Overview

Among the most pressing challenges we face today are those concerning the transition to more resilient and sustainable futures, and they occur at the intersection of environment, society, economic development, science and technology. ES&P’s mission thus has two parts: 1) To prepare students to be technical and social innovators capable of understanding then addressing some of the most urgent local and global challenges in creative, multi-faceted and collaborative ways; and 2) To undertake innovative research and practice at the intersections of environment, society, technology and development in multi-faceted and collaborative ways.

At ES&P we define what a 21st Century sustainability professional is, what she/he can do, and how it’s done. Our graduates are able to recognize, frame, characterize, and creatively address the challenges and opportunities of transitioning to a more sustainable future.

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ES&P Program Core Faculty

The ES&P core faculty members maintain active research programs and also provide professional services as consultants, journal editors, board directors, and committee members for a wide range of organizations outside the university, which creates opportunities for student projects, internships, and subsequent employment. The core faculty do most of the student advising and research supervision, but there are many other affiliated faculty who contribute to the program and research offerings.

ES&P CORE FACULTY

Halina S. Brown, Ph.D.
Professor
Research interests: Socio-technical system innovation in sustainability transition, sustainable consumption and production, technological innovation, corporate accountability and governance, environmental policy; social learning and institutional theory, environmental public health policy, environmental toxicology, management of risks from toxic substances.

Edward R. Carr, Ph.D.
Professor, Director of IDCE
Research interests: Adaptation to climate variability and change; disaster risk reduction; sustainable development; climate services; climate smart agriculture; sustainable livelihoods; sub-Saharan Africa.

Timothy J. Downs, D.Env.
Associate Professor
Research interests: Socio-ecological systems approaches, natural resource management, watershed stewardship, water supply and sanitation, operational sustainability via integrated capacity building, risk analysis, vulnerability and adaptation, impacts assessment, Latin American region and transitional countries.

Elisabeth A. Gilmore, Ph.D.
Associate Professor
Research interests: Evaluating the economic and social impacts of climate change, mitigation and adaptation policies; applying decision analytic tools, scenarios and modeling tools, specifically integrated assessment and air quality, for quantifying climate impacts; evaluating economic and policy frameworks for integrating low carbon energy and transportation technologies into existing systems and markets.

Frederick T. Greenaway, Ph.D.
Professor, Coordinator of the MS and MS/MBA ES&P degrees, Coordinator of the ES&P track of the Undergraduate Environmental Science major
Research interests: Enzymology of amine oxidases. Metal binding to ligands of environmental interest, both natural and anthropomorphic. Metal binding to antioxidants.

Samuel J. Ratick, Ph.D.
Professor, Coordinator of the Accelerated BA/MS degree
Research interests: Decision analysis in environmental assessment and management, spatial analysis, quantitative and dynamic modeling, environmental policy, coastal hazards from climate change, pollution prevention in companies, locating hazardous facilities.
Completing the ES&P Master’s degree requires 12 course credits, including 5.5 required core courses and 6.5 elective courses. The core courses provide ES&P graduate students with a common academic foundation and an introduction to developing research-based papers. The core curriculum includes a science foundation course, a science-policy foundation course focusing on pollution, a science-policy foundation course focusing on climate change and energy, a decision-making foundation course, and 1.5 course units devoted to the final Masters project. The elective courses allow students flexibility to take courses that will best help them meet their professional and academic objectives and develop appropriate skills. We encourage students to take advantage of the diversity of courses offered throughout IDCE, in other departments at Clark University (particularly geography, economics, chemistry and biology) and in the Graduate School of Management.

**Time to Degree**
Most students take two years to complete the degree, which means taking (on average) three courses a semester. It is possible to take the degree on a part-time basis, which normally means a three-year degree. Academic work over the summer between the first and second years is expected and most students use this time to work on their capstone paper or thesis, sometimes for a formal internship or sometimes working with an agency, or a Clark or non-Clark faculty member for some part of the summer. Students frequently travel overseas to work on international projects. Some students elect to complete their capstone work during their second summer, which means graduation is delayed till early Fall.

**Spring Entry**
While Fall entry is the most common, entry into the program is possible in January. Students who enter in the Spring may have more problems scheduling courses in an appropriate order and is advised plan a schedule for the two years upon entry to ensure that all required courses are completed in a timely fashion and that the capstone options can be fit into the schedule.

**Advising**
Students are assigned an academic advisor when they join the program. Students should use this advisor to discuss course choices and review progress towards the degree. Students may change advisors at any time by contacting the Associate Director, Erika Paradis, or the ES&P Program Coordinator. Students normally also have another advisor (or two) for their capstone paper/thesis. This advisor is known as a “reader” and works with the student on the capstone paper, and is the person who gives final approval for the work. The reader does not have to be a member of the ES&P program or the IDCE Department, but must be approved by the ES&P coordinator. ES&P faculty will help students find an appropriate reader during their first year.
Required Core Courses (5.5 or 4.5*)
The ES&P required courses include four core courses plus 1.5 courses associated with the final Masters paper. *Students may choose to prepare a Professional Portfolio of Coursework instead of the MS Project, thereby needing only 4.5 required courses.

1. Science Foundation Course
   IDCE 30287 Fundamentals of Environmental Science
   This course covers key scientific and technical topics with relevance to environmental science and engineering. Quantitative problem-solving skills are emphasized.

2. Science-Policy Foundation Course 1
   IDCE 382 Environmental Pollution Policy: A US Perspective
   This course examines the pollution policy in the United States from three broad perspectives: protection of drinking water, air and food from toxic pollutants.

3. Science-Policy Foundation Course 2
   IDCE 30205 Climate Change, Energy and Development
   This course explores the global, regional, and local challenges associated with climate change, energy, and development from multiple perspectives and disciplines.

4. Decision-Making Foundation Course
   IDCE 363/GEOG 361 Decision Methods for Environmental Management and Policy
   This course provides a survey of methods that are currently used to aid environmental decision makers. Different approaches to decision-making are explored and assessed.

5. Final Master’s Project Course
   IDCE 30209 Research Project Development for ES&P (two 0.5-credit courses)
   IDCE 30213 Final Master’s Project
   All ES&P Master’s students are required to take the 0.5-credit course IDCE 30209 (Research Project Development for ES&P), which is offered in the second half of the Spring. All (except those opting for the Professional Portfolio option) are also required to register for two additional 0.5-credit courses to facilitate completion of their final Masters project. The first of these (it has the same course number, IDCE 30209) is taken in the Fall of the final year and is designed to facilitate development of the research paper. The remaining 0.5-credit course (IDCE 30213) is taken with the student’s Masters paper faculty mentor. The grade designation for this credit will not be given until the student has completed and submitted their final Masters project.

ES&P Elective Courses (6.5 or 7.5* required)
Elective courses provide students the flexibility of designing much of their coursework to suit their own needs and to provide depth in a chosen area of focus. Electives should be approved by the students’ academic advisor. The list below is a sampling, but is not comprehensive so please view Clark’s official Academic Catalog (www.clarku.edu/academiccatalog) for a complete listing of course offerings and consider courses outside IDCE.
For questions about other courses that might be used as electives, please see the ES&P Program Coordinator.

*Students choosing to prepare a Professional Portfolio of Coursework instead of the MS Project need 7.5 elective courses.
• BIOL 358 Small Scale Land Conservation Principles
• EN 341 Environmental Toxicology
• GEOG 332 Landscape Ecology
• GEOG 352 GIS and Land Change Science
• IDCE 30204 Advanced Finance
• IDCE 30218 Community Development Decision Making and Negotiations
• IDCE 30220 Advanced Remote Sensing
• IDCE 30225 Grant Writing for Community Developers
• IDCE 30229 Monitoring and Evaluation
• IDCE 30325 Controversial and Emerging Environmental Issues
• IDCE 30241 Environmental Toxicology
• IDCE 30245 Natural Resource Management
• IDCE 30264 Environmental and Social Epidemiology
• IDCE 30269 Capitalism, Nature Development
• IDCE 30277 Sustainable Consumption and Production
• IDCE 30396 Politics and Policy: Sustainability
• IDCE 305 Qualitative Research Methods, Skills and Application
• IDCE 310 Introduction to GIS
• IDCE 320 Food Production, Environment and Health
• IDCE 324 Intermediate Quantitative Methods in Geography
• IDCE 332 Sustainable Development Assessment and Planning
• IDCE 334 Planning and Zoning for Community Developers
• IDCE 342 Environmental Modeling for Sustainable Futures
• IDCE 349 Advanced Topics in Spatial Analysis
• IDCE 355 Global Health: Epidemiology
• IDCE 357 Dynamic Environmental Modeling
• IDCE 358 Advanced Topics: Climate and Development
• IDCE 366 Principles of Negotiation and Mediation
• IDCE 367 Quantitative Environmental Modeling
• IDCE 370 Emerging Scientific Worldviews and Global Sustainability
• IDCE 380 Urban Ecology
• IDCE 388 Advanced Vector GIS
• IDCE 396 Advanced Raster GIS
• MGMT 5510 Sustainability Consulting Projects
• MGMT 5511 Supply Chain Management
• MKT 5487 Sustainable Marketing
• MGMT 5505 Greening the Corporation
• MGMT 5509 Energy Management
• MGMT 5614 Eco-entrepreneurship
• MGMT 5900 Sustainability & Corporate Strategy
• PHYS 243 Technology of Renewable Energy

**Directed Study and Guided Internships:** In addition to the required final masters project courses described above, students can take up to a total of one unit of Directed Study or guided internships as an elective with a specific faculty member who agrees to guide the independent work (students may petition to take more than one unit).
IDCE Academic Probation Policy
Credit for graduate level courses is only given for grades of B- or higher. A minimum GPA of 3.0 is expected.

The first semester a student falls below a 3.0 minimum GPA, the student will receive a letter from the Assistant Director stating they are on academic probation. If the GPA is less than 2.7, the Assistant Director will meet with the student, hand-delivering the letter. The Assistant Director will also give the student the minimum grades they need to achieve the 3.0 that returns their status to good academic standing.

If it is impossible for them to return to good academic standing, they are academically dismissed. In rare cases, exceptions are given if there are other issues at play in a student’s situation (medical or mental health issues for example – in these cases the Assistant Director consults with the Dean of Students).

The Registrar’s Office will provide a list of IDCE students who hold two or more incompletes and those that earn a B- or below in any course at the request of the department. This will aid in identifying students in academic trouble prior to academic probation status.

All communication to student regarding Academic Probation will be copied to the Dean of Graduate Studies to be placed in their official Clark file.

Academic Dishonesty Policy
The IDCE Department has a strict policy that all work submitted by students must be their own.

From the Graduate School Code of Conduct:
Academic Dishonesty
Where a student is found responsible for academic dishonesty, sanctions may be imposed. Sanctions may include but are not limited to one or a combination of the following responses:

1. Letter of warning.
2. Grade of zero for the particular assignment.
3. Grade of F (Fail) for the course.
4. Academic probation.
5. Notation of sanction on the student’s academic record.
6. Suspension from the University.
7. Expulsion from the University.

Academic integrity is highly valued at Clark. Research, scholarship and teaching are possible only in an environment characterized by honesty and mutual trust. Academic integrity requires that your work be your own. Because of the damage that violations of academic integrity do to the intellectual climate of the University, they must be treated with the utmost seriousness and appropriate sanctions must be imposed. The maintenance of high standards of academic integrity is the concern of every member of the University community.

Several ways in which academic integrity may be violated are outlined below.
If you have questions concerning academic integrity, contact the professor teaching a course and/or your academic advisor.

1. Cheating has three principal forms:
• Unauthorized use of notes, text, or other aids during an examination or in performance of course assignments
• Copying the work of another
• Handing in the same paper for more than one course unless the faculty members involved give their explicit permission to do so.

2. Plagiarism refers to the presentation of someone else’s work as one’s own, without proper citation of references and sources, whether or not the work has been previously published. Submitting work obtained from a professional term paper writer or company is plagiarism. Claims of ignorance about the rules of attribution, or of unintentional error are not a defense against a finding of plagiarism.

3. Unauthorized collaboration refers to work that students submit as their own but which was arrived at through a process of collaboration without the approval of the professor. Since standards on appropriate or inappropriate collaboration may vary widely among individual faculty, students should make certain they understand a professor’s expectations before collaborating on any class work.

4. Alteration or fabrication of data includes the submission or changing of data obtained by someone else or not actually obtained in the performance of an experiment or study, except where allowed by the professor. It also includes the changing of data obtained in the performance of one's research.

5. Participating in or facilitating dishonest activities includes, but is not limited to:
   a. Stealing examinations
   b. Forging grade reports or grade change forms, or altering academic records
   c. Sabotaging the work of another student
   d. Selling, lending, or otherwise distributing materials for the purpose of cheating
   e. Forging or altering academic clearance forms
   f. Forging letters of recommendation
   g. Forging signatures on any official university documents

**IDCE Sanctions**

1. First offence - the student gets no credit for the specific assignment and is called in for "warning/reprimand" meeting with the Assistant Director. The student is presented the evidence of academic dishonesty and is read the policy. An internal note is placed in their file with the Student and Academic Affairs Office.

2. Second offence (at any point during their time at Clark) - immediate failure in that particular course. The student is required to meet with the Director and Program Coordinator and is then reported to the Graduate Dean.

3. Third offence - dismissal from the program and the student cannot receive a degree from Clark in the future.
Dual Degree with the Graduate School of Management

Our dual degree program is based on a partnership with the ES&P graduate program within IDCE and Clark University’s Graduate School of Management (GSOM). Students accepted into this program will earn two degrees during three years of graduate study—a Masters degree in Environmental Science & Policy from IDCE and a Master of Business Administration from GSOM.

The worlds of business and the environment are increasingly intertwined. The environmental problems we are facing in the twenty first century are deeply linked to the very nature of the modern economic system: the goods and services we produce, market, and consume. Transitioning to a more sustainable society requires integrated action of the public, non-profit, and business sectors. Novel approaches to management are needed.

Innovations in technologies and services provided by entrepreneurs and corporations are increasingly central to making a transition to a more sustainable world, and to building the “green collar economy” of the future. Non-governmental organizations, traditionally key partners with governments in pursuing environmental goals, are increasingly collaborating with the business world to address sustainability challenges. These organizations need employees with strong management and strategic planning skills, technical skills (like GIS and data analysis), an entrepreneurial spirit, as well as understanding of the complexities of environmental science and policy.

Students admitted to the dual degree program integrate the perspectives, knowledge, and skills they gain from ES&P courses, which focus on policy analysis and the use of scientific and quantitative tools, with the business and management perspective, knowledge, and skills learned in GSOM courses. Students completing the dual degree program may consider jobs in environmental consulting, entrepreneurial environmental leadership (like renewable energy systems), sustainable technology businesses, nonprofit operations and management, corporate sustainability, and others.

Structure of the ES&P/GSOM Dual Degree Program

The first year of graduate study in the dual degree program is spent mainly in the IDCE department fulfilling the core requirements of the ES&P degree. During the second year, students concentrate on the coursework toward the M.B.A. degree. In the third year, students take courses in both IDCE and GSOM and complete a final project that integrates both programs of study. Up to five courses taken during the three years can count toward both degrees, so that there are 22.5 courses required for graduation in all. Please note that there are likely to be fewer elective course options because students are completing two degrees within a rigorous, tight schedule.

Research, Internships, and Careers
RESEARCH RESOURCES

The George Perkins Marsh Institute sponsors research through its Clark Labs for Cartographic Technology and Geographic Systems and the Center for Community-Based Development (CCBD). The CCBD promotes research on community institutions, gender, participation, and conflict resolution.

FIELD RESEARCH

Many students conduct field-based research during their M.S. course of studies, often through funding from external agencies. Student research projects have received external support from the Compton Foundation, U.S. State Department Presidential Management Fellowship, E7 Sustainable Energy Development Scholarship, David L. Boren Graduate Fellowships, Mickey Leland International Fellowships, Greenville Foundation, National Science Foundation, InterAmerican Foundation, the Switzer Foundation, and Catholic Relief Services. Students often draw on their field experience and data to develop their final research project.

The collaborative research projects of IDCE graduate students and faculty reflect their interdisciplinary approach to issues of environment and development. Many projects build upon partnerships between IDCE and community or governmental organizations around the United States and the globe, including in Ethiopia, Kenya, Mali, Somalia, Ghana, India and Senegal.

Locally, environmental and community groups often invite IDCE to undertake key community building projects, as well as data gathering and analysis. This allows IDCE faculty and students to put theory into practice right in the neighborhood. By helping to facilitate participatory sessions and building collaborations, students see Worcester neighbors taking action, setting priorities, and maximizing into their human capital and governmental resources. Students hone their analytical skills through GIS mapping of land parcels for development or preservation and through monitoring water quality.

For more research activities, visit: http://www.clarku.edu/departments/idce/research/studentresearch.html or http://www.clarku.edu/departments/idce/research/default.html.

INTERNSHIPS

ES&P Final Masters Project Options & Professional Portfolio Option

The ES&P program offers three options for fulfilling the final Masters Final Project requirement, or an option to choose the non-project Professional Portfolio instead. Students are encouraged to consider the option that best suits their anticipated professional aspirations. All three Final Project options require students to identify faculty reader(s)/advisor(s) who are willing to mentor and guide the work and obtain the agreement of the advisor(s) to serve. Students may also have the opportunity to work on Team Projects organized and supervised by ES&P faculty (see below). **In all cases, the ES&P program coordinator must approve the proposal (after the faculty mentors/ readers have approved it) by April 30 (at the latest) at the end of the first year.**

A useful reference is: “The Craft of Research” by Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, which is readily available at many on-line outlets.

**Project Option 1. Research Paper (guidance by one faculty reader who has agreed to serve)**

The Research Paper presents the results of student research on a specific theme, argument, question or problem defined and identified by the student’s interests, drawing from their course work, field work, or professional experiences. The paper may be based on primary or secondary research, and the research methodology should be clearly described. A critical part of the research paper is a review of the existing literature, and an appropriate placement of the student research findings in the context of the literature.

**Project Option 2. Practitioner Project (guidance by one faculty reader who has agreed to serve)**

The Practitioner Project reports critically on an applied project carried out by the student in conjunction with a specific organization. The project should contribute to the organization’s needs and a representative from the organization must approve and review the project. The paper should describe and reflect upon the original contribution that the student has made. The student is solely responsible for making contacts and establishing the necessary relationships with organizations associated with the project, but a faculty mentor must advise and review the student in their progress. While this option may seem similar to the internship academic credit that is also available, there is a clear distinction. An internship is primarily a learning experience for the student (which hopefully benefits the sponsoring organization). The standard for the practitioner project is higher than that. The practitioner project must include the production of a tangible completed product that benefits the sponsoring organization in a specific way, and that has been independently conceived and executed by the student. It is, in effect, a product that a professional working for that organization would be asked to produce.

**Project Option 3. Thesis (guidance by two faculty readers who have agreed to serve)**

Graduate students demonstrating high academic achievement and a capacity for completing original independent research may apply for approval to write a thesis as their final Masters project. For the thesis option, students need to secure two faculty research readers/advisors to oversee and guide the research. The primary faculty research advisor should be an ES&P faculty member. To be eligible for pursuing the thesis option, students must develop and submit a thesis proposal to their two faculty readers for approval before the end of the student’s second semester of graduate studies.

**Team Projects (guidance by one faculty supervisor, additional readers as required by each student’s contribution)**

Students are encouraged to work on team final projects organized by and under the supervision of ES&P faculty who may have eligible projects. Each student’s contribution to the team project should be equivalent in effort and quality to an individual final project. Such collaborative work mirrors real-world
professional projects in the ES&P field, and will provide additional experience of teamwork and collaboration that are valued by prospective employers.

**ES&P Poster Symposium**

Graduating students are required to present their final project work in the form of a poster of professional-quality at the annual *ES&P Final Project Symposium* held each year a week or two before spring break.

**Professional Portfolio (guidance by the student’s Academic Advisor)**

The professional portfolio option is a non-research based option that provides a capstone experience based on 12 credits of course work. Students choosing this option take 12 regular courses and are not required to register for the final project course. Students choosing this option are also required to assemble a professional portfolio of term papers, class project work, internship reports and other coursework materials. This portfolio is developed instead of a stand-alone, research-based final project. The goal of the portfolio is to showcase four semesters of the student’s work as an ES&P graduate student and to help them in the job search process. Students work with their academic advisor to craft a portfolio that will make them more competitive for the work they aim to do after graduation; the portfolio should be a document that will impress a prospective employer. There will be a two-page portfolio summary of the materials describing them and explaining how they demonstrate particular knowledge and skills, and how materials are inter-related as a coherent whole.
Masters Project Deadlines & Timeline

**For May Commencement**
January 31: A complete first draft of the final Masters paper must be submitted to the primary faculty advisor.
March *: The final faculty-approved version of the final Masters paper must be submitted to the IDCE office. IDCE Student and Academic Affairs office will communicate deadline to students.

**For December or August Commencement***
Get in touch with your primary faculty advisor to complete your first draft. The final faculty-approved version of the final Masters paper must be submitted to the IDCE office on the deadlines specified. These deadlines are department-wide deadlines. Individual programs may impose deadlines that are earlier, but not later.

**ES&P Final Project Timeline**

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*NOTE: Check key dates with the IDCE Student Services Office because the specific date(s) may change.*
Guidelines for Writing a Research Paper

This document has been written collaboratively by the ES&P faculty to provide students with general guidelines for the structure and organization of well-written research papers. These guidelines are relevant and should be helpful for the ES&P final Masters papers (for both the Professional Project Report or Thesis option) and also for research papers written for courses.

This document provides guidelines and suggestions on the following topics:

1. Importance of Considering a Skeptical Reader
2. General Organization and Table of Contents
3. Guidelines for Specific Sections of Paper
   3.1 Title
   3.2 Abstract
   3.3 Introduction
   3.4 Background
   3.5 Methods
   3.6 Results
   3.7 Discussion
   3.8 Conclusions/Recommendations
   3.9 References
4. Assessment of Research Papers

1. Importance of Considering a Skeptical Reader

When you write a research paper you must keep in mind that your reader may be a skeptic who does not believe your own assurances about the state of the world until he or she has an opportunity to examine the evidence, its significance, and the reasoning that underpins your interpretation of the evidence. You will therefore need to make your arguments and reasoning explicit and, above all, present the necessary data to support them.

2. General Organization and Table of Contents

The most effective research papers are very clear and explicit both in substance and content but also in their organization. One critical part of writing good research papers involves clearly and continuously communicating with your reader what you are doing, i.e. guiding your reader through your paper so the reader understands each section and how it relates to the overall purpose of the paper and research. While a table of contents may not seem necessary for all research papers, a table of contents is a valuable and easy tool to provide your reader with an initial quick outline of the content of your paper. To demonstrate the value of including a table of contents, the beginning of this document includes a table of contents that outlines the different sections of this document. Providing your reader with such an outline enhances your readers’ perception and understanding of the organization of the paper.

Another organizational component of a research paper that can enhance your own and your reader’s clarity of the structure of the paper is providing numbered and titled headings and subheadings delineating sections and subsections. Providing these numbered headings and subheadings can greatly improve the overall organization of a paper.

To demonstrate the value of these numbered headings and subheadings, this document has included such headings and subheadings. Also, below is a demonstrative example of a table of contents for an ES&P research paper using numbered headings and subheadings:
3. Guidelines for Specific Sections of Research Paper

Most research papers should include each of the following sections.

3.1 The Title

Your title should be clear, specific and descriptive. For example, “Prospects for Eliminating Environmental Exposure to Lead in the Twenty-First Century” is preferable to a vague title like “Environmental fate of lead.” Whatever it is that you are investigating/examining should be reflected in the title of the work.

3.2 The Abstract

The abstract is the most important part of any long research paper (including a masters paper or thesis) because readers will read this first to determine whether or not they want to read any other parts of the paper. Because of the importance of an abstract, every sentence and word choice should be carefully considered. The abstract should succinctly and clearly explain the importance of the research, the research approach, and the conclusions of the research. A good abstract that accurately reflects the contents of the research paper cannot be finalized until the entire paper is written and the conclusions of the work are well developed. So while it is worth attempting to write an abstract in early drafts of your paper, it should be recognized that the abstract will likely have to be modified and adjusted throughout the process and the final version of the abstract may be one of the final steps in finalizing your paper.

3.3 Introduction – Framing your Research Question

The introduction to a research paper articulates the purpose of the research and sets the stage; the introduction prepares the reader for how the paper will proceed. The introduction is a funnel into which you enter a broad topic – with a range of subtopics – and from which emerges a clear, concise, and focused research question. The opening paragraph should describe the broad problem area you are dealing with and why it is particularly interesting, relevant, and important. This should be followed by a short description of many different aspects of that problem (subtopics). In the introduction you should present a spectrum of the subtopics previously identified within the general problem area which lend themselves to further research in depth. Highlight two or three of these subtopics that lead into the direction of your own research topic. Each subtopic deserves approximately a paragraph, more or less. Within the introduction when these broad topic and subtopics are being presented, broad and important references should be included.

An alternative approach to an introduction which is sometimes effective is to begin with a short example or story of the subject you intend to explore – then to proceed to open up the subject (as described above) followed by narrowing (as described below)– and then perhaps promise to revisit the opening example.
After the broad topic and subtopics have been presented, you have arrived at the place where you want to introduce your specific topic. The previous introductory paragraphs should lead your reader down a path that points directly to your specific research question. With sentences starting like: “One of the unresolved issues…” or “Contrary to the popular opinion, the evidence for XYZ does not show…”, or, “The dilemma of XYZ derives from a poor understanding of…”, and so on. You can frame the research question addressed in your paper. The research question may be introduced like this: “This paper/project investigates/examines/explores/reviews the evidence for….etc.”

Congratulations! You have framed your research question. This process was not easy. Progressive narrowing down to one (or two) research question(s) requires a lot of thought and often requires later adjustments and changes as you learn more about the subject through your research. It is not uncommon that the final version of the “Introduction” be completed after all the other parts of the paper are finished. The goal is always clarity and specificity.

The final part of the introduction is a short description of the method you used to conduct your research, the sources you used, and you should state simply the overall findings and conclusions of your work. You want to end your introduction by telling your reader about the structure of your paper so that the reader is prepared to read your paper and follow your well-planned layout of the paper. For example, the final sentence of the introduction could read, “This paper will first provide background on the topic, then describe in detail the method used and the results obtained, and then conclude with a discussion about the implications of the research results.”

If you have written the “Introduction” well your reader will know:

- What you are studying
- Why you are studying it
- Why they should be interested in this topic
- How the topic of your research is related to some broader questions or policy dilemmas or field of investigation
- What approach you take to this work
- What you have discovered through your research.
- How your paper is organized

3.4 Background

This section is the place for expanding the material covered in the introduction by reviewing the literature or other pertinent background information, such as, for example, history of a particular problem, the technical or scientific details associated with the problem, attempts (or their absence) to solve the problem or to redefine it, and so on. Most of your references should be cited in this section.

The purpose of this section is to strengthen the argument you made in the “Introduction” that this is an important and worthwhile topic to study, and that your research question is really well-placed and sharp. This section should also set the stage for your choice of research methods by highlighting the research methods used by others. (You may, for example, make a case that others studied the same exact question, but did so by using different methods and therefore your approach has merit).

The title of this section can be very non-committal, such as “Background,” or be more colorful, reflecting the topic of your research. Examples include: “History of …..”, “Anatomy of Intractable Public Controversy,” or “Why litigation does not solve Brownfield problems…” or so on. Use your imagination. You might end this section by reiterating the research question, or at least summarizing how or why previous research provides a context for understanding your work.
3.5 Methods

This section applies to both research papers and critical review papers – you need to explain to the reader what you did and where you got your information. You need to describe your research approach – what steps you took to answer your research question, what data and information you acquired and how you interpreted and analyzed those data. This section should be descriptive and objective – you can mention problems or difficulties you encountered with your methods in this section, but later in the discussion section you will be able to evaluate your methods, raise questions about the efficacy of these methods, and discuss problems and difficulties at more length.

3.6 Results (in some cases coupling results and discussion into one section is appropriate)

This part of the paper describes the results of the actual research. This section coupled with the discussion section is the main body of your paper and should contain two elements: data and analysis of the data. By data we mean the factual information derived from the sources you have used to conduct your research. For most papers it will probably work best to have two separate sections “results” and then “discussion.” In the results section you simply describe the information/data. Here you would present results of various experiments, surveys, computer simulations, field investigation, cost-benefit analysis, case study descriptions, and quote historical facts and predictive models. All throughout this process you should therefore limit your data presentation to that which is pertinent to your particular topic. Avoid getting distracted by some sideline data-set that will not illuminate the main question you are trying to answer.

3.7 Discussion

Whereas presenting data is essential to your paper, it is not sufficient. You need to interpret your data. This may be the most difficult part of the paper if you are not used to independent analytical thinking. However, if you phrased your original question with clarity and accumulated sufficient data, half of your work should be done already. In this section you will ask questions such as: Does a policy/approach/technology work? Why does it/does it not work? What are the prospects of this policy/technology? What are the trends? And attempt to answer them. By now you should be using references very sparingly. Rather, you should be relying on the data that you have gathered and presented. The proper use of references is when you compare your results with those produced by other investigators of the similar topics. If their results differ from yours, you need to attempt to explain the observed differences, even if your explanation is no more than a hypothesis.

At this stage you need to remind yourself about the skeptical audience: you must convince them that your interpretation of the data is correct by allowing them to see the data and to follow your thought process. This is a good place to interpret your findings vis-à-vis prevailing theories and views on the matter under study, and to comment on whether your findings are consistent with these theories, contradict them, or expand them with new and interesting evidence. This characteristic – the analysis of data – is what distinguishes a research paper from a survey of literature or a review paper. In a review paper you would acquire new information and relate it to your reader. In a research paper you must critically evaluate that information in order to pose a specific question, and then collect more data to answer that question.

Presentation of data and critical analysis can be done in one of two ways: as two sections following each other (first data, then analysis) or as one section where each piece of data are a set of facts and figures are critically evaluated, then followed by another set of data and another analysis, and so on. It is your choice.

An important thing to avoid in this section at any cost is any normative statements relative to what should be done, given the results of your work. Papers relevant to policy and management present a
great temptation to make this error here. You nevertheless must avoid all the “should’s” and “ought’s.” These belong in the Conclusions and/or Recommendation sections.

3.8 Conclusions (and/or Recommendations)

Finally, you are ready to write the conclusions and, if you want, recommendations. The conclusions should flow directly from your analysis and be specifically directed to the central research question(s) or thesis. Avoid any conclusions that are not substantiated by your research and analysis. Also, avoid sweeping generalities such as “lead is dangerous and should be removed from the environment,” or “something must be done to protect children from this environmental hazard.” Be specific. Relate your conclusions to the original research question. You can think about your conclusions as your “findings.” What did your research find? You should consider this the main product or output of your work – even though you may also want to tell people how to behave; part of presenting a normative discussion can be a set of recommendations, but even without specific recommendations, you may want to present an “interpretation” of your findings that has a normative aspect.

In this section you may also indicate what the uncertainties are. In general, this is the most subjective part of the paper which allows you to express what you have learned through your research work and what you think about the subject matter. Depending on the topic, it may also be appropriate to treat uncertainties in some detail in a discussion section, and then summarize the issues of uncertainty in the conclusions.

Another often very interesting component of the conclusion section is the inclusion of suggestions for further work. It is possible and often desirable that based on your work you will identify follow up research – the things that you would do next if you had more time or energy. If you have detailed suggestions on this, a sort of beginning research plan, for instance, you can add a paragraph or two (or even a separate section if detailed enough) on future work.

Recommendations (which may go under a separate section heading) should be brief. They may focus on policy or further research, or other actions the society or its specific members could and should take to contribute to solving the broader problem area you identified earlier in the “Introduction.”

3.9 References

Your paper should be properly referenced. Each statement which refers to a new piece of information should be referenced. There are several standard ways of including references in your work, and as long as you are consistent you can choose the way that you prefer. In general, the ES&P faculty prefer in-text citations that use the author, year approach. At the end of any sentence that refers to research done, statements made, or information provided by someone other than you, there should be, in parenthesis, the author’s last name (or the authoring organization’s name) followed by the year of that reference. For example “Previous research suggests that voluntary environmental programs are ineffective in promoting the advancement of new technology (Smith, 2001). The full reference corresponding to each in-text citation will then be listed alphabetically by authors name in the “References” section at the end of the document.

A note about including “quotes” in research papers. Direct quotes should be used very rarely. The papers should be written in your own words. A quote is only appropriate if a statement is unique and if it adds to your argument when stated in exactly the same words as in the original source. For example, in discussing public rejection of GMC’s you may want to quote a following statement from a citizen’s group “We feel that a new form of feudalism has been introduced by large companies through creating an economic dependency on GMC’s.” This statement reflects the intensity of the drama and the value issues involved in the controversy. Therefore it is appropriate to include it (although please note that it is just as effective to state, in your own words, that such-and-such organization views GMC’s as a new form of feudalism). On the other hand, it is inappropriate to use
quotes when stating factual matter, such as scientific findings. For example, there is nothing unique about a statement “CFC’s present a serious threat to the ozone layer,” so you do not need to put quotation marks around it in your paper even if these exact words are used in one of your sources. In this case, you only need to cite the source.

4. Assessment of Research Papers

There are four major criteria on which research papers are judged:

(1) the extent to which you draw information from a variety of sources and integrate it with coherency,

(2) the extent to which you incorporate concrete evidence into your paper in support of general statements and arguments. This includes not only quantitative facts and figures but also qualitative examples, anecdotes, or your observations,

(3) the structure of the argument. Here, what matters is that your argument evolves logically and progressively, and

(4) the quality of the writing and presentation, including the clarity of expression, references, citations in the text, captions for figures and tables, spelling, punctuation, and so on.
Guidelines for Writing a Thesis

ES&P-Specific Details on Thesis Option

The thesis option should only be considered for students who are prepared for advanced, independent, academic research. Proposals for approval for the thesis option in ES&P will be evaluated based on two basic criteria:

(1) the student’s demonstrated capacity for completing original independent research, and

(2) the potential of the proposed project to make an original contribution to the relevant field of scholarship and/or practice.

Applications for approval to write a thesis must be submitted to both readers and the ES&P graduate coordinator in the student’s second semester of the ES&P Program, by April 30th. The short proposal (about two to three pages in length) should include:

(1) a research question or a hypothesis, with a brief justification of why this is significant to pursue in the context of the field in which the student proposes to conduct the research,

(2) a description of the research plan and the methodology to be used,

(3) a description of the literature to be critically reviewed as part of the thesis, including a brief justification for the choice of the literature, and

(4) a proposed schedule for completing the thesis project, including demonstrating the feasibility of completing the thesis according to the proposed schedule.

To be eligible for pursuing the thesis option, students must develop and submit a thesis proposal to their two faculty readers for approval before the end of the student’s second semester of graduate studies. Approval by both readers and the ES&P Coordinator is required to pursue the thesis option.
IDCE faculty can assist students in identifying internship opportunities; however, students are encouraged to identify their own internships. Internships can be done for credit, as negotiated with faculty, and depending on the opportunity, interns may also earn a stipend paid by the host agency. You must complete all steps of the Internship Requirements in order to receive credit.

**Step 1: Search for an Internship**
Search the Internet, job listings, the Careers Database on the IDCE website, and Career Services email messages. Talk to faculty who may know of openings. Ask second-year IDCE grad students and alums where they found internships. Inquire with a personal call, letter, or formal email to request updated information from an organization of your choice about current internships available and/or an application for internships. For a summer internship, begin your search by October or November.

**Step 2: Apply for the Internship**
Once you find an internship that interests you, apply well before the deadline. Competition will be stiff for choice internships.

**Step 3: Complete an Internship Report**
Once you have secured the internship, begin to fill out the Internship Report. This is a short paper that answers some general questions about the place of your internship. This report should be returned to the Student and Academic Affairs Office by the time your internship is complete.

If you wish to receive academic credit for your internship, continue on with Step 4.

**Step 4: Get Internship Approval**
Once you secure an internship, fill out an Internship Proposal form. Complete the form and meet with your faculty sponsor to describe your internship, its relevance to your studies, and the appropriate academic component that you wish to pursue. Once your faculty sponsor approves your internship and signs the application form, return two signed copies of the completed Internship Proposal form to the Student and Academic Affairs Office to be added to your student file.

**Step 5: Register Your Internship for Credit**
An internship must be a minimum of 210 hours to qualify for academic credit. You will need to secure a faculty sponsor to oversee your internship and complete an academic component in order for it to count towards one credit. You can register for academic credit for a summer internship in the fall semester following the internship ONLY if you have completed an Internship Proposal form and received approval from your faculty sponsor in the previous spring semester.

**Academic Component**

Before starting your internship, discuss the internship with your faculty sponsor, so that he/she can determine the academic component that best fits your internship. Your faculty sponsor must sign off on your academic component in order for you to receive credit. The options include:

**1. Research Paper:** A 15- to 20-page paper describing a research topic that you explored during the internship.

**2. Research Materials:** Produced as part of your internship, this is research that you carried out for the organization, such as a handbook, manual, report, or study.
Step 6: Complete the Internship
Before the final week of your internship, have your internship supervisor complete the Internship Supervisor Evaluation form and send it to the Student and Academic Affairs Office. Remember to fill out the Internship Report, too, and return it to the Student and Academic Affairs Office by the time your internship is complete.

Step 7: Complete the Academic Component
If you wish to receive credit, submit the academic component of your internship to your faculty sponsor within four weeks of completing the internship. This is the Research Paper or Research Materials. Talk to your faculty sponsor for guidelines and expectations regarding your academic component.
IDCE Internship Proposal

An internship must be a minimum of 210 hours to qualify for academic credit. Not more than 25% of your job duties should be clerical by nature.

Complete this form after you have secured an internship. After your faculty sponsor has signed this form, please submit it to the Director of Career Development in Room 203 of the IDCE House.

PLEASE NOTE: Before the final week of your internship, have your internship supervisor complete the Internship Supervisor Evaluation form and send it to the IDCE Student and Academic Affairs Office in Room 24 of the IDCE House. If you wish to receive credit, submit the academic component of your internship to your faculty sponsor within four weeks of completing the internship.

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<thead>
<tr>
<th>Student Name: ___________________________</th>
<th>Program: ___________________________</th>
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<tbody>
<tr>
<td>Semester of Internship (circle one):</td>
<td>Fall  Spring  Summer  YEAR: __________</td>
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<td>Student Address during internship:</td>
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<td>Campus address:</td>
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<td>Telephone: ______________________________</td>
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Sponsoring Organization

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<tr>
<th>Name of Organization: ______________________________</th>
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<td>Address:</td>
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<td>Telephone: _______________________________ E-mail:</td>
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<tr>
<td>Website:</td>
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<tr>
<td>Description of the Organization:</td>
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<tr>
<td>Internship Supervisor: __________________________</td>
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<td>Title and Department: ____________________________</td>
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<tr>
<td>Internship Title and Responsibilities:</td>
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Goals or End Product (reports, publications, etc.) of the Internship

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Proposed Weekly Schedule (if possible, attach a work timetable that you have agreed upon with your internship supervisor.)

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Hours per week: ________________________ Total # of weeks: ________________________

(Please note that international students must have any paid internship approved by the Director of International Students and Scholars.)

Faculty Sponsor (please print): ______________________________

Department: ________________________________________________

Faculty Signature for Approved Internship Date Signed

______________________ _________________________

Director, Career Development Signature Date Signed

______________________ _________________________

After your faculty sponsor has signed this form, please submit it to the Director of Career Development in Room 203 of the IDCE House.
IDCE Internship Report

Please answer the following questions and submit your report to the IDCE Career Development Office, not more than four weeks after the internship is completed (by October 15 for summer internships). For GISDE students who will graduate in December under the internship option, this exact date should be coordinated with your advisor and the final project’s deadline.

Internship Proposal: ____________________________________________________________

Student Name: _________________________________________________________________

I. Description of the sponsoring organization

• What is the organization’s mission?
• What are its main areas of work and expertise, and where does it carry out its mission (in the U.S., other countries)?
• What is the organizational structure (e.g., staff composition, gender, cultures, etc.)?
• What are the organization’s strengths? What areas need attention?
• How effectively does it accomplish its mission?

II. Description of the Internship Responsibilities

• Describe your responsibilities in the internship.
• How was your internship connected to the organization’s mission?

III. Assessment of Your Internship

• What did you learn during this internship?
• How well did the internship relate to your course of studies and/or overall career goals?
• Would you recommend this internship for other IDCE students? Please explain.
Internship Supervisor Evaluation

Student Name: ________________________________________________________________

Internship: __________________________________________________________________

A letter from the internship supervisor describing internship responsibilities and performance is required for
IDCE graduate students to receive academic graduate credit. Please request that your supervisor send this
completed form to:

Clark University
Department of International Development, Community, and Environment - Internships
950 Main Street
Worcester, MA 01610-1477

Name of Supervisor: __________________________________________________________________

Name of Organization: __________________________________________________________________

Address: _________________________________________________________________________

_____________________________________________________________________________________

Telephone: __________________________ E-mail: ____________________________________________

Website: ___________________________________________________________________________

1) How well did the Clark IDCE intern perform the responsibilities of the internship and live up to your
   expectations?

2) How well did the intern assimilate into the organization environment and culture?

3) Was the intern receptive to feedback?

4) Were there any areas in which a need for improvement was evident? Any particular problems? If so,
   please explain.
5) Was the intern’s academic preparation adequate for the internship?

6) Would you be willing to sponsor another IDCE intern? If so, would you sponsor an intern for the summer? For a semester? Paid or unpaid?

Signature: ___________________________________________ Date: __________________________