ During collaborative learning, students will advocate for their ideas but also work together to come to consensus.

Critical Thinking→ Students will be asked to connect their new learning to create a new understanding. They will base decisions on what they need to learn next based on prior knowledge, and they will break down ideas into their most fundamental/mechanistic level.

Global Thinking→ Students will always be working on meaningful problems since they will see the coherence between what they are trying to figure out and what they have already learned. Through collaborative learning, they will gain an understanding of the problem through discussion of different points of view.

Establish a flow chart of courses and indicate where this course will fit in.

9th Grade	10th Grade	11th Grade	12th Grade
Three Year Sequence			
Biology	Chemistry and Electives	Physics/Physical Science and Electives	AP/Electives or no Science
Two Year Sequence			
Accelerated Science 1	Accelerated Science 2 and Electives	AP/Electives	AP/Electives or no Science

STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Students will be expected to engage in nonfiction reading and writing in this course.
Students will be expected to work across disciplines and wrestle with big issues.
Students will be expected to collaborate, communicate, and connect ideas.

Civic Expectations:

Communicating and Critiquing Conclusions
Taking Informed Action/Advocacy

Social Expectations:

Collaborating to research and solve problems
Work with real-world issues, explore careers in the field

Student Learning Outcomes:

Skills (what students will be able to do):

The CT-NGSS gives equal footing to science content and science skills (more correctly referred to as practices since they are always developing and need to be practiced). The main practices include:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions

Assessment(s):

- Research tasks
- Performance-based assessments

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

Since students would normally be taking two years of science, we do not anticipate any impact on staffing with this course.

Budget Requirements:

Equipment, materials, textbooks? Please distinguish between a one time only and a yearly expense.

Current resources within the department should be sufficient to run this course. The only expense could be if we decided to connect two classrooms with an internal door to facilitate collaborative instruction between two sections of Accelerated Science.

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

15

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

Again, we will be drawing from the same student population, so there should be minimal impact on science instructional space.

Are there physical needs or limitations for this course? (water, power, room size, etc.)

As noted above, if we run multiple sections, we may wish to install an internal door between two adjoining classrooms to facilitate even more collaboration between classes.

**STAPLES HIGH SCHOOL
NEW COURSE PROPOSAL FORM**

Course Title: Advanced Statistics in the Social Sciences

Credit: 0.5

Credit Area(s): Mathematics

Course Proposed by: Administration Board of Education
 Student(s) K-12 Curriculum Review
 Department Other (specify)

Course Catalog Description:

We are bombarded with data every day. Scientists, politicians, and policy makers use numbers to describe ideas, summarize positions, and persuade opinions. With the proliferation of numerical information comes an ever-growing need for statistical literacy. In this course, students will learn how statistical methods are used to analyze data and make inferences about the world around us. Students will also investigate the challenges and pitfalls of experimental design and the ethical questions surrounding statistical research, leading to discussions of how statistics have led to both great achievements and embarrassing blunders. Students will learn how to read and interpret real-world statistical studies as well as how to formulate their own questions and analyze them using statistical methods.

COURSE/DEPARTMENT INFORMATION:

How many electives does your department currently offer?

5

How does this course fit into the course offerings?
(Is it a stand alone, is it part of a sequence or is it replacing another course?)

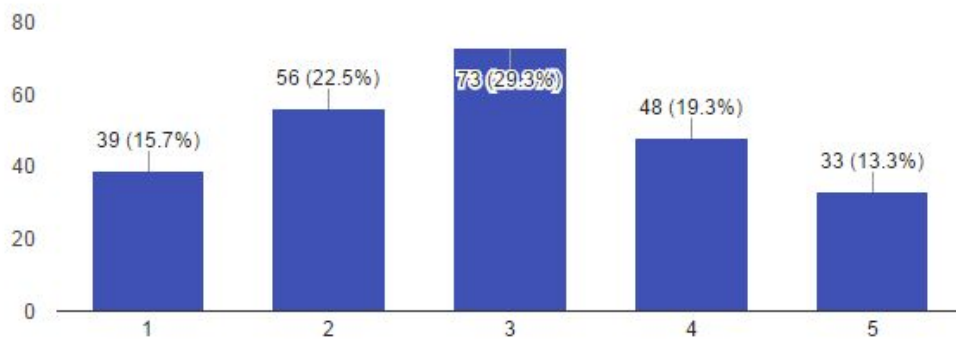
This would be the second part of a 2-part semester course sequence following Statistics A.

Who is your target audience?

Senior or Junior students who would like to explore more of the fundamental concepts, processes, and applications of statistics but would not benefit from the AP Statistics course due to its pacing/difficulty or current course load. The graphs below summarize a survey sent to students during the 2016-2017 school year (5 being highly likely).

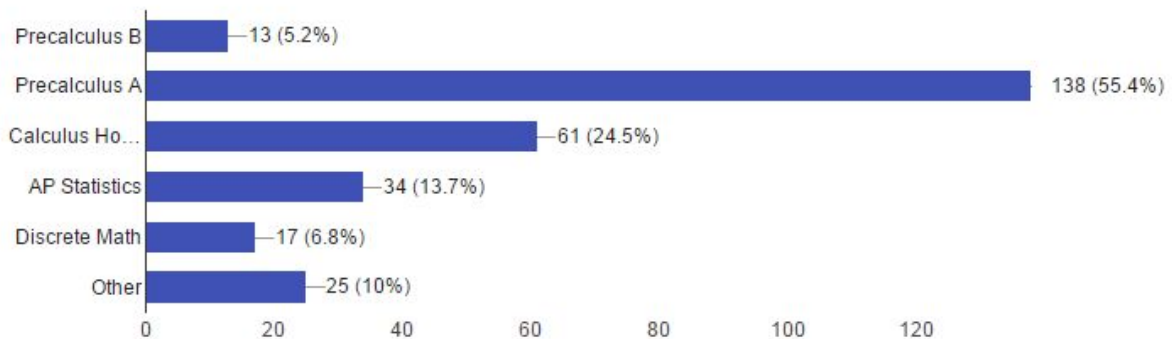
How likely is it that you would have enrolled in a full year (two semesters) of statistics at the A-level if it were offered? The second semester of the course would focus on using statistics in fields such as psychology and other social sciences. This could be in place of or in addition to your current mathematics course.

249 responses



Which course(s) are you enrolled in now?

249 responses



Has your department discussed the pros and cons of this submission?

Yes. The department overwhelmingly agreed that making statistics available to more students would help us better serve our student population as the world becomes more data driven. The department also discussed the benefits of having a course has inter- and intra-disciplinary

connections.

The strongest negative ramification had to do with logistics regarding the number of second-semester mathematics elective offerings and how this would split the population, but this concern was purely speculative and most agreed that impact should be minimal.

What percentage of the department voted “yes” to bring this course forward?

94%

RATIONALE:

How does this course contribute to the department’s goals and objectives?

Statistics is a vastly growing field. More colleges and universities emphasize its importance in numerous majors both within and outside mathematics and the sciences. The Bureau of Labor Statistics (BLS) projects that employment of statisticians will grow 34% from 2014 to 2024, compared to 28% for mathematical science occupations, and 7% for all occupations. The field ranks 9th on the Department of Labor's list of 20 **fastest-growing** occupations (Jan 21, 2016).

What is the need this course addresses?

Course is aimed to have broad appeal to both STEM and non-STEM students. The proliferation and availability of data today generated by surveys, simulations, and other measures make statistics a vital literacy in understanding, navigating, and improving the world. Currently we only offer 1 semester of non-AP statistics, which is half of what we offer at the AP level. Many districts offer a full year of non-AP statistics to provide as many students as possible with the ability to gain footing in introductory applied probability, experimental design, and inference.

How does this course support the recommendation of the latest K-12 review?

The course is multidisciplinary and offers a viable non-calculus option.

How does this align to your current department accepted standards?

Critical thinking, reading, writing, cross-disciplinary connections, communication, and ethical practices are abundant in this course.

How does this course support the Staples Mission Statement?

The content will inspire learning, the ethics unit will foster integrity, and analyses of psychological issues such as social norms and biases will nurture empathy.

How does this course support the goals of the Westport 2025 initiative?

The course hinges on meaningful problems. Students will work collaboratively, make knowledge-based decisions, and ask questions motivated by curiosity.

Students will need to utilize *critical thinking* in order to interpret and analyze data sets and experimental designs, see connections across inference methods and discipline-specific applications, and evaluate the effectiveness of statistical methods and conclusions.

Students will need to utilize *creative thinking* in order to ask questions and imagine what beliefs and ideas can be evaluated statistically.

Students will need to utilize *communication* in order to work collaboratively, compare and contrast different inference methods and discuss the viability of various statistical procedures in a real-world context.

Students will need to utilize *global thinking* in order to understand and discuss the interdisciplinary nature of statistical thinking and how it has impacted, and continues to impact, modern society.

Establish a flow chart of courses and indicate where this course will fit in.

Course follows Statistics A and has the potential of being cross-listed in the new graduation requirements.

STAPLES EXPECTATIONS FOR STUDENT LEARNING:

Academic Expectations:

Specific to this course, students will be able to:

- Understand significance of statistical concepts,
- Make knowledge-based decisions based on accurate data interpretation,
- Ask questions motivated by interest and curiosity,
- Work with meaningful problems,
- Make connections across disciplines,
- Read and interpret statistical studies, and
- Communicate clearly findings both verbally and in writing.

Through this course material, students will develop interdisciplinary practices, including:

- Construct a viable argument and critique the reasoning of others (CCSS.MATH.PRACTICE.MP3)
- Use appropriate tools strategically (CCS.MATH.PRACTICE.MP5)
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11-12 texts and topics*. (CCSS.ELA-LITERACY.RST.11-12.4)
- Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem. (CCSS.ELA-LITERACY.RH.11-12.7)
- Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information (CCSS.ELA-LITERACY.RH.11-12.8)
- Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. (CCSS.ELA-LITERACY.RST.11-12.8)

Civic Expectations:

Students will demonstrate:

- Citizenship in their school by their actions and
- A sense of ethics by their analysis and by their actions.

Social Expectations:

Students will work cooperatively with respect for each other, the school, and themselves.

Course Content: Themes, Topics and Literature

Course Essential Questions

- How are statistical methods used to generalize results about populations, examine associations, and determine cause and effect?
- How have statistical methods been used properly and improperly, and what have been the impacts on science and society?

Core Topics

1. Sampling for success: Designing effective surveys and experiments
 - a. Samples versus Censuses
 - b. Types of studies: surveys, case studies, controlled experiments
 - c. Importance of randomization, independence, and representativeness
 - d. Types of bias (e.g. convenience, response, voluntary, confirmation) & confounding/lurking variables

- e. Correlation review/contrast with causation
- f. Possible historical examples: 1936 Landon v. Roosevelt; 1948 Dewey v. Truman
2. The Central Limit Theorem and the mathematics of sampling
 - a. Review of normal curve, empirical rule, z scores
 - b. Sampling distributions: shape, center, spread
 - c. Computing probabilities from sampling distributions
 - d. Central Limit Theorem and implications
 - e. Sample size fallacy (“hasty generalization”)
3. Introduction to Inference Testing
 - a. Confidence Intervals
 - b. Hypothesis Tests
 - i. Null & Alternative Hypotheses
 - ii. Test statistics, p- values, effect size, statistically significant
 - iii. False positive & false negative errors
 - iv. Scope of inference/cause and effect
 - c. Possible historical Examples: Asch Conformity Experiment
4. The Ethics of Statistical Research
 - a. P-hacking & Publication Bias
 - b. Ethical design, analysis, and communication of findings
 - c. Possible historical examples: Ego Depletion, Bohannon & Chocolate, Stanley Milgram, Little Albert

Student Learning Outcomes:

Skills (what students will be able to do):

- Obtain and use censuses, samples, surveys, experiments, & simulations to generalize, show association, or establish cause and effect.
- Differentiate between good and poor sampling & experimentation techniques.
- Properly identify & use the terms bias, confounding, randomization, control, replication, blind, double-blind, placebo in creating or critiquing studies.
- Understand the shape, center, and spread of a sampling distribution.
- Analyze the role of sample error and sample size.
- Apply appropriate test of inference from data to make predictions in regard to a population.
- Interpret p-values and effect size in context.

Knowledge (what students will know):

- Attributes of an effective and valid study, survey, experiment.
- How to use a sample to generalize to a population and communicate findings clearly.
- How to read a statistical article and generate questions, state possible errors, and discuss ramifications

Assessment(s):

A healthy diet of problem sets, tasks/studies, quizzes, exams, ...

BUDGET AND FACILITY CONSIDERATIONS:

Staffing Requirements:

Will this create an additional staffing need within the department?

We do not anticipate that this course will on its own cause a large change in total math requests.

Budget Requirements:

Equipment, materials, textbooks? Please distinguish between a one time only and a yearly expense.

None

Facility Requirements:

Minimum Number of Students Needed to Run this Class:

15

Is there classroom availability within the department for this class? If not, how will this class be accommodated within the school?

We do not anticipate that this course will on its own cause a large change in total math requests.

Are there physical needs or limitations for this course? (water, power, room size, etc.)

No