SENATE COMMITTEE ON CURRICULAR AFFAIRS

COURSE SUBMISSION AND CONSULTATION FORM

Principal Faculty Member(s) Proposing Course

Name	User ID	College	Department
GLENNA MALCOLM	gmm193	Science (SC)	Not Available

Academic Home: Science (SC)

Type of Proposal: ☐ Add ☒ Change ☐ Drop

Current Bulletin Listing

Abbreviation: **BIOL**

Number: **120A**

☒ I am requesting recertification of this course for the new Gen Ed and/or University Requirements Guidelines

Course Designation

(BIOL 120N) Plants, Places, and People

Course Information

Cross-Listed Courses:

Prerequisites:

Corequisites:

Concurrents:

Recommended Preparations:

Abbreviated Title: Plts Pple and Plcs

Discipline: General Education

Course Listing: Inter-Domain

Special categories for Undergraduate (001-499) courses

Foundations

☐ **Writing/Speaking (GWS)**

☐ **Quantification (GQ)**

Knowledge Domains

☐ **Health & Wellness (GHW)**

☒ **Natural Sciences (GN)**

☐ **Arts (GA)**

☒ **Humanities (GH)**

☐ **Social and Behavioral Sciences (GS)**

Additional Designations

☒ **Bachelor of Arts**

☒ **International Cultures (IL)**

☒ **United States Cultures (US)**

☐ **Honors Course**

☐ **Common course number - x94, x95, x96, x97, x99**

☐ **Writing Across the Curriculum**

First-Year Engagement Program

☐ **First-Year Seminar**

Miscellaneous

☐ **Common Course**

GE Learning Objectives

☒ **GenEd Learning Objective: Effective Communication**

☒ **GenEd Learning Objective: Creative Thinking**

☐ **GenEd Learning Objective: Crit & Analytical Think**

☐ **GenEd Learning Objective: Global Learning**

☒ **GenEd Learning Objective: Integrative Thinking**

☐ **GenEd Learning Objective: Key Literacies**

☒ **GenEd Learning Objective: Soc Resp & Ethic Reason**

Bulletin Listing

Minimum Credits:	3
Maximum Credits:	3
Repeatable:	NO
Department with Curricular Responsibility:	Biology (UPSC_BIOL)
Effective Semester:	After approval, the Faculty Senate will notify proposers of the effective date for this course change. Please be aware that the course change may not be effective until between 12 to 18 months following approval.
Travel Component:	NO

Course Outline

A brief outline or overview of the course content:
Week 1: Intro to Plants, Finding Peer Reviewed Evidence To Support Claims
Week 2: Plant Anatomy
Week 3: Photosynthesis & Plant Growth
Week 4: Plant Hormones & Plant Reproduction
Week 5: Ancient - Modern Agriculture; Guns, Germs, & Steel
Week 6: Grain and Legume Crops
Week 7: Fruits/Veggies, Spices
Week 8: Plants For Medicine, Poisons, & Drugs
Week 9: Beer & Wine
Week 10: Plants for Biofuel & Environment
Weeks 11/12: Peer Learning & Teaching

A listing of the major topics to be covered with an approximate length of time allotted for their discussion:
Plant Biology (Anatomy, Photosynthesis, Reproduction/Breeding, Communication): 40%
Plant Connections to Civilization Historically: 50%
- Agriculture
- Food
- Medicine

Plant Connections with Modern Science/Sustainability: 10%
- Biofuels
- Green Architecture and Pollution Clean-Up

Course Description:
Students learn about plants from the perspective of sustainability, agriculture, food, genetics, textiles, and medicine, across history and around the globe, after spending a few weeks learning about basic plant biology. Students engage with a group project in collaboration with other students to deepen their understanding and appreciation of plant biological and historical connections with human civilization. Students share these projects with the class in a peer-teaching and learning exercise in the final weeks of class.

The name(s) of the faculty member(s) responsible for the development of the course:

- Name: GLENNA MALCOLM (gmm193)

Title:
Phone:
Address:

Campus: UP
City:
Fax:

Course Justification

Instructional, Educational, and Course Objectives:
This section should define what the student is expected to learn and what skills the student will develop.
Course Learning Objectives:

To explore the world of plants, particularly those that have propped up or supported human civilizations in important ways
To gain a basic understanding of plant anatomy with focus on anatomical traits that were desired by humans for their use
To understand how plants grow, live, and reproduce
To compare and contrast traditional vs. modern ways of domesticating crops and producing plant-based products
To explore plant use by humans historically and globally using agriculture, food, and medicine, as examples beginning with the first humans and ending in modern day
To consider how plants are being used for sustainability purposes, including as biofuels and for green architecture and environmental clean-up
To communicate about plants and science both orally and in written form using evidence-based approaches to support arguments
To collaborate with peers to teach classmates in an effective and engaging manner

Evaluation Methods:
Include a statement that explains how the achievement of the educational objective identified above will be assessed. The procedures for determining students' grades should be specifically identified.
Exams
Weekly Homework (one-page essays)
Group Work (facilitated as discussion forums online)
Group Project

Relationship/Linkage of Course to Other Courses:
This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.
This course is intended as a general education requirement for non-Biology major students at Penn State with Biology students taking it as an elective. As such, this course is taught at the level of a non-major with tutorials built in Canvas at that level. The assumption in the course is that students have little to no plant biological background so time is spent on the front end to help students engage with plant biology basics before shifting into the more integrated portion of the course.

Relationship of Course to Major, Option, Minor, or General Education:
This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.
This course serves as a general education course for the Department of Biology both in-person and online. Since the course is very obviously 50% science and 50% history, it could also served as an interdomain course for GN and GH.

A description of any special facilities:
None required.

Frequency of Offering and Enrollment:
This course is offered via World Campus Fall, Spring, and Summer Session I +II with 48 students for each offering. It is also offered in spring as an in-person course at University Park and is taught to 48 students. This course is sometimes taught at branch campuses to varying numbers of students.

Justification for Changing The Proposal:
Include a justification for each change to the course. Particular attention should be paid to the effects of the course change within the discipline and in other disciplines where the course may be required within a major or used as a service course. When a unit submits several course changes, with or without new course proposals, a general statement covering the programmatic effects of the changes should be submitted.
Since the course is very obviously 50% science and 50% history, the course seems to be most appropriately offered as a GN/GH in addition to IL/US/BA status.

Alignment with General Education Objectives

☒ **EFFECTIVE COMMUNICATION – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.**

☐ **KEY LITERACIES – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.**

☐ **CRITICAL AND ANALYTICAL THINKING – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.**

☒ **INTEGRATIVE THINKING – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.**

☒ **CREATIVE THINKING – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.**

☐ **GLOBAL LEARNING – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people's lives.**

☒ **SOCIAL RESPONSIBILITY AND ETHICAL REASONING – the ability to assess one's own values within the social context of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self-- knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.**

What component(s) of the course will help students acheive the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.

1. The main collaborative project in this course give students the opportunity to synthesize knowledge from the course, across multiple domains (biology and history), across cultures globally and then also be creative in that they create their own lessons they share with the class. In effect, the students teach and learn from each other in the last two weeks of the course.

2. Additionally, weekly individually written homework assignments and group work (in class, otherwise discussion forum) gives students numerous opportunities to practice their written and oral communication skills, which culminates in the above mentioned collaborative project which involves further written and oral communication in the form of peer teaching and learning at the class level.

3. Finally, using evidence-based reasoning, students consider social and ethical responsibility for environmental challenges woven throughout the course (ex. climate change, plants for biofuels vs food, plants for green architecture and environmental clean-up vs synthetic methods to do so, plants and efficacy of natural medicines).

4. Creative thinking is employed by students via the integrated, multi-week peer teaching and learning project lessons developed in the course. The students are given the freedom to present their lessons on particular plants to their peers in creative ways of their choosing and synthesize biological and historical information about their plants taking advantage of the knowledge and skills they have built throughout the course.

How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student's overall performance in this course.

1. Collaborative project is assessed by the teacher with two opportunities for feedback on the project earlier in the semester. The last exam of the semester has questions sourced from the collaborative projects shared with the class.

2. Written homework and group work assignments are assessed by the teacher using consistent rubrics from week to week so students can work to improve upon the skillsets emphasized therein.

3. In all rubrics in the course, an expectation is that students used evidence-based reasoning by supporting all claims about plants, history, ethical dilemmas, etc., with credible references. An activity in week 1 helps students find credible references and avoid poor or even false informational sources.

4. Creativity on presentation of teachable materials is an explicit part of the rubric for the semester-long class project. Additionally, students have two discussion forums where they reflect on ways their classmates creatively synthesized knowledge and helped them to learn about the biology and history of their particular plants.

General Education Domain Criteria

General Education Designation: Inter-Domain

GH Criteria

☐ **Explain the methods of inquiry in humanities fields and describe how the contributions of these fields complement inquiry in other areas**

☒ **Demonstrate competence in critical thinking about topics and texts in the humanities through clear and well-reasoned responses**

☒ **Critically evaluate texts in the humanities– whether verbal, visual, or digital– and identify and explain moral or ethical dimensions within the disciplines of the humanities**

☒ **Demonstrate knowledge of major cultural currents, issues, and developments through time, including evidence of exposure to unfamiliar material that challenges their curiosity and stretches their intellectual range**

☒ **Become familiar with groups, individuals, ideas, or events that have influenced the experiences and values of different communities**

What components of the course will help students acheive the domain criteria selected above?

Exams allow assessment of students' abilities to demonstrate knowledge of major cultural currents, issues, and developments through time, some of which may touch upon unfamiliar material that challenges their curiosity and to become familiar with groups, individuals, ideas, or events that have influenced human civilizations in this case. Written homework assignments, group work, and the collaborative project also assess these but in addition add in demonstrating competition in critical thinking and ability critically evaluate texts in the humanities as these forms of assessments expect the students to find and evaluate sources to support arguments they make for ethical or social dilemmas and to piece together the history of particular plants, particularly when it has major impact on human civilization.

GN Criteria

☒ **Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas**

☒ **Construct evidence-based explanations of natural phenomena**

☒ **Demonstrate informed understandings of scientific claims and their applications**

☒ **Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge**

☒ **Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems**

What components of the course will help students acheive the domain criteria selected above?

In addition to exams that test student knowledge of plant biology and environmental sustainability in this course, students are encouraged to use evidence-based reasoning for all claims in homework, group work, and the collaborative project and are encouraged to seek out peer-reviewed research articles when they can (ex. when crops were domesticated [bio/archeology literature] or efficacy of plant for x illness [bio medical literature]. In piecing together the history of a plant (human and biological perspectives), students have to find their own resources and decide whether they are credible and explain any natural scientific phenomena relative to the plant they are studying for the semester. Finally, students will have multiple opportunities to identify societal or philosophical implications of discoveries in the natural sciences, with one example being GMOs and their potential to help in feeding the world versus concerns some have for their use.

Integrative Studies

Explain how the intellectual frameworks And methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.

In this course, students will also be learning about plants, people, and places from around the globe and from different time periods since humans started interacting with plants. Students will use evidence-based reasoning to find reputable and quality resources, in collaboration with peers, to construct a lesson about a plant, which will include information about plant biology & anatomy, history of crop domestication, and several key historical events involving the plant that helped influence civilization. Aside from plant biology and anatomy, the rest of the topics in their projects require students to integrate and apply their knowledge from both knowledge domains they learned in this course. These same topics will be approached in the course with other plants and historical information first so they can use that information as a foundation before applying their knowledge in the collaborative project. They will also have practice integrating and applying their knowledge from both knowledge domains throughout the course via written homework. Thus, common critical skill-sets from Bloom's Knowledge Pyramid used in the class in both knowledge domains include: understanding, applying, analyzing (synthesis), evaluating, and creating.

Demonstrate that each Of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.

If you look at the time and attention paid to the main topics in the course, plant biology and history end up being approximately 50/50:
Plant Biology 40%
Plant History/Civilization 50%
Sustainability and Environment 10%

The plant biology portion focuses on plant biology primarily in order that the students have a basic/fundamental understanding of plants that will help them engage better with the rest of the course. Thus, what students learn in plant biology comes up again and again throughout the course as plant history in regard to civilization is weaved in. One obvious example would be some important crop domestication events in history, which weave in archeology, history, and anthropology, but also require students to understand the science behind crop domestication/traditional breeding. There are many such examples.

Collaborative Project, Group Work, and Written Homework all require understanding and application of knowledge from both domains. Using crop domestication again as an example, students work together as a group to gather information from both knowledge domains (as described in the paragraph above) about crop domestication of a particular plant and for written homework, they submit a group summary. Feedback is provided and then they can revise the homework assignment to include this information in the collaborative project. Revision (i.e. incorporation of feedback) is an explicit part of the grading rubric for the final project.

Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.

Teachers in this course are all Biology instructors with significant knowledge about plant biology, natural history of plants, agriculture, and/or sustainability. In any cases where historical/archeological/anthropological information cannot be gleaned from books or research articles, colleagues in other departments at PSU would be contacted.

Describe the assessments that will be used to determine students' ability to apply integrative thinking.

The collaborative project, which takes place over the course of the semester, allows the students to synthesize their plant biology and history knowledge (both knowledge domains) and apply it to a different plant for which they construct a lesson to share with the entire class. Students will also be tested via exams in both knowledge domains throughout the semester and write and

communicate weekly in either one or both knowledge domains via their homework and group work (discussion forums when online).

General Education Designation Requirements

Bachelor Of Arts Requirements:

- [x] **BA: Natural Sciences**
- [ ] **BA: Other Cultures**
- [ ] **BA: Foreign/World Lang (12th Unit)**
- [x] **BA: Humanities**
- [ ] **BA: Social and BA: Behavioral Sciences**
- [ ] **BA: Arts**
- [ ] **BA: Quantification**
- [ ] **BA: Foreign/World Lang (All)**

The justification statement covers nine major concerns and each area must be addressed separately.

1. Instructional, educational, and course objectives: contained in this proposal
2. Evaluation methods: contained in this proposal
3. Relationship/linkage of course to other courses: contained in this proposal
4. Relationship of course to major, option, minor, or General Education: contained in this proposal
5. If the course is to be offered by several colleges, consultation from the other colleges should be provided: contained in this proposal
6. A description of any special facilities (e.g. labs or equipment) required to teach the course effectively should be included in the proposal: none required
7. List needed library resources: none required
8. Frequency of offering and enrollment: contained in this proposal
9. Indicate how many students are expected to enroll and how often the course will be taught: contained in this proposal

Intercultural Requirements:
United States Cultures (3 credits)

The following learning objectives are explored in this course with specific detail regarding topics where we use them included below each:

1.Cultivate student knowledge of issues of social identity such as ethnicity, race, class, religion, gender, physical/mental disability, age, or sexual orientation;
--> Race, gender, age, class identities with agriculture, farming life, and slavery systems, including focus on cotton and tobacco impacts on U.S. History
2.Convey to students a knowledge of different United States values, traditions, beliefs, and customs
3.Increase student knowledge of the range of United States cultural achievements and human conditions through time;
--> Agriculture in the U.S., historically to modern day, food access, slave labor, indentured servitude, environmental impacts, all nested in values, customs, and beliefs at the time plant use is being examined.
4.Increase student understanding of the nature of societal justice, and equity in the United States at the societal, institutional, and individual levels.
--> Through topics, including food & medicine access, slave labor, and rural U.S. (agricultural perspective), examinations of race, gender, and economic inequalities occur.

International Cultures (IL) (3 credits)

The following learning objectives are explored in this course with specific detail regarding topics where we use them included below each:
1.Convey to students a knowledge of other nations' cultural values, traditions, beliefs, and customs;
--> Plant use by humans across the globe is discussed and it is always nested in cultures, traditions, and beliefs, some of which the students examine for efficacy by looking for peer review literature to back up claims made about certain plant uses.
2.Increase students' knowledge of the range of international cultural achievements and human conditions through time;
--> Plant use by humans globally is explored from cave men through modern time, in many different cultures and in many different applications (medicine, food, agriculture, fuel, etc), with many applications of plants examined at different time points to have a better understanding of how the relationship with humans may have changed over time.
3.Increase students' knowledge of nations and cultures not in isolation, but in relation to one another.
--> Different cultures in different regions of the globe used plants in different ways and these comparisons and contrasts are made throughout the course and during project time when students focus on particular plants.
4.Increase student understanding of the nature of societal justice, and equity in international nations at the societal, institutional, and individual levels.
--> When considering plant use by humans globally and historically, issues of social justice come up from human treatment of particular groups (i.e. slave labor) and economics (i.e. who has access to different plants, how are they paid for their labor, etc.). These issues may come up in the context of a particular group of people, country, etc.

Campuses That Have Offered (BIOL 120A) Over The Past 4 Years

semester	AB	AL	BK	BR	BW	CR	DS	ER	FE	GA	GV	HB	HN	HY	LV	MA	NK	PC	SH	SL	UP	WB	WC	WS	XC	XP	XS	YK

UPLOADED DOCUMENTS FOLLOW:

Plants, Places, and People [BIOL120], GN, US/IL
12-Week Course
Dr. Glenna Malcolm
Office: 412B Mueller Bldg
Email: gmm193@psu.edu

General Education Learning Objectives:

- To exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish
- To synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, while also able to identify linkages between existing knowledge and new information and to transfer knowledge within and beyond their current contexts
- To synthesize existing ideas, images, or expertise in original ways and to perform, make, think, or act in imaginative ways that may be characterized by innovation, divergent thinking, and intellectual risk-taking

Course Learning Objectives:

- To explore the world of plants, particularly those that have propped up or supported human civilizations in important ways
- To gain a basic understanding of plant anatomy with focus on anatomical traits that were desired by humans for their use
- To understand how plants grow, live, and reproduce
- To compare and contrast traditional vs. modern ways of domesticating crops and producing plant-based products
- To explore plant use by humans historically and globally using agriculture, food, and medicine, as examples beginning with the first humans and ending in modern day
- To consider how plants are being used for sustainability purposes, including as biofuels and for green architecture and environmental clean-up
- To communicate about plants and science both orally and in written form using evidence-based approaches to support arguments
- To collaborate with peers to teach classmates in an effective and engaging manner

Weekly Expectations For the Course:
1. (3-4 hours) Read course material, watch videos, take notes, and participate in discussion forums in your weekly modules.
2. (2-3 hours) Complete a homework assignment that will either involve a video or some reading followed by some guiding questions.
3. (40 minutes) Take a 20 question, timed exam on the material you explored every two weeks in the course (Weeks 2, 4, 6, 8, 10, 12).
4. A group project will be due the Friday of week 10 with the assignment load reduced in the two weeks leading up to it. Parts of the project will be built earlier in the course as well.

Group Plant Lessons Based On Your Plant From Your Book:
The goal is for each plant book group to create 40 minute lessons in Canvas that are engaging and include important stories as to why your particular plant is/was so useful to human civilizations. These lessons will be due by the end of week 10. Use my CANVAS lessons as models, but feel free to be creative and teach however you think will be engaging and informative.

Course Schedule: Our weekly course schedule for the semester can be accessed here.

Required Course Material:

- Access to internet to view and watch course materials on CANVAS. It is your responsibility to have internet access in an online course, with free internet availability at certain coffeehouses and the public library if you have connectivity issues at some point during the semester.
- After selecting your plant group at the end of week #1, purchase one plant book (fiction novel), which will be discussed in your groups and used as a resource to develop a lesson based on that plant for your classmates to engage with later in the course.

Office Hours: By appointment.

Course Grading:

Assignment	# of Assignments	Total Points
Quick Participation	3, various pts	10
Homework	8 @ 15 pts	120
Mini Exams	5 @ 40 pts 1 @ 50 pts	250
Discussion Forum Participation	11 @ 10 pts	110
Group Plant Book Teaching Lesson + Group Peer Review	80 30	110
TOTAL POINTS		**600**

Late Policy:

Since you are given a full week to complete each module, at your convenience, late assignments will not be tolerated. Starting after the drop/add (Week 2), quizzes and discussion forums will close each Sunday at 11:59pm. Homework assignments will be docked -25% in the first 24 hours of being late, -50% in the next 48 hours of being late, and then will receive a zero for anything later than that. No exceptions will be made without appropriate documentation from a doctor or other Pennsylvania State University recognized reasons, such as a religious holiday or participation as an athlete in a D1 sports event.

Assignment of Final Grades:

Exam grades are weighted less in this course, so participation, homework, and projects heavily determine your final grades (60% of the grade).

Final grades will be calculated from your earned grades in the course, with no curve as follows: A = 93-100 A- = 90-92 B+ = 87-89 B = 83-86 B- = 80-82 C+ = 77-79 C = 70-76 D = 60-69.

Academic Integrity:

All Penn State Policies regarding ethics and honorable behavior apply to this course.

Disability Statement:

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) Web site provides contact information for every Penn State campus: http://equity.psu.edu/sdr/disability-coordinator. For further information, please visit Student Disability Resources Web site: http://equity.psu.edu/sdr.

Course Schedule and Assignment List:

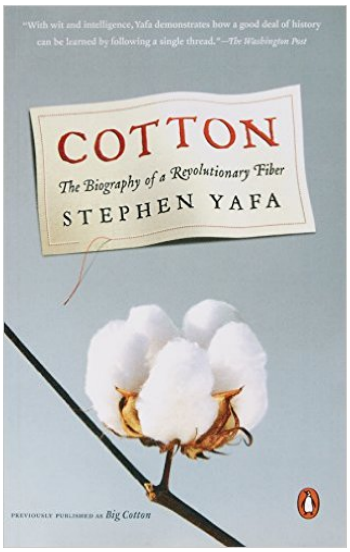
All assignments are due by the date listed below by 11:59pm, except for your group project lessons, due Friday of Week 10 at 5pm. For a refresher on this course's late policy for homework assignments, please refer to our syllabus. Discussion forums and mini-exams will not be accessible after the due date. Please email me with specific requests if you have a university-recognized reason (Links to an external site.)Links to an external site. keeping you from doing your work.

Week	Due Date	Lesson Material	Topics	Project and Homework Assignments	Discussion Forum	Mini-Exam
1	May 21	Module 1	Intro Syllabus (5 pt) Credible Sources	Carnivorous Plants Video + 1 Pg Essay	Garlic Benefits: Fact or Fiction	None
2	May 28	Module 2	Anatomy Paper	Plant Communication Video + 1 Pg Essay	Intro To Your Group	Wk 1 & 2
3	June 4	Module 3	Photosyn. Communication Auxin/Cyt (2 pt)	Group "Page": Plant Anatomy/Biology	Plan Plant Anatomy Page	None
4	June 11	Module 4	Reproduction Breeding	Read Plant Book 1 + Essay	GMO Discussion	Wk 3 & 4
5	June 18	Module 5	Ancient Ag Guns, Germs... Modern Ag	Group "Page": Crop Domesticate	Plan Crop Domesticate Page	None
6	June 25	Module 6	Cereal Grains Beans	Read Plant Book 2 + Essay	Plant Book Discussion 1	Wk 5 & 6
7	July 2	Module 7	Fruits/Veg Spices I & II DivyBook (3 pt)	Read Plant Book 3 + Essay	Plant Book Discussion 2	None
8	July 9	Module 8	Aspirin Film Medicine, Poison, Drug	Finish Plant Book 4 + Essay	Plant Book Discussion 3	Wk 7 & 8
9	July 16	Module 9	Beer Wine	No Homework	Plant Book Discussion 4	None
10	July 23	Module 10	Plant Biofuels Architecture	Plant Book Lesson* Group Peer Reviews*	No Discussion Forum	Wk 9 & 10

11	July 30	Module 11	Plant Book Group Lessons	No Homework	Lesson Effectiveness I	None
12	Aug 6	Module 12	Plant Book Group Lessons	No Homework	Lesson Effectiveness II	Wk 11&12 Plant Lessons

*Due Fri at 5pm.

Plant Book Options (updated 10-16-17)

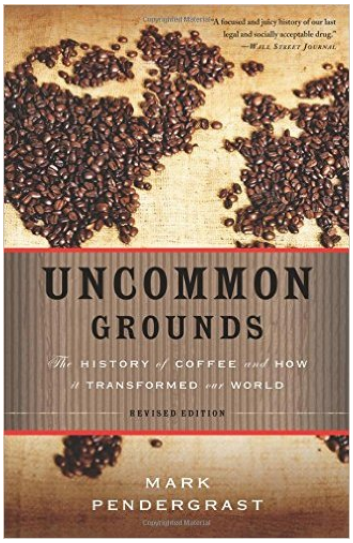


Avg. Price: $12.00-15.00

Page Count: 432

Cotton: The Biography of a Revolutionary Fiber
By, Stephen Yafa

In the tradition of Mark Kurlansky's Cod and Salt, this endlessly revealing book reminds us that the fiber we think of as ordinary is the world's most powerful cash crop, and that it has shaped the destiny of nations. Ranging from its domestication 5,500 years ago to its influence in creating Calvin Klein's empire and the Gap, Stephen Yafa's Cotton gives us an intimate look at the plant that fooled Columbus into thinking he'd reached India, that helped start the Industrial Revolution as well as the American Civil War, and that made at least one bug—the boll weevil—world famous. A sweeping chronicle of ingenuity, greed, conflict, and opportunism, Cotton offers "a barrage of fascinating information" (Los Angeles Times).

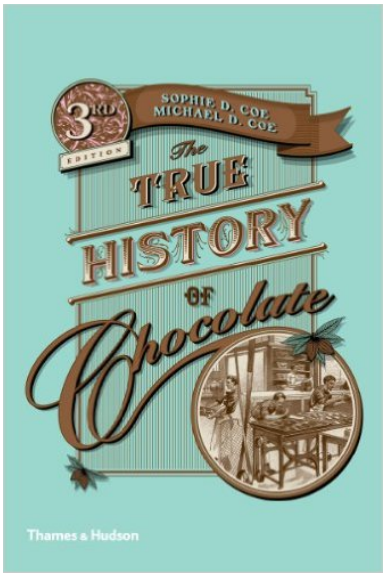


Avg. Price: $12.00-15.00

Page Count: 480

Uncommon Grounds: The History of Coffee and How It Transformed The World
By, Mark Pendergrast

Uncommon Grounds tells the story of coffee from its discovery on a hill in ancient Abyssinia to the advent of Starbucks. In this updated edition of the classic work, Mark Pendergrast reviews the dramatic changes in coffee culture over the past decade, from the disastrous “Coffee Crisis” that caused global prices to plummet to the rise of the Fair Trade movement and the “third-wave” of quality-obsessed coffee connoisseurs. As the scope of coffee culture continues to expand, Uncommon Grounds remains more than ever a brilliantly entertaining guide to the currents of one of the world’s favorite beverages.



Avg. Price: $8.00-17.00

Page Count: 240

The True History of Chocolate
Sophie and Michael Coe

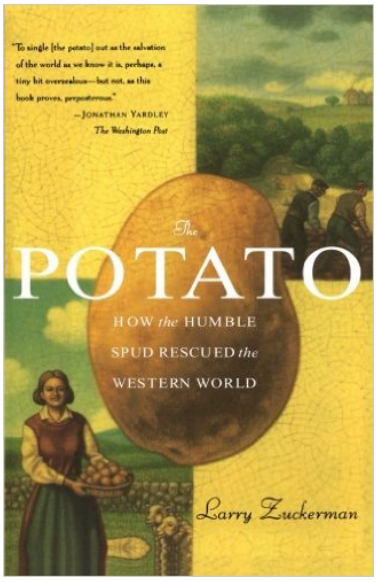
This delightful tale of one of the world's favorite foods draws on botany, archaeology, and culinary history to present a complete and accurate history of chocolate. It begins some 4,000 years ago in the jungles of Mexico and Central America with the chocolate tree, Theobroma Cacao, and the complex processes necessary to transform its bitter seeds into what is now known as chocolate. This was centuries before chocolate was consumed in generally unsweetened liquid form and used as currency by the Maya and the Aztecs after them. The Spanish conquest of Central America introduced chocolate to Europe, where it first became the drink of kings and aristocrats and then was popularized in coffeehouses. Industrialization in the nineteenth and twentieth centuries made chocolate available to all, and now, in our own time, it has become once again a luxury item.

Avg. Price: $10.00-12.00

Page Count: 464

Sugar: A Bittersweet History
Elizabeth Abbott

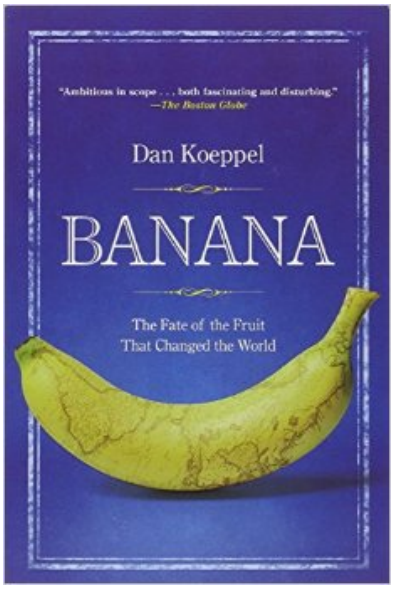
The book explores the hidden stories behind this sweet product, revealing how powerful American interests deposed Queen Lili'uokalani of Hawaii, how Hitler tried to ensure a steady supply of beet sugar when enemies threatened to cut off Germany's supply of overseas cane sugar, and how South Africa established a domestic ethanol industry in the wake of anti-apartheid sugar embargos. The book follows the history of sugar to the present day, showing how sugar made eating on the run socially acceptable and played an integral role in today's fast food culture and obesity epidemic. Impressively researched and commandingly written, Sugar will forever change perceptions of this sweet treat.



The Potato: How the Humble Spud Rescued the Western World
Larry Zuckerman

The Potato tells the story of how a humble vegetable, once regarded as trash food, had as revolutionary an impact on Western history as the railroad or the automobile. Using Ireland, England, France, and the United States as examples, Larry Zuckerman shows how daily life from the 1770s until World War I would have been unrecognizable-perhaps impossible-without the potato, which functioned as fast food, famine insurance, fuel and labor saver, budget stretcher, and bank loan, as well as delicacy. Drawing on personal diaries, contemporaneous newspaper accounts, and other primary sources, this is popular social history at its liveliest and most illuminating.

Avg. Price: $5.00-16.00
Page Count: 336

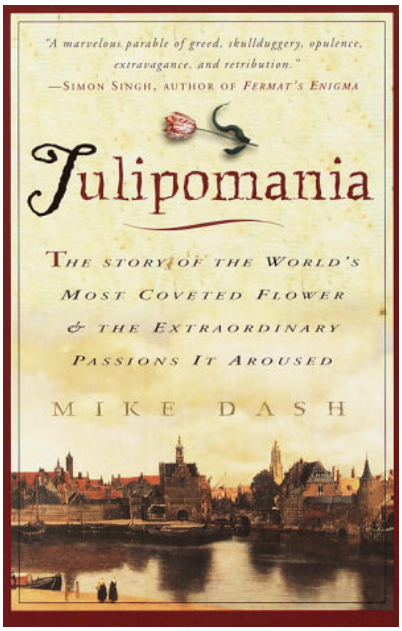


Banana: The Fate of the Fruit That Changed the World
Dan Koeppel

In this fascinating and surprising exploration of the banana's history, cultural significance, and endangered future, award-winning journalist Dan Koeppel gives readers plenty of food for thought. Fast-paced and highly entertaining, Banana takes us from jungle to supermarket, from corporate boardrooms to kitchen tables around the world. We begin in the Garden of Eden—examining scholars' belief that Eve's "apple" was actually a banana—and travel to early-twentieth-century Central America, where aptly named "banana republics" rose and fell over the crop, while the companies now known as Chiquita and Dole conquered the marketplace. Koeppel then chronicles the banana's path to the present, ultimately—and most alarmingly—taking us to banana plantations across the globe that are being destroyed by a fast-moving blight, with no cure in sight—and to the high-tech labs where new bananas are literally being built in test tubes, in a race to save the world's most beloved fruit.

Avg. $10.00-14.00

Page Count: 304

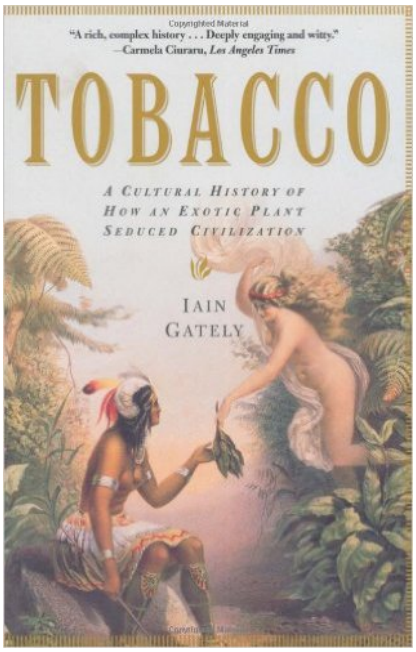


Tulipomania: The Story of the World's Most Coveted Flower & The Extraordinary Passions It Aroused
Mike Dash

Historians would come to call it tulipomania. It was the first futures market in history, and like so many of the ones that would follow, it crashed spectacularly, plunging speculators and investors into economic ruin and despair. This is the history of the tulip, from its origins on the barren, windswept steppes of central Asia to its place of honor in the lush imperial gardens of Constantinople, to its starring moment as the most coveted--and beautiful--commodity in Europe. Historian Mike Dash vividly narrates the story of this amazing flower and the colorful cast of characters--Turkish sultans, Yugoslav soldiers, French botanists, and Dutch tavern keepers--who were centuries apart historically and worlds apart culturally, but who all had one thing in common: tulipomania.

Avg. Price: $10.00-12.00

Page Count: 273

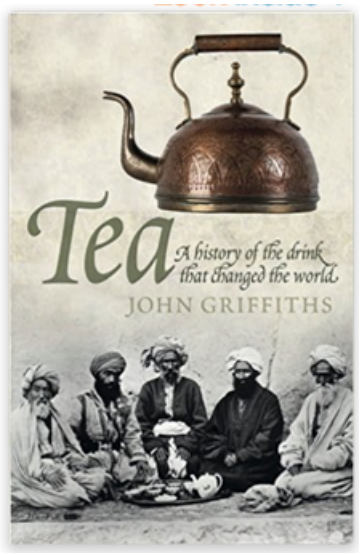


Tobacco: A Cultural History of How An Exotic Plant Seduced Civilization
Iain Gately

Tobacco was first cultivated and enjoyed by the indigenous inhabitants of the Americas, who used it for medicinal, religious, and social purposes long before the arrival of Columbus. But when Europeans began to colonize the American continents, it became something else entirely -- a cultural touchstone of pleasure and success, and a coveted commodity that would transform the world economy forever. Iain Gately's Tobacco tells the epic story of an unusual plant and its unique relationship with the history of humanity, from its obscure ancient beginnings, through its rise to global prominence, to its current embattled state today. In a lively narrative, Gately makes the case for the tobacco trade being the driving force behind the growth of the American colonies, the foundation of Dutch trading empire, the underpinning cause of the African slave trade, and the financial basis for our victory in the American Revolution. Informed and erudite, Tobacco is a vivid and provocative look into the complex history of this precious plant.

Avg. Price: $10.00-15.00

Page Count: 416



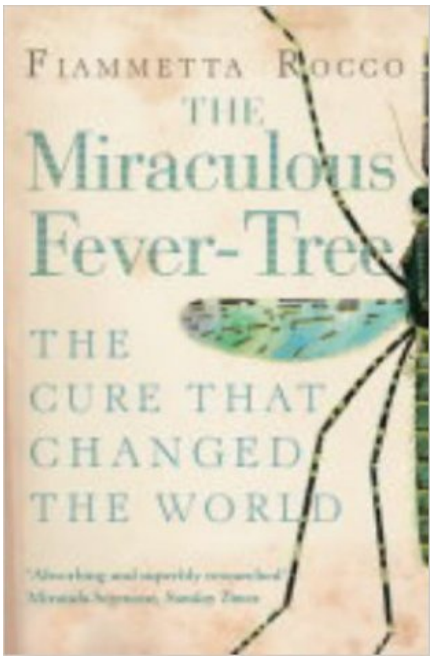
Avg. Price: $6.00-19.00

Page Count: 392

Tea: A History of the Drink That Changed The World
John Griffiths

A fascinating account of the world's favorite beverage from the son of Sir Percival Griffiths, author of the monumental and definitive tome The History of the Indian Tea Industry

A study of the phenomenon as well as the commodity, this is a comprehensive survey of the drink that is imbibed daily by more than half the population of the world. After water, tea is the second most-consumed drink in the world. Almost every corner of the globe is addressed in this comprehensive look at 4,500 years of tea history. Tea has affected international relations, exposed divisions of class and race, shaped the ethics of business, and even led to significant advances in medicine. Thoroughly researched and captivating, this is a unique study of the little green leaf.



Avg. Price: $8.00-12.00
Page Count: 368

The Miraculous Fever-Tree: The Cure That Changed the World
Fiammetta Rocco

In the summer of 1623, ten cardinals and hundreds of their attendants, engaged in electing a new Pope, died from the 'mal'aria' or 'bad air' of the Roman marshes. Their choice, Pope Urban VIII, determined that a cure should be found for the fever that was the scourge of the Mediterranean, northern Europe and America, and in 1631 a young Jesuit apothecarist in Peru sent to the Old World a cure that had been found in the New – where the disease was unknown.

The cure was quinine, an alkaloid made of the bitter red bark of the cinchona tree, which grows in the Andes. Both disease and cure have an extraordinary history. Malaria badly weakened the Roman Empire. It killed thousands of British troops fighting Napoleon during the Walcheren raid on Holland in 1809 and many soldiers on both sides of the American Civil War. It turned back many of the travellers who explored west Africa and brought the building of the Panama Canal to a standstill. When, after a thousand years, a cure was finally found, Europe's Protestants, among them Oliver Cromwell, who suffered badly from malaria, feared it was nothing more than a Popish poison. More than any previous medicine, though, quinine forced physicians to change their ideas about treating illness. Before long, it would change the face of Western medicine.