

# Environmental Science and Public Policy 11: [Sustainable Development](#)

Harvard College/GSAS: 109934

**Meeting Times and Location:** Fall 2017

Class: Monday and Wednesday, 2:30-4:00

Mandatory section meeting: Thursday 2-3pm or Thursday 5-6pm or Friday 10-11am

Location: Museum of Comparative Zoology 440 ([Harvard University Center for the Environment](#))

*Note: This course, when taken for a letter grade, meets the Gen Ed requirement for Societies of the World*

## Instructor

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## Teaching Fellows:

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## 1 Overview

This course explores the question “What should be the human use of the earth?” Its approach is to analyze the earth and its human populations as a coupled social-environmental system, coevolving through time. Its goal is to help you understand how that coevolution can be guided toward sustainable development, which this course will define, following international conventions as “development that improves the well-being of people here and now in ways that do not diminish the prospects of people -- elsewhere or in future generations -- to improve their own well-being.” To this end, the course will equip you to serve as a “general practitioner” supporting the pursuit of sustainability. In particular, you will learn concepts and skills that have proven useful for helping citizens, corporations, governments and other social actors to:

1. Articulate shared goals for sustainable development of their social-environmental system and assess progress (or lack thereof) toward achieving those goals;
2. Diagnose obstacles to further progress and identify opportunities for overcoming those obstacles;
3. Transform knowledge into action for pursuing sustainability.

You will have opportunities to hone these general concepts and skills on a range of specially designed teaching cases including Boston Harbor (via a field trip), Alaska’s salmon fishery, and London’s development from a hamlet to a world mega-city. In addition, you -- together with a team of other students -- will apply the *general* concepts and skills to the *particular* challenges of sustainable development encountered in a specific region of the world. For the 2017 offering of the course, these “application regions” include one of the world’s largest mega-cities (China’s Pearl River Delta and its anchor of Hong Kong), one of the world’s most dynamic remaining frontiers (Brazil’s Acre province on the western edge of the Amazon), and one of the world’s youngest and fastest growing populations (in East Africa’s nation of Uganda). You will be assigned to one of these regions by the teaching staff.

The course is multidisciplinary, drawing from the natural sciences, social sciences, and humanities. It employs quantitative and qualitative methods as needed, but provides training for students who need it to master those methods. The “general practitioner” orientation of the course emphasizes a broad perspective --a perspective increasingly in demand by business, government, NGOs, consulting, and academia -- from which the big picture of sustainable development can be understood, and the specialist expertise needed in particular contexts can be identified, mobilized, and integrated. The course can thus serve as a stand-alone foundation for what Harvard’s Amartya Sen has called “informed agitation” in the pursuit of sustainability, or as an introduction to more specialized training in particular challenges facing contemporary social-environmental systems (e.g. climate change, poverty traps or pesticide treadmills) or in particular approaches for addressing those challenges (e.g. biological conservation, clean energy, green manufacturing, organic agriculture).

Most classes in the course will involve a mix of lecture, small group deliberations, and plenary discussions. A weekly (mandatory) section meeting will provide an opportunity for students to collaborate in developing in-depth knowledge of sustainability challenges in their assigned “application region,” together with the skills necessary for analyzing and reporting on those challenges. The course is capped at 30 students to allow ample opportunity for discussion in class and section. There are no prerequisites. Preference will be given to students enrolled in, or seriously contemplating enrollment in, the Environmental Science and Public Policy concentration.

Students will be evaluated on the basis of class and section participation, 10 short response notes (250 words max), two take-home exams on key sustainability terms and concepts applied to the teaching and application region case studies covered in the course, a group presentation on the most important obstacles to and opportunities for the pursuit of sustainability in student’s “application region”, and a final individual paper (approx. 2000 words) evaluating the opportunities and barriers to sustainable development in their “application region” and proposing an intervention within this context that could facilitate a transition towards sustainable development.

## 2 Strategy

To develop the concepts and skills listed above the course will draw on knowledge and insights from ethics, the arts and humanities (to address item 1 above); from the natural and social sciences, history and public policy (to illuminate items 1 and 2); from science and technology studies (to illuminate item 3) as well as from news items and other materials as appropriate. No one, including your instructor, can be expert in all of these fields. All, however, should be able to learn from the particular expertise and experience that each of us has to offer. One central intellectual challenge of the course will therefore be integration across individual perspectives, thus countering the retreat into the narrow disciplinary silos and professional specializations that increasingly cripple efforts to grapple with the big problems of our age. This is risky stuff: most of the time there will be someone in the classroom (as there will be in the organizations with which you later work on sustainability issues, or the communities you seek to help) who knows more about part of the topic being discussed than you do. It follows that our strategy for coming to terms with sustainable development – in the classroom as in front-line efforts – involves learning how to collaborate: to develop the habits of listening to what others have to say, asking one another for help, sharing what we each know best, and acknowledging our individual and collective limitations. To give us opportunities to hone these skills, the course syllabus is focused on a series of questions about “informed agitation” for sustainable development that we will explore collaboratively in class. The course will therefore involve teamwork and peer commentary in addition to more conventional individual assignments.

The second big strategic challenge for grappling with sustainable development is that context matters. For example, meeting energy needs in rural Africa requires different goals, knowledge, and action than does meeting housing needs in urban America. This is not to say that no generalizable knowledge about sustainable development exists – much of the course will be about such knowledge. But it does mean that we need to wean ourselves from the academic bias toward overvaluing generalizable knowledge, panaceas, and ostensibly “best” practices. The challenge is rather to learn how to shape understandings that are appropriate for particular places, times, and peoples by drawing on generalized knowledge and relevant experience from elsewhere, and then combining it with local knowledge and circumstances to produce useful guidance. To give us opportunities to hone such skills, during most of the course we will be organized into teams, each focused on one of the particular “application regions” noted above.

In each case, the responsible team will focus on current efforts to advance sustainable development in its assigned region. Each team will draw on perspectives from the course to evaluate the region’s current pursuit of sustainability, and to explore how those efforts might be improved in the future. This is not an artificial classroom exercise. Rather, it reflects an increasing practice of many organizations (businesses, governments, civil society, foundations, etc.) to counter their own “inside the box” thinking by seeking outside perspectives of how they are doing, and how they could do better, in their pursuit of sustainability.

## 3 Tactics

### 3.1 Prerequisites and requirements

There are no prerequisites for the course. It is designed to be accessible to students whether they are focused on the humanities, social sciences, or natural sciences. The course is open to all undergraduates enrolled at Harvard College who are willing to meet the expectations outlined in section 4 below. That said, the course is capped at 30 students to allow ample opportunity for discussion in class and section. Preference will be given to students enrolled in, or seriously contemplating enrollment in, the Environmental Science and Public Policy (ESPP) concentration. Should more than 30 students wish to enroll in the course, we will conduct a lottery with preference for ESPP concentrators and likely concentrators.

### 3.2 Meeting times and place

The class will meet MW from 2:30-4:00, in the Museum of Comparative Zoology 440 ([Harvard University Center for the Environment](#)). Attendance at weekly section meetings is also required of all students in the class. Available section times are Thursdays 2-3pm, Thursdays 5-6pm and Fridays 10-11am. Sections will be assigned using the

online sectioning tool. Sections begin the week of 9/11. Note, however, that there will be a field trip to evaluate the sustainability of development of Boston Harbor and its Islands on Friday September 8 from 9:00am to 4:30pm. (Details available on Canvas course site).

### 3.3 Class time

In keeping with the need for collaborative deliberation discussed above, most of the class time will involve discussion of the topic of the day. Students will be expected to have grappled with assigned readings, videos, and questions before class, and to contribute to class discussions through response postings to the Canvas web site, oral responses in class (volunteered and cold-called) and oral briefings based on the outcomes of small group breakout discussions. The instructor will provide some introductory lectures, but will serve primarily as a discussion leader and summarizer rather than a lecturer. The teaching fellows will function the same way in the required section meetings.

### 3.4 Readings

**Required Text:** For years, I have been hoping that someone would write a short but rigorous “big picture” book on sustainable development that could be used to supplement the more detailed research and policy papers needed for a course such as this. No one did. So I recently teamed up with two collaborators to write one. They are [Pamela Matson](#) [Professor and Dean of the School of Earth Sciences at Stanford] and [Kristen Andersson](#) [Professor of Political Science at Univ. Colorado, Boulder]. We piloted drafts of the book in previous offerings of this course and similar courses at my co-authors’ schools, revised the book based on comments from our students and peers, and welcomed publication of the present version by Princeton University Press in March 2016 under the title [Pursuing sustainability: A guide to the science and practice](#). We will use this book extensively in the course, so please obtain access to a copy. It is available from the Coop, as a (cheaper) e-book from the usual sources (e.g. Amazon, Apple, Google, etc.), and on library reserve. The first chapter, assigned for the first two classes, is available on the course web site.

**Additional Readings:** Understanding of sustainable development is rapidly evolving. As a result, much of the most relevant reading material is available only in research papers or policy briefs published by specialty journals and organizations. I will therefore assign a number of such readings. Many of them will be hard going for some of you (as I assure you they were for me) unless you happen to have upper level training in the particular field in question. I can only recommend that you stick with it: developing an ability to read intelligently across disciplines is not only necessary for grappling with sustainable development, it is part of what makes the grappling so exciting. Well in advance of each class I will post to the Canvas course site a 1-2 page summary of the main issues to be addressed plus a list of the required readings and how they relate to those main issues. Note, however, that the price of working directly with a rapidly evolving field is that new and useful background materials will become available after the course begins. As these come to my attention (through my own reading, work of the teaching staff, or suggestions from you), I will post them in the Supplementary Readings listed at the end of my summary posting. You don’t need to digest this “breaking” material, but may do so if you have the time and inclination. Copies of the assigned readings that are not taken from the course text book will be posted on the Canvas site. To honor the copyright on these materials, copies should NOT be distributed to others not enrolled in the course unless those materials are publically available on the web (i.e. access not restricted to Harvard account holders).

**Digging Deeper:** In a field as vast and rapidly changing as sustainable development, no one can pretend to know all the relevant literature. Keeping up, like so much in the field, is thus a collaborative endeavor. Here are some places where you can find an evolving set of news items and research writings that are broader and deeper than those assigned for this course:

- [Reader in Sustainable Development](#): Presidential Science Medalist and geographer Robert Kates has prepared an annotated “Reader” of the classic publications in the field. It’s a delight to browse, both for the comments accompanying the recommended readings and his effort to “classify” the literature.
- *Reviews*: Good review articles are the only way to even approximately keep up with the pace of modern research. [Here’s](#) a good short paper on why you should make a habit of monitoring the best review in

your field. The [Annual Review of Environment and Resources](#) could readily be called the Annual Review of Sustainable Development. It publishes one volume of about 20 reviews each year. It is designed to cover the whole field of sustainable development every 5 years. So, to a first approximation, the last 5 volumes are the equivalent of an up-to-date textbook on research in sustainable development. (Recent papers have covered everything from tipping points in the climate system to “literature and the environment” by Harvard’s own Prof. Lawrence Buell).

- *Breaking research:* There are lots of top journals publishing original research on sustainable development. My favorites include *Ecology and Society*, *Ecological Economics*, *World Development*, *Journal of Cleaner Production*, *Global Environmental Change Human and Policy Dimensions* and the *Sustainability Science* section of the *Proceedings of the National Academy of Sciences of the US (PNAS)*, of which I am an [unpaid] editor). All are available through Hollis, and have RSS feeds you can send to your favorite reader (mine is *Feedly*).
- *Breaking news:* Sustainability is everywhere. Here are some of the news sites I use in my struggle to keep up: [International Institute for Sustainable Development](#), [Grist](#), [Environmental Health News](#), [SciDevNet](#), [The Guardian’s Sustainable Business section](#).
- *Your suggestions:* On the Canvas course site, I invite you to alert the rest of us in the class to material (texts, pictures, videos, podcasts, from the news, the web or the journals) that you find particularly interesting.

### 3.5 Communication with the instructor and teaching fellows

Announcements regarding the class will be available on the Announcements page of the Canvas site. For questions or concerns about the class, start with the teaching fellows via the email addresses given on this syllabus and on the course site. The teaching fellows (TFs) will also be available for regular consultations at times to be announced early in the course. These will be listed on the Canvas course site.

I am at Harvard, instead of a think tank or national laboratory, because I deeply enjoy interacting with students. So please do your part to further such interactions outside of the classroom as well as during class. Possible subject matter includes (but is not restricted to) issues about the course not resolved with the TFs, specific questions about sustainable development, and general discussions about navigating your (academic) life at Harvard and the world beyond. I will hold regular office hours after class on many Mondays in an office adjoining the lecture room (HUCE 425b), and at other times by appointment in my office at Harvard Kennedy School (see directions below). The normal procedure for office hours is to sign up for times that suit your schedule using the scheduling link provided on the Canvas site. If you cannot make the normal office hours, please schedule time by email directly with my assistant [Leah Knowles](mailto:leah_knowles@hks.harvard.edu) (leah\_knowles@hks.harvard.edu) Let her know in the email when you can meet, how urgently you need to meet, and a couple of sentences about what you want to discuss with me. It will help to keep your email from getting lost in the flood if you put ‘ESPP11’ at the front of the subject line. For substantive issues that can be dealt with by email, or for personal issues or emergencies, you can also reach me via email at [William.Clark@harvard.edu](mailto:William.Clark@harvard.edu). Again, you are more likely to get a quick response if you put ‘ESPP\_11’ at the front of the subject line. In emergencies, the surest way to reach me is through Ms. Knowles. Make sure she knows that you are an ESPP11 student, and that you need to see me soon. She will find a way.

You can find my office at the Kennedy School by: 1. Enter the HKS building at the corner of JFK and Eliot Streets (across from Dunkin Donuts); 2. Turn right upon entering and walk to the end of the hall, where you’ll find the stairs and elevator; 3. Take either to the 3<sup>rd</sup> floor; 4. Upon exiting the stairs or elevator, turn left; 5. Cross the landing, and go through the glass door labeled “Belfer Center for Science & International Affairs”; 6. Walk down the hallway until you come to the reception area; 7. Professor Clark’s office is located right behind the reception desk in the Belfer Center (L-360). I know that seems difficult, but once you visit me once, it will be easy to find again!

## 4 Expectations of faculty and students

You should expect me and the teaching fellows to provide a framework, information, course environment and feedback that will help you to learn the concepts and skills needed to think critically and act effectively in the realm of sustainable development. We will be prepared, by the end of the course, to write you recommendations for internships, jobs and fellowships reflecting the commitment and contribution to the course that you demonstrate through your work. We will also provide multiple opportunities for you to give us feedback on how we are doing: we want to learn from you how to do it better.

What we expect of you is a commitment to do the learning. In particular, you need to be willing to participate fully in the identification and synthesis of relevant knowledge, the classroom and section discussions, written assignments, and feedback on others' work. These commitments are what will make or break the course as a participatory learning environment. This means coming prepared to all classes and section meetings so that others can benefit from your research and insights. It means not just saying your own piece, but also listening and building on what others have to say. It means getting assignments in on time so that others have time to read them before building on them in their own work. It means giving and taking feedback on how the class can work better. It means having enough interest in what is going on in the class, and what I and your classmates are saying, to forego engagement with the electronic world during class hours except as requested by me\*. We are prepared to help you do the learning: if you have questions or are having difficulties, come to us. If you are willing to work hard to meet the expectations outlined above, we would like to have you join the class. If not, not.

## 5 Assignments, Evaluation and Grading

The course is designed to encourage participation, teamwork, accountability for learning the material, and practice in critically applying that material to inform action in the real world. To facilitate the learning process, you will be evaluated based on your participation, quality of written and oral communication, and on a final team oral presentation and individual paper that will draw on your group's semester-long critical assessment of the prospects for sustainable development in your application region. There are two short take home, open book exams. On average, you should expect to be turning in one assignment on most weeks throughout the semester. This is, however, less of a work load than it might at first appear. In general, the weekly response assignments are short (<250w), and many of them cumulatively build toward and will be incorporated in your final briefing and paper. A summary of the individual assignments is provided at the end of this section. A schedule of assignments and due dates will be posted on the Canvas course site.

### 5.1 Participation

Your responsibilities in the course are grounded on your engaged and informed participation in our mutual exploration of sustainable development. My concern here is not that you be right, or agree with me or the readings or your classmates. Rather, it is that you take contributions from all of these sources seriously, strive to understand what they are getting at, and probe them critically but respectfully. Grading will reflect both the substance and the timeliness of your participation in the course. In particular, responsible participation includes:

- Showing up on time for all class and section meetings, or explaining to the TAs *in advance and in writing* on the rare occasions when you can't.
- Being prepared to discuss critically and with *specific* examples the application of assigned material or insights from the broader literature to questions posed and cases discussed in class.
- Contributing your share to the group activities in section, including mutual critique of one another's work.

### 5.2 Academic Integrity and rules for collaboration

In general, this course follows the guidance on "Academic Integrity and Academic Dishonesty" presented in the Harvard College Handbook for students ([link here](#)). In particular, this course is grounded in the idea that open discussion and the exchange of ideas are essential to good academic work. But the price of getting people to be

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\* Students with special needs for electronic equipment in class should write me. We will work something out.

open with their ideas is to give them credit when you use those ideas. In a collaborative work environment, however, the rules for giving “fair credit” can become murky. Here on the ones we will use in this course:

- All assignments in this course will be clearly labeled either “single author” or “collaborative.”
- “Single author” assignments include the weekly response papers and final paper. For these, you are encouraged to consult with your classmates and to share sources and ideas. However, you should ensure that the written work you submit for evaluation contains substantial elements of your own research and that it reflects your own approach to the topic. Given that we will have been discussing in class and section many of the issues you write about, professional practice suggests that you provide a general credit to your colleagues in your final paper (e.g. “Acknowledgments: The work reported here has benefited substantially from my discussions with members of the ESPP11 course at Harvard College.”) For the weekly response papers you can skip this general acknowledgment. That said, any major ideas and any form of direct text that you get from your classmates must always be treated with a full citation just as you would treat a journal article or book (e.g. “I thank my colleague Jane Doe for first suggesting this idea to me” or a standard citation to published work).
- “Collaborative work” in this course means the oral briefing that you and your section-mates will present at the end of the semester. Again, it is expected that your oral presentation will draw from ideas discussed in class, which you can cover with a general acknowledgement of the sort noted above. Any ideas or text included in your final briefing that come from members of your section do not need to be cited. Why? Because you are authoring the oral briefing as a team. You can discuss your oral presentation with others not on your team (indeed with others not in the course). But any ideas and text you get from them must be credited with a full citation, as must material drawn from published sources. Citations to support an oral briefing may be provided in the notes of accompanying slides or in a separate bibliographic memo submitted in support of the presentation.
- The two take home exams are (technically) “single author” assignments. They must be your own individual work. They are “open book” exams, meaning that you can consult any written materials. You may not discuss the questions or your answers with anyone, in person or electronically. Technical or logistic issues should be raised with the teaching staff. Citations are not required for these exams.
- In all cases, if in doubt, consult the teaching fellows or instructor.

### 5.3 Assignments

I summarize below your assignments for the course. Each of these assignments will be evaluated as part of your course grade. Detailed assignment description will be provided with ample time before each assignment is due. It is important to note that your weekly response papers will help you prepare for the take-home exams and final presentation and paper. Working diligently on the response papers will thus ensure you are prepared for the larger assignments. They also provide for repeated practice with feedback on the skills of memo writing and revision that are central to the course.

**Assignment 1: *Take-Home Exam 1:*** This exam will cover the Introduction and Part 1 of the course. The exam will include multiple short answer questions (200-word limit) and one essay question (500-word limit). **This exam will be opened on Wednesday, October 4<sup>th</sup> at 5:00 pm and must be submitted to the Canvas course site by Friday October 6<sup>th</sup> at 6:00pm.**

**Assignment 2: *Take-Home Exam 2:*** This exam will focus on Part 2 of the course (though you cannot address the issues in part 2 without full comprehension of the substance of the Introduction and Part 1). The exam will include multiple short answer questions (200-word limit) and one essay question (500-word limit). **This exam will be opened on Wednesday, November 1<sup>st</sup> at 5:00 pm and must be submitted to the Canvas course site by Friday November 3<sup>rd</sup> at 6:00pm.**

**Assignment 3: *Final Symposium Presentation (group assignment):*** Each regional team will prepare and present an oral briefing on the most important obstacles to and opportunities for the pursuit of sustainability in the team’s “application region”. The final presentations will take place on **Wednesday December 6<sup>th</sup> from 10:30am to 12:00pm** at the Harvard Kennedy School in Bell Hall. After the presentations, we will have a

celebratory lunch. Each presentation should last 15-20 minutes, with an additional 10 minutes for questions and answers. No written product is required for this assignment, though you may want to use a modest number of projected “slides” or handouts to accompany your oral presentation. **This assignment is “due” when the symposium begins, i.e. on December 6, 2017 at 10:30 am. Supporting materials (e.g. PowerPoint presentations, hand-outs, etc.) must be submitted to the Canvas course website by 8:30 am so that it can be made available to others prior to your arrival at the symposium.**

Assignment 4: *Final paper (individual assignment)*: Individually, you will write a paper evaluating the opportunities and barriers to sustainable development in your “application region,” using the frameworks used in the course and proposing an intervention within this context that will move the needle for a transition towards sustainable development **The final paper should be approximately 2000 words (plus or minus 300 words). The word count does not include tables, figures, footnotes, endnotes or the bibliography. This assignment is due by 5pm on Wednesday December 13<sup>th</sup> to the Canvas course website.**

**Response Papers:** In addition to the four major assignments described above, you will have 10 response papers due over the course of the semester. **Response papers should be posted to the course website prior to 11pm the day before class.** Response papers should be no more than 250 words. Response papers are graded on a scale of 0 – 3 (0=not submitted, 1=not quite there, 2= fine, 3= exceptional).

*The response paper schedule is as follows:* Response papers will start in the 3<sup>rd</sup> week of class (week of September 11). For the third and fourth week of class, students must submit two response papers per week (one for each class). After the 3<sup>rd</sup> and 4<sup>th</sup> week, for the remainder of the semester, you are only required to submit 1 response paper per week (either for Monday’s class or Wednesday’s class, usually for a class of your choosing, sometimes for one specified by us). Note that we will not have response papers due during the two weeks when you have take-home exams. *Careful readers will note that this totals 12 response papers. You, however, are only required to submit 10: you may skip two of the scheduled response papers on days of your choosing (perhaps you are having a particularly busy week). However, if you wish to submit up to 12 response papers, we will only count your top-10 response paper grades, allowing you to make up for poor scores on up to two response papers.*

#### 5.4 Grade Weights

I urge you to use the course as an opportunity to explore, challenge and learn. That said, grades must be given. Here is the distribution of weights that I will apply to reach the final grade:

Engaged Participation in class and section .....	16%
Response Papers .....	16%
Exams.....	32%
• Exam 1.....	16%
• Exam 2.....	16%
Group Final Symposium Presentation .....	16%
Final Paper .....	20%

For the Final Symposium Presentation, all members of the Group will receive the same grade. For all Assignments, the teaching staff is committed to helping you improve your performance through comments on your work and, if requested, office hour meetings with you. We urge you to make use of this feedback.

#### Penalties:

*Participation and attendance:* Because this class is based on participation and sharing of ideas, missing a class or section penalizes all of us. Because life is complicated, however, absences will sometimes be necessary (e.g. job interviews). If you have to miss a session or be late, write to your TF before the class, explaining why, and take the initiative with your group members to assure that you take on your share of any group work emerging



from the session. Unexcused absence from class or section without a prior written excuse from your TF means that you will receive a participation grade of 0 (scale 1-100) for that session. Unexcused late arrival at a class or section meeting will result in a maximum grade of 75 points for that meeting. Multiple absences or late arrivals will result in a participation grade of 0 for the course as a whole.

*Written assignments:* Because the written assignments contribute directly to class and section discussion, a late assignment incurs a penalty of 20% per day or partial day unless an exemption has been granted in advance, in writing, by your TF. Any fraction of a day counts as a day. The same penalties apply to the final paper unless an exemption has been granted in advance, in writing, by me.

## 5.5 Grade definitions

As noted above, you will be graded based on how diligently, critically and creatively you take advantage of each of these opportunities. I will make a serious effort to have the grade awarded on each contribution and on the course as a whole correspond to the literal definitions of grades provided in the official [Harvard Student Handbook](#), i.e.:

A, A- Earned by work whose excellent quality indicates a *full mastery* of the subject and, in the case of the grade of A, is of *extraordinary distinction*.

B+, B, B- Earned by work that indicates a *good comprehension* of the course material, a *good command of the skills* needed to work with the course material, and the student's *full engagement* with the course requirements and activities.

C+, C, C- Earned by work that indicates an *adequate and satisfactory comprehension* of the course material and the skills needed to work with the course material and that indicates the student has met the *basic requirements for completing assigned work and participating* in class activities.

D+, D, D- Earned by work that is *unsatisfactory* but that indicates some *minimal command* of the course materials and some *minimal participation* in class activities that is worthy of course credit toward the degree.

E Earned by work which is *unsatisfactory and unworthy* of course credit towards the degree.

## 6 The (important) fine print about how you can use this course to destroy your life

Of the many ways to mess up the glorious opportunities that being at Harvard offers you, only a couple have much to do with the classroom. Getting a bad grade is way down the list. Plagiarism is right at the top. The only part of my job that I hate is chairing the disciplinary committee at the Kennedy School, where I periodically have to pass a sentence on a case of plagiarism that ruins a student's life. It makes me very sensitive to the issue. Too many people – from political leaders to professors to students – do plagiarize, mostly by accident. But “by accident” at best turns the case from the academic equivalent of murder to manslaughter, with the result that the perpetrator is forever known as a former academic convict, with a record, and all that this entails. Plagiarism is not only wrong (if we steal ideas that others share with us, soon no one will be willing to share ideas), it's dumb (whatever the risk is of being caught, the punishments are so horrible that anyone stupid enough to plagiarize on purpose doesn't deserve a college degree anyway). You should therefore think hard about how not to have anyone even suspect that you've plagiarized anything, ever. What the Harvard College [Handbook for Students](#) has to say on the topic is worth reading. I reproduce some of the key text here:

*It is expected that all homework assignments, projects, lab reports, papers, theses, and examinations and any other work submitted for academic credit will be the student's own. Students should always take great care to distinguish their own ideas and knowledge from information derived from sources. The term “sources” includes not only primary and secondary material published in print or online, but also information and opinions gained directly from other people. Quotations must be placed properly within quotation marks and must be cited fully. In addition, all paraphrased material must be acknowledged completely. Whenever ideas or facts are derived from a student's reading and research or from a student's own writings, the sources must be indicated (see also [Submission of the Same Work to More Than One Course](#) ...) The responsibility for learning the proper forms of citation lies with the individual student. Students are expected to be familiar with the [Harvard Guide to Using Sources](#). Students who are in any doubt about the preparation of academic work should consult their instructor and Allston Burr Assistant Dean or Resident Dean of Freshmen before the work is prepared or submitted.*

*Students who, for whatever reason, submit work either not their own or without clear attribution to its sources will be subject to disciplinary action, up to and including requirement to withdraw from the College.*

## 7 List of classes

COURSE INTRODUCTION		
Wednesday	30-Aug	<b>1. Pursuing sustainability:</b> An overview of the course
Monday	4-Sep	HOLIDAY
Wednesday	6-Sep	<b>2. Social-environmental systems (SEs):</b> An introduction to the stage on which the pursuit of sustainability is being played out
Friday	8-Sep	<i>Harbor Islands Trip 9am - 4:30pm</i>
PART I: SUSTAINABLE DEVELOPMENT AS A CONCEPTUAL CHALLENGE		
Monday	11-Sep	<b>3. Goals for sustainable development:</b> What should we want for people and nature?
Wednesday	13-Sep	<b>4. Determinants of sustainable development:</b> What must be sustained to achieve sustainability goals?
Thur/Fri	14 / 15 -Sep	SECTION 1
Monday	18-Sep	<b>5. Natural capital:</b> What is the role of natural resources, biogeochemical cycles, and climate in sustainable development?
Wednesday	20-Sep	<b>6. Human capital:</b> What is the role of population, health and education in sustainable development?
Thur/Fri	21 / 22-Sep	SECTION 2
Monday	25-Sep	<b>7. Manufactured capital:</b> What is the role of industry, cities, infrastructure and other human-produced "stuff" in sustainable development?
Wednesday	27-Sep	<b>8. Social capital:</b> What is the role of trust, norms, and institutions in sustainable development?
Thur/Fri	28 / 29-Sep	SECTION 3
Monday	2-Oct	<b>9. Knowledge capital:</b> What is the role of what we collectively know, and know how to do, in sustainable development?
Wednesday	4-Oct	<b>10. Integrated assessment</b> of trends in capital assets: Are we consuming too much?
Thur/Fri	5 / 6-Oct	SECTION 4
PART II: SUSTAINABLE DEVELOPMENT AS A MANAGEMENT CHALLENGE		
Monday	9-Oct	HOLIDAY
Wednesday	11-Oct	<b>11. Analyzing the dynamics of social-environmental systems:</b> How do basic system properties of feedback, stocks and flows affect the pursuit of sustainability?
Thur/Fri	12 / 13-Oct	SECTION 5
Monday	16-Oct	<b>12. Temporal invisibilities:</b> How can the future consequences of present actions be dealt with in the pursuit of sustainability?

Wednesday	18-Oct	<b>13. Spatial invisibilities:</b> How can the global consequences of local actions be dealt with in the pursuit of sustainability?
Thur/Fri	19 / 20-Oct	SECTION 6
Monday	23-Oct	<b>14. Public goods and bads:</b> How do externalities, free-riders, and common pool resources affect the pursuit of sustainability?
Wednesday	25-Oct	<b>15. Tipping points and irreversibilities:</b> How does the non-linear character of SESs further complicate their management?
Thur/Fri	26 / 27-Oct	SECTION 7
Monday	30-Oct	<b>16. Coping capacity:</b> How can management actions reduce vulnerability and increase the resilience of SESs?
Wednesday	1-Nov	<b>17. Adaptive management:</b> How can our incomplete understanding of SES dynamics be harnessed to "bend the curve" toward sustainability?
Thur/Fri	2 / 3-Nov	SECTION 8
<b>PART III: SUSTAINABLE DEVELOPMENT AS A POLITICAL CHALLENGE</b>		
Monday	6-Nov	<b>18. Governance:</b> How can the pursuit of sustainability deal with the multiplicity of actors involved and the asymmetric distribution of power among them?
Wednesday	8-Nov	<b>19. Collaboration:</b> How can efforts to avoid the "tragedy of the commons" deal with challenges of free-riding and collective action?
Thur/Fri	9 / 10-Nov	SECTION 9
Monday	13-Nov	<b>20. Compulsion:</b> What can governments and other actors with pro-sustainability agendas induce others to take appropriate action?
Wednesday	15-Nov	<b>21. Empowerment:</b> How can apparently powerless actors nonetheless managed to promote transitions toward sustainability?
Thur/Fri	16 / 17-Nov	SECTION 10
Monday	20-Nov	<b>22. Knowledge as power:</b> How can knowledge realistically influence action for sustainable development in a world of powerful actors and interests?
Wednesday	22-Nov	HOLIDAY
Thur/Fri	23/ 24-Nov	HOLIDAY
Monday	27-Nov	<b>23. Boundary work for decision support:</b> How can the efforts of experts and decision makers be better linked to promote sustainable development?
Wednesday	29-Nov	<b>24. Toward a sustainability transition:</b> How can we move beyond isolated actions to nudge whole sectors or regions along pathways of sustainable development?
Thur/Fri	30-Nov /1Dec	SECTION 11
Wednesday	6-Dec	<i>Final Symposium Presentation at Harvard Kennedy School - 10:30am - 12pm with celebratory lunch from 1pm-2pm</i>