WPI DEGREE REQUIREMENTS (effective for students matriculating after August 1, 2011)

WPI’s academic requirements are specifically designed to develop an overall educational experience which meets the goals of the college. Each requirement plays a supporting role as follows:

- To provide intellectual breadth and a better understanding of themselves and the diversity and creativity of human experience, every WPI student must complete a Humanities and Arts Requirement;
- To provide an understanding of the priorities of other sectors of society, develop the ability to communicate effectively with disparate groups, organize and derive solutions to complex problems, and gain an awareness of the interrelationships between technology and people, every WPI student must complete an Interactive Qualifying Project (IQP);
- To provide a capstone experience in the professional discipline, to develop creativity, instill self-confidence and enhance the ability to communicate ideas and synthesize fundamental concepts, every student must complete a Major Qualifying Project (MQP);
- To provide for learning through an academic program with fabric and course balance while encouraging individual student choices within that framework, every student must fulfill Distribution Requirements.

WPI TERMS AND CREDIT UNITS

The Bachelor degree from WPI normally is based upon a residency at WPI of 16 terms. WPI operates on a system with four seven-week terms, two in the autumn semester (Terms A and B) and two in the spring semester (Terms C and D). A summer session, Term E, is also available. The normal academic load for each term is defined as one unit of work, usually divided among three courses or projects. Thus, the usual credit unit for courses or independent study/projects is 1/3 unit. Qualifying Projects, defined on pages 14-15, require one full unit of activity which may be concentrated into a single term (especially if conducted off-campus) or spread throughout an academic year. The degree will be awarded upon completion of the following:

DEGREE REQUIREMENTS

1. **The Humanities and Arts Requirement** (See page 31)
   Qualification by overall evaluation of two units of work in the humanities and arts.
   To provide intellectual breadth and a better understanding of themselves and the diversity and creativity of human experience, every WPI student must complete a Humanities and Arts Requirement.

2. **The Mathematics and Science Requirement** (See page 37)
   The Mathematics and Science Requirement defines a minimum standard of scientific, technological, engineering, and mathematical literacy for graduates of WPI, regardless of major field. Most degree programs will provide a substantial level of preparation in most of these areas, far beyond this standard. Students will satisfy this requirement by satisfying the program requirements of their individual major programs.

   The goals of the Mathematics and Science Requirement at WPI are that students will be able, in their careers and daily lives, to: 1) explain and apply key concepts and principles of scientific disciplines and use an understanding of scientific methods to make critical judgments, 2) apply mathematical methods to understand the solution of real-world problems, 3) productively and appropriately use computers and other technology, 4) use methods from the quantitative, natural or engineering sciences to systematically identify, formulate, and solve problems.

   The specific requirement is two units of work in science, engineering, mathematical science or computer science. Two-thirds units of work must be in Quantitative Science (courses with prefixes CS or MA count by default); two-thirds units of work must be in Natural or Engineering Science (courses with prefixes BB, BME, CHE, CH, ECE, ES, GE, ME, PH or RBE count by default); the final two-thirds unit may be from any of the Quantitative, Natural or Engineering Sciences. Each major program may set more restrictive requirements as the program sees fit. Programs may also propose other work to fulfill any portion of the two-unit Requirement; such alternatives must be approved by the Committee on Academic Policy and the Dean of Undergraduate Studies.

3. **The Interactive Qualifying Project** (See page 17)
   Successful completion of a qualifying project relating science and/or technology to society (the Interactive Qualifying Project, or IQP) representing at least one unit of credit in project or independent study work. The format of the documentation is to be in accordance with current WPI policy on such documentation.

4. **The Major Qualifying Project** (See page 16)
   Successful completion of a qualifying project in the major area of study (the Major Qualifying Project, or MQP) representing at least one unit of credit in project or independent study work. The format of the documentation is to be in accordance with current WPI policy on such documentation.

5. **Distribution Requirements** (See program description for specified departments – page 37)
   Satisfaction of published academic activity distribution requirements in or relating to the major area of study. These requirements typically total no more than ten units (including the MQP and two units to fulfill the Mathematics and Science Requirement) and are specified by general topical subject area, not by specific courses. Completion of distribution requirements will be certified by the appropriate Program Review Committee (PRC), upon recommendation by the student’s academic advisor. For students desiring designation of a major area for which a determination regarding distribution requirements has not previously been made and published, a faculty committee will be appointed by the department head or IGSD dean to review and approve the student’s program of study.
6. **Social Sciences** (See page 36)
   Completion of 2/3 unit of work in the social sciences, exclusive of qualifying project.

7. **Residency Requirement**
   A minimum of eight units must be completed satisfactorily in residence at WPI. (It is anticipated the normal residence at WPI will be 16 terms.)

8. **Minimum Academic Credit**
   The minimum academic credit required for the Bachelor degree is 15 units. Credit accumulated beyond the published distribution requirements shall be accomplished by the addition of “free elective” work.

9. **Physical Education** (See page 102)
   Qualification in physical education shall be established by completing 1/3 unit of course work (four PE classes) or its equivalent. Such an equivalent, for example, may be participation in club or varsity sports.

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**MAJOR AREAS OF STUDY**

Guidelines for the construction of the most common major programs are given alphabetically by area in the “Department and Program Descriptions” section beginning on page 37. The exact program of study for any student, however, is developed by the student with the aid of an advisor.

All of the majors below, with the exception of Environmental and Sustainability Studies, and Liberal Arts and Engineering, are awarded with the B.S. degree. Some programs are listed that are developed through the departments indicated in parentheses. In the past, WPI has graduated students in the following fields, but this list should not be interpreted as necessarily putting any restriction on a student’s “major:”

- Actuarial Mathematics (MAC)
- Aerospace Engineering (ME)(accredited by ABET)
- Architectural Engineering (AREN)
- Biochemistry (CBC)(certified by the American Chemical Society)
- Bioinformatics and Computational Biology (BCB)
- Biology/Biotechnology (BB)
- Biomedical Engineering (BME)(accredited by ABET)
  Specializations in:
  - Biomaterials and Tissue Engineering
  - Biomechanics
  - Biomedical Instrumentation, Biosignals, and Image Processing
- Chemical Engineering (CHE)(accredited by ABET)
  Concentrations in:
  - Biochemical
  - Biomedical
  - Environmental
  - Materials
- Chemistry (CBC)(certified by the American Chemical Society)
  Concentrations in:
  - Medicinal Chemistry
- Civil Engineering (CEE)(accredited by ABET)
  Subareas in:
  - Structural and Geotechnical Engineering
  - Environmental Engineering
  - Transportation Engineering
  - Urban and Environmental Planning
  - Construction Engineering and Project Management
  Concentration in:
  - Environmental
- Computer Science (CS)(accredited by ABET)
- Computers with Applications (CS)
- Economic Science (SSPS)
  Concentrations in:
  - Sustainable Economic Development
  - Computational Economics
- Electrical and Computer Engineering (ECE)(accredited by ABET)
  Subdisciplines in:
  - Robotics
  - Power Systems Engineering
  - RF Circuits and Microwaves
  - Communications and Signal Analysis
  - Biomedical Engineering
  - Analog Microelectronics
  - Computer Engineering
- Engineering Physics (PH)
- Environmental Engineering (CEE; CHE; ME) (accredited by ABET)
- Environmental and Sustainability Studies (B.A. degree) (ID)
- Humanities and Arts (HU)
  Concentrations in:
  - American Studies
  - Environmental Studies
  - Humanities Studies of Science and Technology
  - History
  - Literature
  - Music
  - Philosophy, Religion
  - Drama/Theatre
  - Writing and Rhetoric
  - Art History
  - German Studies
  - Hispanic Studies
  - Science and Technology
- Industrial Engineering (BUS) (accredited by ABET)
- Interactive Media and Game Development (HU; CS)
  Artistic Track
  Technical Track
- Interdisciplinary (by arrangement)(IGSD)
- International Studies (HU)
- Liberal Arts and Engineering (B.A. degree)(HU)
Management (BUS)(accredited by AACSB)
Management Engineering (BUS)(accredited by AACSB)
  Concentrations in:
  Biomedical Engineering
  Civil Engineering
  Electrical and Computer Engineering
  Entrepreneurship & Innovation
  Mechanical Engineering
  Manufacturing Engineering
  Operations Management
Management Information Systems (BUS)(accredited by AACSB)
Mathematical Sciences (MA)
  Subareas in:
  Algebraic and Discrete Mathematics
  Computational and Applied Analysis
  Operations Research
  Probability and Statistics
Mechanical Engineering (ME)(accredited by ABET)
  Concentrations in:
  Biomechanical
  Engineering Mechanics
  Manufacturing
  Materials Science and Engineering
  Mechanical Design
  Robotics
  Thermal-Fluid Engineering

Physics (PH)
Professional Writing (IGSD)
Psychological Science (SSPS)
Robotics Engineering (CS; ECE; ME)(accredited by ABET)
Society, Technology and Policy (SSPS)
System Dynamics (SSPS)

Programs for students interested in medicine, law or pre-college education can be readily developed from many of the above majors.

Interdisciplinary (individually-designed) majors (ID) may also be developed under the B.S. or B.A. degree; see Interdisciplinary Programs, page 85.

WPI undergraduate diplomas designate “Bachelor of Science” or “Bachelor of Arts” as appropriate. The transcript will list the student’s major. If a Minor or Concentration was completed, this will also be included on the transcript.

The number of majors associated with a single WPI Bachelor’s degree is limited to two.

PROFESSIONALLY ACCREDITED PROGRAMS

WPI is accredited as an institution by the New England Association of Schools and Colleges. In addition, the aerospace engineering, biomedical engineering, chemical engineering, civil engineering, electrical and computer engineering, environmental engineering, industrial engineering, mechanical engineering, and robotics engineering programs are accredited by the Engineering (or Computing) Accreditation Commission of ABET, http://www.abet.org. (The WPI Computer Science Program is accredited by the Computing Accreditation Commission of ABET.) The Chemistry and Biochemistry Department and its program are approved by the American Chemical Society. The bachelor’s and master’s degree programs in business offered by the School of Business are accredited by AACSB International — The Association to Advance Collegiate Schools of Business.
WPI’s advising program is based on a cooperative and understanding relationship between the students and advisors. Under the WPI Plan, students have the final responsibility for designing their own educational experience at WPI which includes understanding all their degree requirements and making sure all those requirements have been satisfied for graduation. The role of the faculty advisor is to help his/her advisees design a program of study which reflects the students’ interests and professional goals. While advisors are willing to suggest specific programs of study, they will not insist that students follow a particular path. Advisors also help students choose among academic alternatives, help them interpret catalog requirements and review degree audits and grade reports with them. Students are expected to understand these documents and their implications for academic progress and act accordingly. Therefore it is critical that students take the initiative to consult regularly with their academic advisors.

The Office of Academic Advising at WPI has three main areas of focus: 1) general academic advising; 2) academic resources; and 3) pre-professional programs.

GENERAL ACADEMIC ADVISING
Students can come to the Office of Academic Advising to get general advising help in areas such as course selection, academic status concerns, major and advisor selection, and individualized academic coaching. The Office of Academic Advising oversees programming for the First Year, including the Insight Program and the Insight Wellness course.

The academic coaching program includes counseling from an Academic Advisor (or PAC - Peer Academic Coach) in areas such as learning styles, effective study strategies, problem solving and critical thinking skills, and time management. Students work on setting their academic goals, discovering their strengths and weaknesses, and designing learning and study strategies that work best for them.

ACADEMIC RESOURCES CENTER
The Academic Resources Center (ARC) at WPI is located in Daniels Hall, and houses the academic tutoring program, the Writing Center, MASH (Math and Science Help) and the Peer Academic Coaching program. Peer tutors and academic coaches are students who have demonstrated a mastery of material, and have been trained in peer tutoring and communication.

The MASH program is an academic support program for students enrolled in math and science classes. Offered to all students in a supported course, MASH provides assistance in regularly scheduled weekly study sessions beginning the first week of every term.

MASH review sessions are offered for a limited number of courses which students and faculty have identified as challenging. Many of the courses are typical first year classes, allowing extra support for students transitioning to college-level work. Each session is guided by a MASH leader, an undergraduate student who has taken the course before and has excelled. He/she understands the course material and what the instructor expects. MASH leaders attend lectures so they are prepared for questions that might arise in a MASH session.

Through the MASH, tutoring, and PAC program, students become actively involved with the content material in a supportive environment. Studies show that students who attend MASH, tutoring, and see a PAC regularly earn higher grades than students electing not to participate. But even more importantly, they learn how to master new concepts, learn how to put ideas into perspective, develop a better way to study, and effectively manage their time.

PRE-PROFESSIONAL ADVISING
The Pre-Professional Advisor works with teacher preparation, pre-law, and pre-health students. Students can come to the office to receive course advice regarding pre-requisite courses for various professional schools (veterinary medicine, optometry, physician assistant, physical therapy, law, and medical school, among others.) The advisor works with students to fit the pre-requisite into their schedules while also fulfilling major course requirements.

The Office of Academic Advising collaborates with the Career Development Center to offer special programming for pre-professional students. Students interested in pre-health, pre-law, and teacher preparation can receive academic coaching from the pre-professional advisor. Pre-health students are assisted through the application process for many health related graduate programs. Students often make appointments with the pre-professional advisor to explore their different options within different health related careers.

Students can make an appointment for any of these services by going to www.wpi.edu/offices/arc or calling x5381.

OFFICE OF DISABILITY SERVICES
Academic accommodations are available for students with documented disabilities. Please see page 202 for more information.
**DEFINITION**
A Concentration is an option associated with a Major which provides recognition for focused and coordinated academic work either within the Major or within an area of study closely related to the Major.

**RULES**
1. All Concentrations require completion of two units of integrated academic study plus an MQP with a topic and content appropriate to the given Concentration.
2. Concentrations deemed to belong exclusively or primarily within the stated Major must be accommodated within the distribution requirements of that Major.
3. Concentrations deemed to have a substantial interdisciplinary nature can exceed the normal 10-unit allotment of the Major by as much as 1 unit, provided that the additional requirements do not include or permit academic work designated by the Major prefix or coursework normally taken to satisfy the Major's portion of the distribution requirements. Furthermore, Concentrations of an interdisciplinary nature are permitted to use up to 1 unit of the academic program beyond the distribution requirements of the Major, including the IQP, Social Science requirement, and Free Electives, as deemed appropriate.
4. The requirements of the Concentration must be designed to offer choices for the student within the Major area and, if relevant, outside the distribution requirements of the Major; however, the Concentration requirements must not preclude meeting the normal distribution requirements for the Major.
5. Rules and guidelines for each Concentration will be formulated by the faculty associated with the governing Major, and must be reviewed by the Committee on Academic Operations (CAO) and subsequently approved by the Faculty. CAO is empowered to rule on whether a proposed Concentration is disciplinary or interdisciplinary.
6. An individual program of study leading to a Major with a Concentration will be planned by a student in consultation with his/her academic advisor. The student's intention to pursue a Concentration will be declared by application to the appropriate Program Review Committee in accordance with that Committee's schedule of deadlines. Application deadlines should be designed to enable Committee review and communication of decisions to students at a sufficiently early point that flexibility of schedule still exists. Extenuating circumstances may be considered at the discretion of the Program Review Committee.
7. Concentrations and minors are additional degree designations. Any credit earned for an additional degree designation must not overlap with credit earned for another additional degree designation by more than one unit. Also, no credit-bearing activity may be triple-counted towards degree designations or degree requirements.

Listings of Concentrations may be found in the “Department and Program Descriptions” section beginning on page 37.
Minors are described in the “Program Description” section of this catalog. Minors sponsored by a department are described following the department. Others are listed alphabetically by title. As of the printing of this catalog, the following Minors have been approved:

- Biology
- Biochemistry
- Bioinformatics and Computational Biology
- Business
- Chemistry
- Computer Science
- Drama/Theatre
- Economics
- Electrical and Computer Engineering
- English
- Entrepreneurship
- Environmental and Sustainable Studies
- German
- History
- Industrial Engineering
- Interactive Media and Game Development
- International Studies
- Law and Technology
- Management Information Systems
- Manufacturing Engineering
- Materials
- Mathematics
- Mechanical Engineering
- Music
- Physics
- Political Science and Law
- Psychology
- Robotics Engineering
- Social Entrepreneurship
- Social Science
- Sociology
- Spanish
- System Dynamics
- Statistics
- Writing

Interdisciplinary or Individually Designed (ID) minors are approved by the Committee on Academic Operations (CAO). The form needed to declare a minor or to propose an interdisciplinary or individually designed minor can be found in the Registrar’s Office.

**Double Majors**

An option for some students who wish to broaden their WPI experience is the completion of two distinct majors through the double major option. The choice to pursue a double major should be made early in a student’s career. No student shall complete more than two undergraduate majors.

For double majors, the diploma may list both majors (in order of preference by the student), either major, or no major as indicated by the student.

A double major should signify capacity in two distinct disciplines. Some combinations of double majors are not sufficiently distinct to merit this designation. Departments and programs decide whether any combinations of double majors overlap to such an extent as to be disallowed. As of the publication date of this catalog, the following combinations are not allowed:

- Actuarial Mathematics and Mathematics
- Aerospace Engineering and Mechanical Engineering
- Biochemistry and Chemistry
- Civil Engineering and Architectural Engineering
- Civil Engineering and Environmental Engineering
- Computer Science and Computers with Applications
- Humanities and Arts and International Studies
- Industrial Engineering and Management Engineering with Concentration in Operations Management
- Physics and Engineering Physics

Students who wish to pursue any double major should consult with faculty advisors in both majors. Exceptions to disallowed double majors must be approved by the Committee on Academic Operations.

Degree requirements for double majors are as follows:

1. **The Humanities and Arts Requirement.**
   
   No modifications are made to the Humanities and Arts Requirement for double majors. All students, including majors in Humanities and Arts or International Studies must satisfactorily complete the Humanities and Arts Requirement culminating in an Inquiry Seminar or Practicum.

2. **The Interactive Qualifying Project.**
   
   If one of the majors of a double major is in Social Science and Policy Studies, a single project bearing at least one unit credit may be used to satisfy both the MQP requirement for the SSPS major and the IQP requirement. In order to be used to satisfy both requirements, the combined social science MQP and IQP must meet the goals of both projects. It must be interactive in nature involving an aspect of technology, and must also be an application of social science knowledge and analytical techniques. In order to select a single project that satisfies both the goals of the MQP and the goals of the IQP, the decision to pursue a social science double major needs to be made fairly early in the student's career.

3. **The Major Qualifying Project.**
   
   At least one separate and distinct major qualifying project of at least one unit of work must be completed for each major, unless a student receives permission from his/her MQP advisor to pursue a single interdisciplinary MQP of at least 4/3 units of credit (See the Major Qualifying Project.)

4. **Distribution Requirements.**
   
   The distribution requirements of each major must be met, but requirements common to both majors have to be met only once. The MQP requirements for Double Majors may be fulfilled in either one of two ways:
   
   - Two distinct projects, one in each major, each of at least one unit of credit.
   - One interdisciplinary project of at least 4/3 units of credit, and having significant work associated with each major. An interdisciplinary project must be:
     - jointly advised by at least two faculty members, one associated with each of the relevant degree programs; OR
     - advised by a single faculty member who is associated with both of the relevant degree programs.
Faculty associated with each degree program are listed in Section 2 of the WPI Undergraduate Catalog.

An interdisciplinary MQP involving social science may not be used as an IQP.

The interdisciplinary MQP option takes advantage of the value of interdisciplinary work at the intersection of the two majors. Students undertaking an interdisciplinary MQP must complete an interdisciplinary MQP approval form in advance of project registration, and this form must be signed by all advisor(s) on the project. This form must contain a summary of the proposed project work indicating the content relating to each major. The interdisciplinary MQP option is available only at the discretion of the faculty and only when all faculty advisor(s) agree on the project content. Students planning to use this option should identify and consult with their faculty advisor(s) well before the end of their junior year.

For a double major, completion of a 4/3 unit interdisciplinary MQP completes the 1 unit MQP requirement for each major. The assignment of credit is as follows: 2/3 unit is double counted toward each major, and the remaining 2/3 unit is allocated as 1/3 unit to one major and 1/3 unit to the other major.

Note: It is anticipated that in some cases a student pursuing a double major will join a project team whose other members are pursuing a single major. The double-majoring student will bring the interdisciplinary content to the project, and this additional work will be represented by the additional credit that that student (perhaps only that student) earns, and with an enlarged report prepared by that student.

For students wishing to pursue double majors, the program audit for each intended major must be completed and certified by the review committee of each department involved. Academic activities appropriate to both majors may be counted in both majors. For the policy in the special situation of double majors involving the social sciences see the Social Science and Policy Studies department description in Section 2 and the Double Major Distribution Requirements in Section 4 of the Undergraduate Catalog.

Certain interdisciplinary MQP’s and corresponding double-majors in the same department are not allowed.

Interdisciplinary MQP’s with two faculty advisors: All faculty advisors have equal status in approving the final project, and a single grade is submitted for each term’s work and a single project grade is submitted on the CDR form. Should an interdisciplinary MQP, once completed, be deemed acceptable as an MQP for one of the two majors, but not for the other, and/or if the faculty advisors cannot agree on a single grade after much effort to do so, the project may be considered as the MQP for a single major. This conversion can only occur with the consent of the student and the advisor(s) from the single major being selected.
Project activity is an integral part of the educational experience for all students under the WPI Plan. The two types of qualifying projects are:

1. A project in the major field of study (the Major Qualifying Project, or MQP).
2. A project which relates technology and science to society or human needs (the Interactive Qualifying Project, or IQP).

Projects should be chosen in consultation with the student’s academic advisor and must be accepted by a project advisor before project registration can be completed. Many project opportunities come from off-campus organizations, and provide challenges to solve real-world problems and thus gain experience invaluable for seeking jobs and for professional practice.

Students are encouraged to develop their own projects, to solicit support for their ideas from potentially interested faculty, and to form teams to pool resources and share points of view.

The Major Qualifying Project should focus on the synthesis of all previous study to solve problems or perform tasks in the major field with confidence, and communicate the results effectively.

The Interactive Qualifying Project should challenge students to relate social needs or concerns to specific issues raised by technological developments.

RESOURCES - GETTING STARTED
Students are encouraged to avail themselves of the many resources and advice areas found in the Projects Program web page (projects.wpi.edu).

In addition, personal advice can be provided by meeting with the project coordinators listed on page 196.

AVAILABLE PROJECTS
Students may obtain information about new or ongoing projects from a variety of sources. Principal sources include discussions with other students, especially those currently involved in a project, the Projects Program web site, department offices, or their web pages. Off-campus projects are discussed annually in the fall. In the spring, “Available Projects” on the Projects Program web site (www.wpi.edu/Academics/Projects/) can be used as a directory of specific IQP projects or as a source of ideas for developing your own projects. Some students will find a project listed which fits their needs and interests exactly. In other cases, the listing will serve to lead students to a faculty member who can help to develop a project idea. Faculty associated with the Interdisciplinary and Global Studies Division (IGSD) are available to assist students in interdisciplinary and interactive projects.

PROJECT PERFORMANCE AND TIME-ON-TASK
A student is normally expected to expend 15-17 hours per week on the average for each 1/3 unit of credit for project work, and expected achievement is based upon that commitment.

A project group, whether it involves one student or more, should have a minimum of one scheduled conference per week with the advisor(s). Additional time should be scheduled when the effort exceeds 1/3 unit per student or when more students are involved.

Students should be prepared to submit interim project reports to the advisor each week. Students are also encouraged to complete a proposal at the beginning of the project activity to define the scope and timeline for completion of the effort. In addition, oral reports may be required as determined by the advisor. At the end of the project, a report must be prepared to the satisfaction of the project advisor. For projects sponsored by off-campus organizations, both a written and oral report for the sponsors is normally expected.

PROJECT GRADING
The Faculty of WPI have endorsed the following grading guidelines for project activity:

1. Each term a student is registered for a project, the student receives a grade reflecting judgment of accomplishments for that term.
2. Upon completion of the project, students will receive an overall project grade. It is important to note that this grade reflects not only the final products of the project (e.g., results, reports, etc.), but also the process by which they were attained. No amount of last-minute effort should turn a mediocre project effort into an A.
3. The available grades and their interpretations are as follows:
   - A: a grade denoting a consistently excellent effort, and attaining the stated project goals.
   - B: a grade denoting a consistently good effort, and attaining the stated project goals.
   - C: a grade denoting an acceptable effort, and partially attaining the stated project goals.
   - SP: a grade denoting an effort sufficient for the granting of the credit for which the student is registered. This grade provides students with no feedback, and its use is discouraged except for circumstances in which the faculty member is unable to judge the quality of the work (yet can still determine that the granting of credit is appropriate).
   - NAC: a grade denoting an effort unacceptable for the credit for which the student is registered. Note that this grade is entered into the student’s transcript.
   - NR: a grade denoting an effort insufficient for the credit for which the student is registered. This grade is appropriate when the project has not proceeded due to circumstances beyond the control of the student, or for project extensions which do not represent the full amount of credit for which the student is registered.
4. The results of a project should be such that an outside reviewer would reasonably deem the project as being worthy of the credit and grade given, based on evidence such as the project report.

5. In light of the above grading criteria, it is strongly suggested that a formal project proposal or contract be developed early in the project activity, so that all participants in the activity have a clear understanding of the project goals, and advisor and student expectations.

**ELECTRONIC PROJECT SUBMISSION**

WPI requires that all undergraduate students submit their Interactive Qualifying Project (IQP) and Major Qualifying Project (MQP) electronically (“eProjects”).

Students must be registered for a minimum of 1/6 unit of qualifying project credit in the term in which the final project report is submitted. An eProject must be submitted via the web site, wpi.edu/+eprojects, following the steps outlined there.

No matter which format is used to create the original report document (Microsoft Word, Latex, or other), the final report must be converted to a PDF format in order to be submitted as an eProject. For information on converting to a PDF, go to wpi.edu/+ATC/Collaboratory/HowTo/. Every eProject must include a title page and must follow the formatting guidelines described at wpi.edu/+Projects/finishing.html.

The deadline for the submission of the initial report draft and the final document may be established at the discretion of the project advisor. Drafts and reports need not be accepted by the advisor after the established deadline.

The final PDF is required, but additional related files such as simulations, computer programs, multimedia, and data sets may be submitted as a component of the project.

A project that is completed by a team of students, except in extenuating circumstances, will submit ONE project report from the group. After the MQP or IQP team submits the final version of the project report, the advisor must review the work and approve or reject it online at wpi.edu/+eproject.

The final project report should be carefully proofread. Once the submitted project has been approved by the advisor and released for archiving by the Registrar’s Office, it is considered an academic record and cannot be edited.

A completed electronic Completion-of-Degree-Requirement (eCDR) form, must be printed for signature by each student and signed individually by the advisor as the final step in the submission process. The eCDR form must be submitted in person by the project advisor or a member of the academic department of the advisor to the Office of the Registrar by no later than the tenth day of the next academic term.

A student who has filed an application to receive their degree in May must submit a completed eCDR to the Office of the Registrar by the last Thursday in D-term.

**GROUP QUALIFYING PROJECT EFFORTS**

Students meeting a qualifying project degree requirement by participation in a group, or team effort, will submit, at the discretion of the project advisor, either a single, comprehensive written report from the group, or individual written reports from each member of the group. A single, comprehensive written report must, however, include some means by which each individual’s contribution to the group effort may be clearly identified. This identification may take the form of an “authorship page,” simply a list of individual chapters and their respective authors, or of a prefacing statement in which each contributing group member is named as having carried out one or more specific tasks within the overall project effort.

In the case where one or more students leave an ongoing group project after having contributed at least one unit each of project effort, those students, again at the discretion of the project advisor, will submit either a single written report or individual written reports in satisfying the qualifying project documentation requirement. The same means of identifying individual contributions will be employed as described above.

**DISSEMINATION OF PROJECT REPORTS**

MQPs and IQPs completed for off-campus agencies are usually distributed within the sponsoring agency by the agency project liaison. A project report may be restricted from public viewing if it contains confidential or proprietary information of a sponsoring agency. Completed project reports are electronically archived at WPI’s Gordon Library, are indexed and are available to the public (http://www.wpi.edu/+library).

Students are responsible for keeping personal copies of project reports for their own permanent professional records. In this way, reports can be reviewed for later use, and incorporated into a professional portfolio.

Thus, MQPs and IQPs are best viewed as research reports which establish good professional practices as well as being potential sources for further study and research.

**PAY AND CREDIT (for students working on sponsored projects)**

A student may receive pay for work associated with a registered project under the following conditions:

1. The work done for pay is clearly distinguished from the work defined for academic credit for the project. This distinction must be clearly articulated in a conflict of interest statement signed by all participating parties before the project begins.

2. Results obtained from paid or unpaid work performed while students are not registered for project credit at WPI may be used in projects only after consultation with the project advisor. When possible, such consultation should take place before work begins.
The qualifying project in the major field of study should demonstrate application of the skills, methods, and knowledge of the discipline to the solution of a problem that would be representative of the type to be encountered in one's career. The project's content area should be carefully selected to complement the student's total educational program. In defining the project area within which a specific topic is to be selected, the student and academic advisor should pay particular attention to the interrelationships that will exist between the bodies of knowledge represented by courses, independent studies, and Preliminary Qualifying Projects; and by the Interactive Qualifying Projects.

MQP activities encompass research, development, and application, involve analysis or synthesis, are experimental or theoretical, emphasize a particular subarea of the major, or combine aspects of several subareas. In many cases, especially in engineering, MQP's involve capstone design activity. Long before final selection of a project topic, serious thought should be given as to which of these types of activities are to be included. Beyond these considerations, the MQP can also be viewed as an opportunity to publish or to gain experience in the business or public sectors.

Off-campus MQPs are also very valuable for access to state-of-the-art resources and contacts for future professional work.

GETTING STARTED ON AN MQP
Project topics are originated by students, faculty, or practicing professionals participating in WPI's off-campus project programs. A faculty member in each academic department acts as Project Coordinator for all majors within the department. The Project Coordinator has assembled MQP topic descriptions being proposed and has identified the faculty who will serve as project advisors for each topic. All project opportunities-MQP, IQP, PQP, on-campus originated and off-campus originated are made available to the student body through a planned information-sharing program of activities during C and D terms of the academic year prior to the start of the project.

PROJECT PROPOSALS
Students are strongly encouraged to begin their MQPs with a project proposal. A detailed guide to preparing project proposals is available in department offices or on the Projects Program web page (www.wpi.edu/academics/Projects/).

MQP LEARNING OUTCOMES
By completing their MQP, WPI students will achieve the following learning outcomes at a level at least equivalent to that of an entry level professional or graduate student.

Students who complete a Major Qualifying Project will:
1. apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study.
2. demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study.
3. use effectively oral, written and visual communication.
4. identify, analyze, and solve problems creatively through sustained critical investigation.
5. integrate information from multiple sources.
6. demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards.
7. practice the skills, diligence, and commitment to excellence needed to engage in lifelong learning.

Specific disciplinary programs may add additional MQP outcomes, such as design or mathematical skills or teamwork, as appropriate.

MQP PROJECT CENTERS
Each project center has a WPI faculty member as the director, well-defined procedures for completing project work, and selective admissions processes. The Centers tend to be highly structured and require superior performance.

At the present time, the WPI project center close to campus is:
• University of Massachusetts Medical School Project Center/
  Tufts University Cummings School of Veterinary Medicine.

See also page 19 for residential Project Centers at a distance from WPI.

UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL PROJECT CENTER/TUFTS UNIVERSITY CUMMINGS SCHOOL OF VETERINARY MEDICINE

Major qualifying projects are available at nearby University of Massachusetts Medical School (UMMS) and Tufts University Cummings School of Veterinary Medicine (TUCSVM) for students from many disciplines on campus. These institutions are nationally recognized for research and medicine and offer project opportunities over a wide range of research areas. Students performing projects at these centers work in cutting edge research programs and typically interact with graduate and post-doctoral researchers to solve real-world problems.

It is recommended that students spread their projects over the entire academic year. Students from any major interested in project opportunities should contact Dr. Destin Heilman in the department of Chemistry and Biochemistry.
THE INTERACTIVE QUALIFYING PROJECT

At WPI, students are expected to develop an understanding of how science and technology are embedded in the fabric of society. The Interactive Qualifying Project (IQP) challenges students to address a problem that lies at the intersection of science or technology with society. During the IQP, students work in interdisciplinary teams, often with an external sponsoring organization, to develop solutions to real-world problems. In doing so, students learn something about the role of science and technology, its impact on society, its place in meeting human needs and human efforts to regulate, control, promote and manage our changing technologies. The IQP is equivalent to three courses, typically undertaken in a student's junior year. It can be completed over three terms, or as a full course load for a student for one term, and it can be completed on-campus, or at one of our many residential project centers in the U.S. and abroad. For more on the IQP see the websites of the Interdisciplinary and Global Studies Division (IGSD) at http://www.wpi.edu/academics/iqp.html. For more on the IQP and study abroad, see the Global Perspective Program website: http://www.wpi.edu/academics/igsd/gpp.html. Completed IQPs are electronically archived at WPI's Gordon Library, are indexed and are available to the public (http://www.wpi.edu/+library).

IQP LEARNING OUTCOMES
The Faculty adopted the following statement defining learning outcomes for the IQP. Successful completion of an IQP is an important element in helping students achieve WPI’s overall undergraduate learning outcomes. Students who complete an Interactive Qualifying Project will:

1. Demonstrate an understanding of the project's technical, social and humanistic context.
2. Define clear, achievable goals and objectives for the project.
3. Critically identify, utilize, and properly cite information sources, and integrate information from multiple sources to identify appropriate approaches to addressing the project goals.
4. Select and implement a sound methodology for solving an interdisciplinary problem.
5. Analyze and synthesize results from social, ethical, humanistic, technical or other perspectives, as appropriate.
6. Maintain effective working relationships within the project team and with the project advisor(s), recognizing and resolving problems that may arise.
7. Demonstrate the ability to write clearly, critically and persuasively.
8. Demonstrate strong oral communication skills, using appropriate, effective visual aids.
9. Demonstrate an awareness of the ethical dimensions of their project work.

PREPARING FOR AND FINDING AN IQP
Students are encouraged to view the IQP as a learning opportunity – a chance to gain knowledge outside their major field – while working with others to solve open-ended, complex problems. The best approach is to consult with one's academic advisor and select courses to be taken in the first and second year at WPI that can provide a foundation for an IQP in the junior year. Often project preparation involves developing an understanding of the social sciences and humanities, as the concepts and analytical techniques of these disciplines are important in understanding the social context of science and technology. In addition, students enrolled in the Global Perspective Program will be expected to complete a course devoted to project preparation in advance of their travel.

Project topics originate with external organizations, faculty and students. Students who complete IQPs at a residential project center through the Global Perspective Program work on project topics identified by external sponsoring organizations. Students can explore these opportunities at the Global Opportunities Fair organized each September by the Interdisciplinary and Global Studies Division (IGSD). Students completing projects on campus are encouraged to seek faculty members that share their interests to advise projects. Faculty interested in advising specific IQPs will post their project topics on-line at the IQP Registry. See http://www.wpi.edu/Academics/Projects/available.html. The IGSD also hosts an On-Campus Project Opportunities Fair each March where students can meet faculty advisors to discuss projects being offered on campus during the following year.

The IGSD (http://www.wpi.edu/academics/igsd.html) offers administrative support for project activities. Students are welcome to seek further assistance from the staff on the second floor of the Project Center.

WHAT ARE IQPS ABOUT? SCIENCE, TECHNOLOGY AND SOCIETY
Most, but not all, IQPs are indexed according to the following IQP Divisions. These Divisions assist students in locating proposed projects by topical area in the Registry of IQP opportunities (http://www.wpi.edu/Academics/Projects/available.html). IQP (and MQP) projects are searchable in the Library’s catalog (http://www.wpi.edu/+library).

Division 41: Technology and Environment. Subjects have included a wide range of environmental problems, for example, water quality and supply, climate change, open space and growth, hazardous waste and acid rain.

Division 42: Energy and Resources. These projects have focused on energy supply, alternative energy technologies, conservation, and the economic and policy choices made or proposed to govern this industry.
Division 43: Health Care and Technology. Projects in this division have focused on the technologies and cost of health care delivery in the US. Ethical questions in health care have also been addressed, including abortion, stem cell research, cloning, and “right to die” issues.

Division 44: Urban and Environmental Planning. Land use planning, historic preservation, urban renewal, transportation systems and the impacts of infrastructure design are among the subjects studied in this division.

Division 45: Science and Technology – Policy and Management. IQPs in this area focus on public policy as it is used to promote or constrain technology. Examples include both public and private efforts to promote scientific research, manage innovation and understand how changes in technology result in a changing business and economic environment.

Division 46: Social Studies of Science and Technology. Students working on these projects use a socio-logical approach to understanding the impact of technology on society. Topics have included equity issues (gender, race, ethnicity), technological literacy, and technology assessment and forecasting.

Division 47: Safety Analysis and Liability. The study of safety analysis introduces students to the subjects of risk analysis, negligence, and standards of care in product design and use. Projects have also focused on fire risk and safety, risks associated with natural disasters and risk management.

Division 48: Humanistic Studies of Technology. Humanistic studies illuminate the social context of science and technology. History, literature, philosophy, religion and the fine arts all speak of the nature of human problems and the scientific and technological approaches used to address personal and social problems. Each discipline provides analytic methods for examining society/technology problems. Students working in this division should prepare by taking appropriate humanities courses before beginning their project.

Division 49: Economic Growth, Stability and Development. Division 49 focuses both on problems of stability and change in mature economies, and the economic problems of developing nations. Tools of economics are used to understand the relationship between technology and growth. Projects address policy issues of appropriate technology, technology transfer among countries and trade, among others.

Division 50: Social and Human Services. These projects address the problems and technologies involved in the provision of community services, broadly defined. Projects have addressed services for the mentally or physically disabled, for juveniles, seniors, consumers, and public school students.

Division 51: Education in a Technological Society. Many WPI students have helped design and test science and engineering curricula for students at all grade levels, from elementary to high school. Projects in this area have also addressed the design and testing of computer assisted learning environments and other applications of technology to learning.

Division 52: Law and Technology. Legal systems regulate technology in all aspects of life, from food safety to pollution control to intellectual property (patents, copyright). Projects in this division explore the role of courts, agency regulations and legislation in controlling the impacts and use of technology.

Division 53: Historic and Artistic Preservation Technology. The technologies of art conservation and restoration, combined with the policy and values issues involved in the preservation of historic places and works of art, form the subject matter of IQPs completed in this division.
In addition to IQP and MQP opportunities on campus, through the Global Perspective Program, overseen by the Interdisciplinary and Global Studies Division, WPI students have many opportunities to complete a project for a term at one of WPI’s off-campus project sites. Some centers are residential, with students traveling to and living on site for a term, while others offer the opportunity to complete an off campus project in Worcester, Boston, or other nearby communities. Project work conducted at these sites provides teams of students with extraordinary opportunities to learn by solving real-world problems provided by industrial, non-profit, non-governmental or government agencies.

Application for IQP work in these programs begins in the fall with the Global Opportunities Fair. At the Fair, IQP, MQP, HUA and exchange program directors will be available to talk with students about these opportunities. Students should apply in Term A of the year preceding the year in which they would like to participate. Further information is available at the Interdisciplinary and Global Studies Division in the Project Center or through the WPI Global Portal: http://wpi-sa.terradotta.com/index.cfm?FuseAction=Abroad.Home

Application processes are competitive and accepted students must complete a series of pre-departure orientations and submit required paperwork to be eligible to travel.

All students accepted to an off-campus IQP Center will be registered for the preparation course ID 2050 in the term immediately preceding their time off campus. Students must be making satisfactory progress in their academic program in order to participate. Students are highly discouraged from overloading during the preparatory term.

Prior to leaving campus for a project program site, each student is required to complete a project registration form as described on page 195.

OFF-CAMPUS PROGRAMS

All programs offer students the opportunity to complete a project in one term of full-time work. Advance preparation is required. Faculty advisors are in residence at IQP sites and some Humanities and Arts and MQP sites.

PROGRAMS IN NORTH AMERICA

BAR HARBOR PROJECT CENTER – IQP

Director: Prof. F. Bianchi, Alden Memorial 205

Located in one of the most beautiful areas of the country, the Bar Harbor, Maine, project site allows WPI students to work in close proximity to the Acadia National Park and to an abundance of research, historical, environmental, and arts organizations. Students enrolling in Term E projects in Bar Harbor will stay in residence halls on the campus of the College of the Atlantic (COA).

While the similarity to college living is noticeable, it is from here that the resemblance disappears. Nested on the east side of Mt. Desert Island, the rocky coast, mountainous terrain, and ocean vistas have long been the destination of researchers, explorers, scientists, artists, and other curious visitors. In addition to the academic and scholarly experience that awaits WPI students, the summer in Bar Harbor offers the lure of hiking, biking, rock climbing, swimming, sailing, nature walking, kayaking, whale watching, and more.

Bar Harbor Projects have a strong focus on the relationship and intersection between the humanities, technology, the arts, and the environment. Within this context, projects involve research and creative activities intended to offer insight into the preservation, improvement, appreciation, and sustainability of the natural environment.

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<tr>
<th>PROJECT CENTER</th>
<th>PROJECT TYPE</th>
<th>TERM OFFERED</th>
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<tr>
<td>Buenos Aires, Argentina</td>
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<td>London, England</td>
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<td>Ifrane, Morocco</td>
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<td>WPI-Stantec</td>
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GLOBAL PERSPECTIVE PROGRAM

BOSTON PROJECT CENTER – IQP

Co-Directors: Prof. S. Tuler, Project Center
       Prof. P. Mathisen, Kaven Hall
This world-class city, featuring a wealth of cultural, educational, recreational, and tourist opportunities, is an exciting, vital and stimulating environment in which to live and work. Projects in Boston offer students the opportunity to both live in Worcester and participate in meaningful projects for sponsors based in Boston.

Most projects will address environmental issues, with a focus on sustainability, climate change adaptation, and public health. Projects typically include field work in the city's neighborhoods and in the greater Boston area. Some projects sponsored by state or federal agencies may address regional issues. The focus on sustainability and climate change reflects their growing importance for government agencies and private organizations at all levels. Past projects include: a plan for the reduction of neighborhood disruption during the work on the Big Dig (for the North End Neighborhood Association); an analysis of the impacts of Historic Districts on surrounding neighborhoods and a method of streamlining construction permits in those districts (for the Boston Landmark Commission); adapting to seal level rise in the Boston Harbor area (The Boston Harbor Association) effects of sea level rise on water and wastewater treatment in Massachusetts (Massachusetts Department of Environmental Protection); green building policies in Newton (City of Newton); the improvement of public safety through the inventory and mapping of all underground fuel tanks (for the Boston Fire Department), as well as yearly projects for the Museum of Science and for various departments of the cities of Boston, Cambridge, Brookline, Quincy and Newton.

GALLO PROJECT CENTER – MQP

Director: Prof. H. Nowick, Goddard Hall 123
       Prof. N. Kazantzis, Goddard Hall 224A
E & J Gallo Wineries is headquartered in Modesto, CA and also has winery operations in Sonoma and Napa Valleys, Livingston and Fresno, CA.

Projects will be conducted during Term C in California. The students will work full-time at one of the sponsor’s sites (most likely in Modesto) for approximately eight to nine weeks, from early January through early March. They will work with a mentor from the sponsoring company and with WPI faculty advisors. Previous MQP projects have involved wine filtration improvements, storage tank inert gas blanketing, wine carbonation and introduction of new processes, equipment and technology.

MICROSOFT PROJECT CENTER – MQP

Director: Prof. D. Finkel, Fuller Labs 231
Microsoft is one of the dominant companies in the software industry. The Microsoft projects will be conducted at the Microsoft New England Research and Development (NERD) Center in Cambridge, Mass. The NERD Center is located near Kendall Square. Students will live in Boston/Cambridge in housing arranged by WPI. The Microsoft Project Center offers MQPs for Computer Science majors only.

The projects will be conducted during Term B. The students will work full-time at Microsoft for approximately eight weeks, from mid-October through mid-December. They will work with a mentor from Microsoft and with a WPI faculty advisor. The project work will include the completion of an MQP report and presentation on the project to Microsoft.

MITRE PROJECT CENTER – MQP

Co-Directors: Prof. R. Ludwig, Atwater Kent 228
       Prof. S. Makarov, Atwater Kent 306
MITRE is a non-profit organization chartered to work on federally funded research projects for the Department of Defense (DoD), Federal Aviation Administration (FAA) and other government agencies. All projects will be conducted at the Mitre-Bedford center located in Bedford, MA. Students will commute to Bedford from WPI. Only US citizens can be considered for this program.

The MITRE Project Center provides opportunities for ECE majors. Selected participating students will have an opportunity to conduct a paid internship during the summer where they will perform background research in the respective area of their research and liaison with MITRE to learn about the project specifics and work with a company mentor. The sponsored projects will be conducted during Term A in Bedford. After completing a summer internship at MITRE, students will work full-time at MITRE for approximately eight weeks from late August through mid-October. WPI will provide daily transportation from campus to Bedford at no cost to the student participants. Each team will work with a company-designated mentor and a WPI faculty advisor.

NANTUCKET PROJECT CENTER – IQP

Director: Prof. D. Golding, Project Center
The Nantucket Island project site is a residential program with resident faculty advisors. This historic island is 14 miles long with an average width of about 3.5 miles and has about 10,000 year round residents. It was once a booming whaling center but is now primarily a tourist destination, particularly during the summer months. A National Historic District, Nantucket has changed little since the 17th century complete with cobblestone streets, old shops and lamps, seaside cottages, and historical museums. It has excellent public beaches that extend around the island, and 40% of the island is protected conservation land.

Nantucket is a high-end, tourist destination in the summer when approximately 40,000 tourists visit the island and draw on the island’s limited resources. This historic site is deeply committed to historic preservation and museum studies. and the Island is an environmentally-sensitive site where much of the land is protected and where problems such as beach erosion and invasive species have created new challenges. As such, projects tend to focus on environmental challenges (e.g., waste management, tourism impacts, sustainability) and on museum studies (e.g., providing information and maps to tourists; making museum information more accessible to the public). Potential projects may include working with the following sponsors: Maria Mitchell Association, Nantucket Historical Association, Sustainable Nantucket, and the Town of Nantucket.
SANTA FE PROJECT CENTER – IQP

Director: Prof. F. Carrera, Project Center
Santa Fe, capital of New Mexico, is the oldest (1610 AD) and highest (7,199 ft) state capital in North America. Nestled at the foot of the Sangre de Cristo Mountains, Santa Fe is a quaint, human-scaled town of 70,000 Perched high above the Rio Grande in north-central New Mexico. In less than a half hour, it is possible to go from downtown Santa Fe up into the national forest, where skiing at over 13,000 feet is available until April. Santa Fe is a major center for Native American culture and a Mecca for both active and retired scientists and avant-garde artists. Due to the proximity of Los Alamos National Lab and the establishment within its boundaries of the world-renowned Santa Fe Institute (SFI), founded by George Cowan (WPI class of ’41), Santa Fe has attracted world-class researchers, including several Nobel-prize winners, in the advanced field of complexity theory applied to physics, biology, economics and political science.

Despite its small size, Santa Fe is a sophisticated cosmopolitan and eclectic place where exciting opportunities for projects exist, especially at the intersection of Science and Art and in the general field of complexity applied to community issues. A bootstrap project conducted in term D 2009 identified three main areas on which to concentrate future projects: Water Conservation, Renewable Energy and Urban Planning. Given the inter-ethnic history of this part of the US, we have established research collaborations with local Native American institutions on the above topics as well as on other important environmental, cultural and societal issues. In particular, WPI has submitted grant proposals to NASA in collaboration with the Indian American Institute of Arts (IAIA) and the Santa Fe Indian School (SFIS).

SILICON VALLEY PROJECT CENTER – MQP

Director: Prof. D. Finkel, Fuller Labs 231
Silicon Valley, California, is home to many of the most dynamic companies in the computer industry and in other related high-technology industries. Recent project sponsors include SRI International (a research center), eBay, and NVIDIA as well as smaller companies. Several project center alumni have taken full-time positions with the sponsors and with other companies in Silicon Valley. The projects will expose students to both the cutting-edge technology and the entrepreneurship of Silicon Valley.

Students participating in the Silicon Valley Project Center will participate in a Preliminary Qualifying Project (PQP) during B-Term. During this PQP, the students will perform background research in the area of their project, learn about the company and the industry where they will be performing their project, and hold discussions with their company mentor about their project work.

The projects will be conducted during C-Term in Silicon Valley. The students will work full-time at the sponsor’s site for approximately nine weeks, from early January through early March. They will work with a mentor from the sponsoring company and with a WPI faculty advisor. The project work will include the completion of an MQP report and presentation on the project to the sponsoring organization. Admission to the Silicon Valley Project Center is based on academic standing and performance, essay response, evidence of maturity and independence, availability of projects in a specific area, qualifications relevant to the project offered, and results of an interview. Projects may be available in Computer Science, in Electrical and Computer Engineering, and Interactive Media and Game Development.

WALL STREET PROJECT CENTER – MQP

Director: Prof. K. Gerstenfeld, 50 Prescott Street 1317
Profs. K. Sweeney, 50 Prescott Street 1324
Wall Street Project Center students are assigned to one of three locations – New York, New York, London, England, and Glasgow, Scotland. All of these cities are high-powered centers of global financial activity, vibrant art and entertainment scenes, and world-class multi-cultural cuisine.

New York is one of the world’s most exciting cities. Some of the best theater and museums are found there. Wall Street is known as the world center of investments and banking and is seen as the capital of business and technology. It has proven to be a training ground for the leaders of the future. New York is a place where people both work and play hard. It is fast-moving and allows the opportunity to apply many of the skills learned at WPI.

At the Wall Street Project Center, students complete MQP’s while working with a wide variety of agencies, such as Bank of America, Deutsche bank and BNP Paribas. Wall Street, now much more than investments, is the center of world commerce; there is a need for WPI projects involving Computer Science, Electrical and Computer Engineering, Management, Industrial Engineering, and Mathematical Sciences. Some of our projects include work-flow analysis, risk analysis (country risk limits), system usability, and data-base corruption issues. Other projects include user on-line functionality, and user help functions for global settlement systems. The projects are challenging and important to the clients as well as to the students.

WASHINGTON PROJECT CENTER – IQP

Director: Prof. K. Risniller, Salisbury Labs 312
Students work on projects with prestigious sponsoring agencies while living in the heart of Washington, D.C., just blocks from the White House. The Washington Project Center is located in an attractive neighborhood near The Mall, shopping, businesses, embassies and international agencies. Take advantage of this ideal location and easy access to the subway to enjoy an endless supply of free museums, national monuments, and impressive buildings that house the seat of national government.

Past projects have been completed with such agencies as the Smithsonian, the Environmental Protection Agency, the U.S. Patent and Trademark Office, the U.S. Coast Guard, the National Science Foundation and the Consumer Product Safety Commission. This is an opportunity to examine the inner workings of government and the importance of national action in areas of the environment, science education, urban issues, and consumer protection.
WORCESTER COMMUNITY PROJECT CENTER – A Center for Community Empowerment and Environmental Responsibility (WCPC-CEER)

Director: Prof. Corey D. Dehner, Project Center
The Worcester Community Project Center (WCPC-CEER) - develops projects around three main themes: 1) environmental justice, 2) environmental policy, often focusing on water policy, and 3) social justice. The WCPC has been recognized around the city and the region as a valuable community resource. As a result, students have the opportunity to work on a number of high profile community projects. These projects often make significant, lasting contributions to the Worcester community.

Recent projects include an assessment of exposure rates of low-income and minority communities in Worcester to environmental hazards (sponsored by the Regional Environmental Council); creation of a climate action plan for the town of Auburn; assessing the information technology system at AIDS Project Worcester; working to draft and assess consumer and legislative support for an e-waste bill (sponsored by a state senator); assisting 13 central Massachusetts' municipalities with stormwater permit compliance (sponsored by the Massachusetts Department of Environmental Protection); facilitating a phase out of the sale of bottled water on WPI's campus (with assistance from Corporate Accountability International) and facilitating the implementation of One Planet Living sustainability principles into WPI operations (sponsored by Bioregional Development Group). Students will work at their sponsoring organization or at the WCPC offices in downtown Worcester and commute daily from their residences.

WPI-MIT LINCOLN LABORATORY PROJECT CENTER – MQP

Director: Prof. E. Clancy, Atwater Kent 304
MIT Lincoln Laboratory located in Lexington, MA was founded in 1951 as a Federally Funded Research and Development Center of MIT. The Laboratory's fundamental mission is to apply science and advanced technology to critical problems of national security. The scope of problems includes air defense, communications, space surveillance, missile defense, tactical surveillance systems and air traffic control.

The WPI-MIT Lincoln Laboratory Project Center conducts nine week, off-campus MQPs. Many students selected for this MQP program will also seek summer employment at Lincoln Laboratory during the summer preceding their MQP. During A-Term 2013, the students will work on their projects full-time (five days a week) for 9 weeks at Lincoln Laboratory. The first two weeks, arranged immediately prior to the normally-scheduled Term A, formally serve as the PQP period. Student teams are often interdisciplinary, and work with a mentor from Lincoln Laboratory and with one or more WPI faculty advisors. A variety of project opportunities are available.

WPI-STANTEC – MQP

Director: Prof. F. Hart, Kaven Hall
Stantec is a global company with operations in Canada, the United States and the Caribbean. To date, students have completed projects in Edmonton, Alberta and Lexington, KY. For the 2013-14 academic year we will be at the Halifax office in Nova Scotia.

The projects will be conducted during Term C and students will work with a Stantec engineer at a Stantec office and a WPI faculty advisor at the WPI Campus. Project topics will cover the full range of CEE focus areas – including sustainable solutions, civil engineering and environmental engineering. Topics will be selected based on student interest and current activities at the selected Stantec office. Past topics include College Sustainability Designs, Green Guide for Roads, Sustainable Community Design, Renewable Energy Applications, Sustainable Landscape Architecture, Dam Construction and Coal Combustion By-Products. The Halifax office is one of the largest Stantec offices in North America and regularly works on projects in sustainable solutions, geotechnical engineering, materials engineering (concrete, etc), structural engineering and environmental engineering.

PROGRAMS IN EUROPE

ALBANIA PROJECT CENTER – IQP

Director: Prof. P. Christopher, Stratton Hall, 305B
Albania is located in southeastern Europe, bordering the Adriatic Sea, and across from Italy and north of Greece. It is a small mountainous country with both Mediterranean and Alpine climates. After centuries of foreign occupation followed by decades of oppressive communist rule, Albania is embracing democracy and capitalism. Although it is a poor, developing nation, today Albania has Europe's fastest growing economy. While Albania has numerous small cities of historical or archeological interest, the capital, Tirana, is a bustling metropolis with heavy traffic and chaotic construction, but also with cultural activities, museums, good restaurants, cafes and nightlife.

Albania has many needs, and in addition to environmental projects, we are planning projects in education, tourism and business. For example, we will work with the Harry Fultz School, a pre-engineering high school in Tirana, to introduce programs such as robotics or game design. An example of an agro-business project involves the sustainability of harvesting medicinal herbs from Albania’s forests, as this is an expanding industry. We also expect to work with the Ministry of Tourism and with private groups such as the Albanian Rafting Group.

BUDAPEST PROJECT CENTER – MQP

Director: Prof. G. Sarkozy, Fuller Labs 244
Hungary has gone through a deep-rooted transformation since 1989, and today it is a free and democratic country with a smoothly working market economy. The country has enjoyed a steady GDP growth, a bullish stock market and a decreasing inflation rate as well. As a result of these changes Hungary became a full member of the European Union on May 1, 2004.
Hungary is a link between Eastern and Western Europe. New investment is revitalizing the country, and grand old Budapest is being restored. It’s the country’s cultural, political, intellectual, and commercial heart – and it teems with cafés, restaurants, markets, and bars. Budapest offers breathtaking Old World grandeur and thriving cultural life. Situated on both banks of the Danube River, the city unites the colorful hills of Buda and the wide, businesslike boulevards of Pest. The city is simultaneously peaceful and bustling, a big metropolis and yet friendly, it treasures the old and embraces the new. These days with all the changes happening, Budapest is one of the most exciting places in Europe.

These CS MQPs will be at the Computer and Automation Research Institute in Budapest. This Institute is the national research center in Hungary for information technology, computer science and their related fields. In addition to pursuing basic and applied research, system design and system integration, consulting and software development are also among the activities of the Institute. The Institute puts a special emphasis on education related activities; it is closely affiliated with several Hungarian and European universities, including the Budapest University of Technology and Economics and the Eotvos Lorand University of Sciences, Budapest.

**DENMARK PROJECT CENTER – IQP**

**Director:** Prof. S. Taylor, Washburn Shops 210

The IQP project sites are in or near Copenhagen, the capital of Denmark, located on the island of Zealand. The Danish population numbers 5.5 million and inhabits an area of 16,630 sq. miles. In addition to farming, Denmark has a diverse and highly technological industry, with emphasis on electronics, pharmaceuticals, shipbuilding, furniture craft and alternative energy sources. The Danish culture is very open to interdisciplinary academic questioning, the foundation of every IQP. Danes are brought up to question and debate the impact of technology on the quality of life and are leaders in utilizing the positive aspects of modern technology while trying to lessen its negative impacts.

IQP projects in Denmark span a wide range of topics, with an emphasis on environmental issues and technology for people with disabilities. Alternative transportation, food quality, technology to assist visually impaired people with disabilities are all topics of great interest to both the public and private sector. Not-for-profit agencies are also expected to sponsor several future projects.

**MOSCOW PROJECT CENTER – IQP**

**Director:** Prof. S. Nikitina, Salisbury Labs 35

Spanning a wide expanse of Europe and Asia, all of 12 time zones, Russia is the largest country in the world in terms of land mass, natural resources and opportunities for economic and technological growth. Students at the Moscow Project Center have a unique opportunity to become acquainted with the people of Russia (both in Moscow and Saint-Petersburg) and to help address local problems by working on a variety of technological, cultural and environmental projects. A Term in Moscow is pleasant and bountiful and offer great opportunities for WPI students to explore the city and the countryside, sample Russian achievements in space exploration, see the museums and sites of the Kremlin and marvel at ingenious design of bridges and fountains of Saint Petersburg.

WPI students will work in multicultural work settings on projects proposed by local nonprofit organizations, universities, and governmental and non-governmental organizations. While most projects take place in the city of Moscow, some offer the opportunity to experience life outside the capital or engage in data collection in Saint Petersburg. Prospective project themes include marketing, industrial safety, and preservation of natural and cultural heritage sites.
NANCY PROJECT CENTER – MQP

Director: Prof. S. Kmiotek, Goddard Hall 120
Nancy, France is a medieval city of about 350,000, located in the heart of the beautiful Lorraine region. The city is well connected by train to Paris, Frankfurt, and Brussels (each about 200 miles), and Luxembourg (75 miles). The “vieux ville” (old city) region of Nancy is known for its small streets, beautiful mansions, museums, and historic walks. There is a large student population, as well, and Nancy offers plenty of sports, concerts, movies, shopping, and eating places that are of interest to students.

The projects will be done in collaboration with the chemical engineering school of the Institut National Polytechnique de Lorraine (INPL), and l’Ecole Nationale Supérieure des Industries Chimiques (ENSIC). The projects will take place in one or more of the following: Laboratoire de Chimie Physique Macromoléculaire (LPCM, Physical Chemistry of Macromolecules), Département de Chimie Physique des Réactions (DPCR, Physical Chemistry of Reactions), Laboratoire de Thermo-dynamique des Séparations (LTS, Thermodynamics and Separation Processes), or Laboratoire des Sciences due Génie Chimique (LSCG, Chemical Engineering Sciences). Projects are chosen based on consideration of the interests and majors of the applicant students. Typically, we have a project in polymeric drug delivery/nanoparticles, biofilms in bioreactors, and in development of fuel cells. Examples of past project titles include “Polymer Stabilized Emulsions for Drug Delivery” and “Biofilm Development and Characterization”.

SWITZERLAND PROJECT CENTER – IQP

Co-Directors: Prof. J. Schaufeld, Washburn Shops 103
Tara Mann, Salisbury Laboratories 121

Zurich is the largest city in Switzerland with about 2 million people in the urban area. It is located in the central part of the country at northwestern tip of Lake Zurich. As the financial and travel center of Switzerland, Zurich is consistently rated as one of the cities with the highest quality of living in the world as well as the wealthiest city in Europe. The official language is German but French and English are also widely spoken.

Students will study at the Zurich University of Applied Sciences (ZHAW), one of the largest and most productive universities of applied sciences in Switzerland. Among ZHAW’s distinguishing features are a focus on interdisciplinary research and its practical applications in everyday life. ZHAW has facilities in Winterthur, Zurich and Wädenswil, Switzerland. IQPs will take place at locations in and around Zurich. Previous projects have addressed the history of luxury commodity trading, historical exhibit design, and sustainable business solution, amongst other topics.

VENICE PROJECT CENTER – IQP

Director: Prof. F. Carrera, Project Center
Called the most beautiful city in the world, Venice features a haunting atmosphere which exudes the splendor of its past. A city without cars, yet with an outstanding historical, artistic, and architectural heritage, much of its uniqueness comes from its symbiotic relationship with the sea and the lagoon. Yet, despite its millenary history, the historic city of Venice is trying to adapt to our XXI century lifestyles, while preserving its environmental, artistic and cultural heritage. The rising cost of living in Venice has led to a dramatic exodus of its population which decreased since WWII from about 200,000 to around 60,000, while tourism has ballooned to 12 million visitors per year. Venice is a microcosm that reflects and magnifies many of the issues confronting the rest of the world, and at the same time it is a place that will allow you to experience a unique – more relaxed – pace of living.

Since the founding of the VPC in 1988, the IQPs in Venice provide an opportunity for students to see the implementation of their projects for the benefit of an entire city. Projects are conducted for Venetian, American and international organizations and include environmental, socioeconomic, artistic, cultural, and technical concerns important to the revitalization of this historic city. The over 120 projects completed in Venice include: studies on aspects of the Canals of Venice; which resulted in the publication of a book under the auspices of UNESCO; a number of projects on the preservation of Venetian art; several environmental studies on the lagoon ecosystem, which are contributing to the creation of a Lagoon Park; a variety of projects for the improvement of the urban quality of life in the city and the lagoon islands, which have resulted among other things, in the re-engineering of the Venetian cargo delivery system and the design of a vacuum sewer system to prevent discharges in the city’s canals.

WALL STREET PROJECT CENTER, London, England or Glasgow, Scotland – MQP

Co-Directors: Prof. A. Jerstenfeld, 50 Prescott Street 1317
Prof. K. Sweeney, 50 Prescott Street 1324

Wall Street Project Center students are assigned to one of three locations – New York, New York, London, England; and Glasgow, Scotland. All of these cities are high-powered centers of global financial activity, vibrant art and entertainment scenes, and world-class multi-cultural cuisine.

There is a need for WPI projects involving Computer Science, Electrical and Computer Engineering, Management, Industrial Engineering, and Mathematical Sciences. Some of our projects include work-flow analysis, risk analysis (country risk limits), system usability, and data-base corruption issues. Other projects include user on-line functionality, and user help functions for global settlement systems. The projects are challenging and important to the clients as well as to the students. The Wall Street Project Center presents opportunities for MQP projects and possible future employment with some of the best firms in the world, such as Bank of America, Barclays Capital, Deutsche Bank, and BNP Paribas. Each of the project sponsors has needs for industrious students with interests in technology and investments.
MOROCCO PROJECT CENTER – IQP

Co-Directors: Prof. W.A. Addison, Salisbury Labs 238  
Prof. T. El-Korchi, Kaven Hall 101

Students will reside at Al Akhawayn University (AUI), located in Ifrane, Morocco. Ifrane is 120 miles east of Morocco’s capital, Rabat, and 35 miles from the historic imperial cities of Fes and Meknes – cities famous for their sacred mosques and colorful Berber inhabitants. With a population of about 15,000, Ifrane is a peaceful resort and recreational village in the foothills of the Atlas Mountains, known for its French colonial architecture as well as a royal retreat. AUI is a semi-private, English-speaking university founded by King Hassan II of Morocco and King Fahd of Saudi Arabia.

IQP projects address issues of water conservation and alternative agriculture in the Middle Atlas countryside, promoting eco-tourism, developing the artisanal industry in textile weaving and mosaic tiles, restoration of historic Kasbah in Fes and Rabat and Roman ruins at Volubilis, financial support for orphans.

NAMIBIA PROJECT CENTER – IQP

Director: Prof. C. Peet, Project Center

Namibia is a southern African nation of extensive national parks, deserts, seaside ports, livestock farms, and towns, with an excellent infrastructure of maintained roads, clean water, and good services. Students will live in Windhoek, the modern capital city. They will work in the city as well as other parts of the country. There will be an opportunity to visit national parks and other tourist attractions and a limited opportunity to become familiar with African rural life.

Namibia’s well-developed government agencies at both the national and municipal levels will sponsor many of the projects, and these projects will generally focus around issues of sustainable development. In particular, projects typically investigate alternative energy sources, improved water and sanitation management, improved preventive health education, low-income housing, micro-level income generating activities and tourism development. Local towns and peri-urban informal settlements will be the venue of some of the projects. No prior knowledge of Africa is needed, but the preparation will include a heavy commitment to learning about the culture of Namibia in addition to preparing specifically for the projects.

MOROCCO HUMANITIES PROGRAM

Coordinators: Prof. W.A. Addison, Salisbury Labs 238  
Prof. T. El-Korchi, Kaven Hall 101

Students will study at Al Akhawayn University (AUI), located in Ifrane, Morocco. Ifrane is 120 miles east of Morocco’s capital, Rabat, and 35 miles from the historic imperial cities of Fes and Meknes – cities famous for their sacred mosques and colorful Berber migrants. With a population of about 15,000, Ifrane is a peaceful resort and recreational village in the foothills of the Atlas Mountains, known for its French colonial architecture as well as a royal palace. Al Akhawayn University is a semi-private, English-speaking university founded by King Hassan II of Morocco and King Fahd of Saudi Arabia. Since about half the faculty hold American graduate degrees, AUI resembles in some respects an American university.

Two-thirds unit of AUI courses will be devoted to the history of the Arab World, Islamic Civilization, and contemporary issues in North Africa. One-third unit will be an independent study project based upon course work and upon tours to Moroccan historic and cultural sites under the supervision of the on-site advisor. These projects may focus upon a variety of areas, including history, religion, art and architecture, as well as contemporary socio-political issues, with the goal of providing greater understanding of Arab and Muslim peoples. The unit of work will either be credited towards meeting the Humanities and Arts Requirement or can be credited toward a Humanities and Arts or International Studies minor or major.
PROGRAMS IN ASIA

BANGKOK PROJECT CENTER – IQP

Director: Prof. R. Vaz, Project Center
Prof. S. Tuler, Project Center

Situated in the heart of Southeast Asia, Thailand presents many of the opportunities and challenges common to developing nations. Students at the Bangkok Project Center have a unique opportunity to become acquainted with the people of Thailand and to help address local problems by working on a variety of social and environmental projects. Some projects provide the opportunity to work with underserved communities, and some give students the opportunity to experience life in the countryside. Despite its challenges, Thailand is intensely beautiful: a land of gilded temples and golden beaches. The Thai people are among the friendliest and most hospitable in the world and have a great talent for enjoying life. Accommodations on the prestigious Chulalongkorn University campus position WPI students to meet Thai students and to explore the city’s many attractions.

WPI students work in multicultural project teams along with students from Chulalongkorn University on IQPs sponsored by local nonprofit organizations, universities, governmental and non-governmental organizations. Projects are conducted on a wide variety of topics and are arranged in advance through resident coordinators in Bangkok. Project themes often center on health and human services, community development, sustainable development and appropriate technology, and environmental issues.

CHINA PROJECT CENTER – MQP

Co-Directors: Prof. Y. Rong, Washburn Shops 307T,
Prof. A. Zeng, Washburn Shops 308

As the manufacturing industry becomes more and more global, many research, design, and manufacturing activities go to China. To experience working with professionals from different backgrounds and in a different cultural environment, WPI students work in mixed teams with students from Huazhong University of Science and Technology (HUST), Wuhan, Southeast University, Nanjing, and Beijing Jiaotong University, all in China. All three universities are major comprehensive universities in China with excellent engineering programs. The three cities are large and industrialized cities in China, with a rich cultural heritage and easy access to Beijing and Shanghai, as well as other cities, by train or airplane. Students will stay on campus and may travel to other cities based on the project sponsor location and the project requirements. Students will have a chance to merge into Chinese culture and experience daily life in China.

Projects will be conducted at one of the three universities. WPI students will work with Chinese students from one of the universities in mixed teams, with co-advisors from both WPI and the university. These projects are real world problems and are sponsored by global companies with China operations, such as UTC, Caterpillar, and Amphenol TCS, and institutions in the areas of mechanical product and system design, robotics, manufacturing processes, environmental engineering, supplier chain management, and lean manufacturing implementations.

HANGZHOU, CHINA PROJECT CENTER – IQP

Director: Prof. Jennifer Rudolph, Salisbury Laboratories 108B

Hangzhou is located on China’s booming southeastern coast and is one of China’s most beautiful and bustling cities. The capital of China’s richest province (Zhejiang) and one of China’s ancient imperial capitals, Hangzhou exemplifies China’s quest to become a modern economic power while retaining its unique historical identity. Students will see firsthand the beauty of China’s antiquity when walking along World Heritage Site West Lake in downtown Hangzhou and experience on a daily basis the booming growth of Hangzhou, China’s 4th largest metropolitan area with a population of 8 million. From Hangzhou, students can easily travel to Shanghai, only an hour away on the high-speed train, and to many cities on China’s seaboard as well as inland. Students will live in furnished apartments for international students on the new campus of Hangzhou Dianzi University (HDU), located in an area built for multiple universities in a new district of the city.

The dynamism that permeates southern China brings with it a host of challenges for municipalities like Hangzhou. Hangzhou projects will provide students first-hand experience on how Chinese organizations approach and tackle issues like green energy, urban housing, sustainable development, historical preservation, education, water challenges, and environmental degradation. Potential sponsors include government ministries, universities, corporations, and NGOs. We anticipate IQPs will deal with sustainable urban development, a greener environment, sustainable resource use, education reform, and other topics as appropriate.

HONG KONG PROJECT CENTER – IQP

Director: Prof. C. Peet, Project Center

The Project Center in Hong Kong provides a gateway to the most dynamic and important region on the planet. The wealth of the world is moving to Asia, and Hong Kong plays a crucial role in the development of China – currently the most significant economy in Asia. This city radiates energy as it rapidly modernizes and takes the lead in economic development, high-rise building, efficient transportation, artistic expression, educational reform and environmental conservation. Students will live in furnished apartments with small kitchens, with 1-3 students in each apartment, in a typical Chinese residential neighborhood, quite different from typical tourist areas of Hong Kong.
In Hong Kong WPI works with a number of educational, social service, policy and environmental organizations and institutions. Hong Kong University of Science & Technology (HKUST), Hong Kong Polytechnic University (HKPU), Hong Kong Institute of Education (HKIEd), Chinese University of Hong Kong (CUHK) and Lingnan University (LU) have sponsored projects, while other sponsors have included Friends of the Earth, Hong Kong Council of Social Service, Caritas Francis Hsu College, Caritas Charles Vath College, Worldwide Fund for Nature (WWF), Civic Exchange, Designing Hong Kong, Business Environment Council, Jets Technics, Hong Kong Maritime Museum and the Hong Kong History Museum. Examples of past projects include an evaluation of an English language educational software program developed to help Chinese students improve their English writing skills, evaluating how to increase recycling of beverage containers and vehicle tires, identifying how to reduce light pollution, understanding the impact of educational reforms that are occurring in Hong Kong, evaluating how to best improve library usage and information literacy among secondary school students, investigating how to make Hong Kong’s fishing industry more sustainable and evaluating how best to develop the waterfront and marine areas of Victoria Harbour.

INDIA PROJECT CENTER – IQP

Directors: Prof. I. Shockey, Project Center

Mandi, India is located in the northwestern foothills of the Himalaya in Himachal Pradesh. In this quiet valley, the IIT-Mandi is one of the newest additions to illustrious Indian Institute of Technology family, premier Institutions of National Importance in India. It is the only IIT in the Himalayas, set within a community of 60,000 with a 500-acre campus in a serene river valley. WPI is the proud recipient of a US Department of State grant that will support our groundbreaking collaboration with WPI IQP students hosted at the IIT in India beginning in 2013.

IQPs in Mandi, India will involve diverse collaboration with the IIT students and faculty, with community agencies, and with NGOs on issues of local interest. Likely topics will feature the social and environmental dimensions of city infrastructure, rural resources including land use and water quality, and community resilience in mountain regions.

JAPAN PROJECT CENTER – MQP

Director: Prof. R. Lindeman, Fuller Lab B24a

The Kansai region of Japan is home to three large cities, Osaka, Kobe, and Kyoto. Osaka is Japan’s third-largest city, and provides an eclectic mix of old and new. Kansai is a convenient launching point for travel to other parts of Japan. The location of the project site is at Osaka University, which is within an hour of both Kyoto and Kobe, and about one hour from Nara, another former Japanese capital and cultural center.

Current projects will involve work in the areas of interactive information systems (e.g., public displays) and other “Cyber-media” applications, and will be conducted within various departments at the university. Projects run from about mid-June through A Term, so total time in country is about four months. This will give participants a much richer experience in Japan, and allow the teams sufficient time to produce outstanding work. The first part of the project will be considered as an internship, while the actual MQP will take place during A Term.

SHANGHAI, PEOPLE’S REPUBLIC OF CHINA – MQP

Co-Directors: Prof. S. Zhou, Gateway Park, Prof. D. DiBiasio, Goddard Hall 127

Shanghai draws the attention of the whole world as the largest base of Chinese industrial technology, the important seaport and China’s largest commercial and financial center. Shanghai is situated on the estuary of the Yangtze River of China. Covering an area of 5,800 square kilometers (2,239 square miles), Shanghai has a population of 18.7 million, including 2 million floating population. Modern Shanghai has three key areas of interest to the visitor. These comprise sightseeing, business and shopping centered upon People’s Square and along the Huangpu River.

The projects will be performed in collaboration with the School of Environmental Science and Engineering, SJTU. Possible projects include: Microbial clogging processes in porous media; Application of hollow fiber membranes in water treatment plants; Evaluation and application of fluid regimes in reverse osmosis membrane modules; Calculation and evaluation of fluid fields in bioreactors for waste water treatment (computational hydrodynamics); Application of immobilization bacteria for ammonia removal in drinking water (experiment and project design); Preparation of self-organized TiO2 nanotube arrays and its photoelectrochemical applications; Pollutant evolvement recorded in the sediment from the Dianshan Lake, Shanghai; Occurrences and characteristics of the emerging contaminants-PCPs in water environments; Detection of organic acid in surface water using ion chromatography; optimization and software design for waste water treatment; Deep treatment processes and nitrogen removal for landfill leachate; Charged ultrafiltration membranes for natural organic matter removal in water.
ARGENTINA HUMANITIES PROGRAM

Coordinator: Prof. A. Madan, Salisbury Labs 03
Along with its Spanish origins, Argentina’s economic ups and downs illustrate its shared ancestry with neighboring Latin American countries, yet its capital’s French architecture and Italian influences reveal a storied and glorified past. The locals of Buenos Aires, known as porteños, are equally proud and frustrated that their city is known as the Paris of South America. Known for its unique neighborhoods, its urban feel, and its sing-songy Spanish, Buenos Aires offers students an easily navigable environment in which to improve their Spanish and their cultural knowledge through daily classes at the renowned language institute Escuelas y Centros de Español en Latinoamérica (ECELA). During the week, students reside with local Argentine families. These families have been vetted by ECELA, and their homes are conveniently situated near the institute and alongside ample public transportation.

The Buenos Aires Language and Culture Immersion provides a unique opportunity in Term E to coalesce language and culture in the real-world setting of Argentina. By taking language classes in the morning and then speaking and learning about culture in the afternoon, students see measurable improvements in their language skills through the four-week immersion. They learn to navigate a foreign city while also becoming proficient in daily Spanish-use – in other words, the Spanish required for real settings – to order food, to drop off laundry, or to purchase a calling card. Students reflect on their experiences with the language and the culture in a class blog and in personal journals. Additionally, they are quizzed weekly on assigned readings and cultural excursions, while ECELA tests students on their language skills. In the final three weeks of the course – back in the United States or anywhere they have access to a library and Internet – students are required to craft an independently designed research paper that relates to Argentine literature, culture, history, or film.

COSTA RICA PROJECT CENTER – IQP

Director: Prof. S. Vernon-Gerstenfeld, Salisbury Labs
Costa Rica is a land of contrasts; banana plantations, flaming volcanoes, misty black sand beaches and a thriving modern capitalist economy. A remarkably stable country, politically and economically, Costa Rica offers an opportunity for students to become immersed in a Central American culture where democracy, economic development, and concern for the environment are a permanent part of the landscape. Students stay in the capital city of San José, but ample opportunity is found to visit the country’s attractions. Many projects have fieldwork associated with them.

Costa Rica’s unique environment provides students opportunities to focus on environmental conservation and sustainable development by working with government agencies dedicated to those issues and with selected museums and private organizations. Prior knowledge of Spanish language is not required for participation. All students, however, must complete a two-week intensive language program on site. Those who have some Spanish skills will greatly improve them.

PANAMA PROJECT CENTER – MQP

Director: Prof. T. El-Korchi, Kaven Hall
The Republic of Panama is situated at the heart of the American continent. Panama forms a link between Central and South America, constituting an isthmus 80 km wide at its narrowest point. The country has over 3 million residents, with one-third living in the capital, Panama City. World-famous for the engineering marvel of the Panama Canal, today Panama City is the most cosmopolitan capital in Central America. The city has seen significant growth and is known for international shipping and banking, transportation, insurance, warehousing, and sales. The combination of colonial ruins, modern high-rise office buildings, luxury homes, and squatters’ slums reflects the blend of cultures, eras, and economic levels that are found in the city.

Projects will be completed in the Environmental and Civil Engineering areas. Sponsors will include various government and private organizations in Panama City. These may include the Autoridad del Canal de Panama, SENACYT (the national organization for Science, Technology and Innovation), and private consulting and contracting firms.

PUERTO RICO PROJECT CENTER – IQP

Director: Prof. L. Mathews, Life Sciences and Bioengineering Center, 4006
The Puerto Rico Project Center offers an opportunity to be immersed in a Caribbean culture that is a unique and harmonious blend of Spanish and North American influences found nowhere else in the world. Located in San Juan, the Center offers the attractions of a large metropolitan area within easy reach of El Yunque national rain forest, white sand beaches, historic El Morro Spanish fortress, Arecibo Observatory, and many other sites of interest.

Projects are completed in teams and span a wide variety of topics including the environment, public health, housing, social welfare, transportation, and land use. Sponsoring agencies have included many offices of the government of the commonwealth as well as local industries.
PROGRAMS IN THE SOUTH PACIFIC

AUSTRALIA PROJECT CENTER – IQP

Director: Prof. H. Ault, Higgins Labs 207

Melbourne, situated along Australia’s southeast coast, is the country’s second largest city. A city of parks and gardens, specializing in arts festivals, sporting events, and fine dining, it was voted “the world’s most livable city” in an international survey. Melbourne, Boston’s sister city, is also a fine place from which to explore the diversity of Australian life; only a short distance from mountains, deserts, beaches, mining towns, and extensive parklands and wildlife reserves.

IQPs involve outreach to the Australian public on issues or topics regarding science, technology and society. The projects usually focus on disabilities, fire protection or the environment.

NEW ZEALAND PROJECT CENTER – IQP

Co-Directors: Prof. I. Shockey, Project Center
Prof. M. Elmes, Washburn Shops 203

Wellington is the capital city of New Zealand and the third most populous urban area in New Zealand (metropolitan population around 390,000). It is situated on Wellington Harbor, on the southwestern tip of the North Island, between the Cook Strait and the Rimutaka Range. It houses Parliament, the head offices of all Government Ministries and Departments as well as most of the foreign diplomatic missions. It is also a cultural center with many museums (including Te Papa Tongarewa, the Museum of New Zealand), a vibrant film and theater industry, symphony and ballet companies, and the biennial New Zealand International Arts Festival. Overall, it is a pedestrian-friendly city, with boardwalks, coffee shops, cycling, kayaking and beautiful scenery within range of the student housing. It has consistently ranked high on several indices of quality of living.

IQPs in Wellington involve diverse collaboration with government organizations and with NGOs in New Zealand on issues related to environment, technology and society. 2013 Projects focus on environmental issues (endangered species at Zealandia, a conservation wildlife area; tsunami emergency planning), museums (visitor engagement analyses and exhibitions), innovation and entrepreneurship for the greater Wellington region, and outreach for a community radio station at Victoria University.

INDIVIDUALLY SPONSORED RESIDENTIAL PROJECTS (ISRP)s

Students and faculty members have the freedom to expand their project opportunities with individually sponsored residential projects (ISRP). Through the ISRP program – and with the support of a faculty advisor – students may participate in custom off-campus projects in addition to the established options available at WPI Project Centers. All such programs must adhere to risk management protocols such as those developed and implemented at established project centers. The WPI Provost’s Office has developed a risk-management protocol to be completed by faculty members planning to advise students pursuing off-campus ISRP’s for academic credit. Otherwise, students, faculty, and WPI are exposed to unnecessary risk.

The Provost’s Office requires completion of the following risk management protocol by all faculty intending to advise students who will earn academic credit while in residence off-campus in individually sponsored projects.

1. Two terms in advance of the off-campus activity: Faculty advisor sends a letter of intent to the Provost’s office (with a copy sent to Anne Ogilvie in the IGSD). The letter describes the scope of the anticipated project, where it will happen, how many students will participate, and the term that the students will be off-campus.

2. Ten weeks prior to departure: Faculty advisor completes and submits a completed ISRP form to the IGSD. The ISRP form is co-signed by the academic department head (MQP) or Dean of IGSD (IQP). A budget should also be submitted at this time, so that financial aid can be reviewed for students undertaking these projects). At this time a signed Transcript and Judicial Release Form must be submitted for each potential student participant.

3. Eight weeks prior to departure: All students expecting to participate in an ISRP should be in good academic standing at this time. WPI reserves the right to withdraw acceptance to students who are subsequently placed on academic warning. Students placed on academic probation are not eligible to participate. Upon review of academic and judicial records for each student the IGSD will inform the advisor of students who may be disqualified due to poor academic performance or judicial history at WPI.

4. Six weeks prior to departure: Student participant(s) submit the following forms to the faculty advisor: the Acknowledgement of Voluntary Participation, the Off-Campus Students’ Health Update and Records Release Form, and the WPI Off-Campus Travel Information Form.
5. Five weeks prior to departure: The advisor submits these completed forms (item 3) to the IGSD. Please note that all forms can be found at the IGSD Web site: http://www.wpi.edu/academics/igsd/gpp-forms.html

Project registration will not be complete until the conditions of this protocol are met.

At the completion of step 2, WPI’s risk managers will review the information provided and make a recommendation to the Dean of IGSD, who will assist the Provost in making a final decision to approve or disapprove the activity based on risk management considerations. The faculty advisor will learn of this decision no later than the first day of the term preceding the proposed activity.

Final approval is always contingent upon submission of completed required forms by the student participants. Registration forms may not be signed until each student turns in their completed paperwork.

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<tr>
<td>Proposal made to Provost’s Office</td>
<td>By January 10th</td>
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<td>By May 10th</td>
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<td>Completed ISRP form submitted to the IGSD</td>
<td>By March 15th</td>
<td>By June 20th</td>
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<td>Completed Health &amp; Safety Forms for each student submitted to the IGSD</td>
<td>By April 20th</td>
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**ON-CAMPUS IQP PROGRAMS**

**CENTER FOR INVESTMENT, RISK MANAGEMENT AND TRADING**

Director, Professor H. Hakim, Atwater Kent 231

The center offers IQPs in the areas related to investment. The projects will be designed with the involvement of the students and a focus in the areas of special interest to each project team. The projects will expose the students to broad areas such as accounting and corporate finance and will teach them the role of fundamental and technical analysis in the development of plans for investment and trading. The project could be focused on specific asset classes such as stocks, bonds, futures, or foreign currency; or derivatives such as options. The students could also do projects in the areas of risk management, analysis of portfolios, or development of algorithms for trading. For more specific information, you can contact Prof. Hossein Hakim.

**CENTER FOR SUSTAINABLE FOOD SYSTEMS**

Prof. R. Hersh, Project Center

Responses to food insecurity usually focus on the individual and household level through food assistance and social welfare programs. By contrast, community food security emphasizes access to and availability of food at the community level, local/ regional food systems within a sustainable global continuum, and greater food self-reliance.

In this set of on-campus IQPs students will work collaboratively with community groups, public health agencies, farmers, ecological designers, and organizations involved in regional food planning to: 1) improve access to healthy food in low income and minority neighborhoods in central Massachusetts and regionally; 2) create closer links among food system activities (production, processing, distribution, consumption, waste disposal) 3) catalyze food business opportunities (e.g., urban farms, food processing, community kitchens, composting services) in these communities; and 4) collaborate with farmers on innovative designs for small scale food production (e.g., bioshelters, grain harvesters, vertical farms). For more information, please contact Prof. Robert Hersh (hersh@wpi.edu).

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**ENERGY SUSTAINABILITY PROJECT CENTER**

Director, Professor John Orr, Atwater Kent 214

This center supports and helps to coordinate project work (both MQPs and IQPs) in all aspects of energy and across all areas of academic inquiry at WPI. The principles of sustainability, in both traditional and renewable forms of energy, will play important roles in all of the center’s activities. The center will provide resources to support these projects and to facilitate the organization of project teams with faculty advisors. Center activities include the following: communication of WPI’s activities in the energy area both internally and externally; establishment of a clearinghouse for project topics and the formation of project teams; organization of a forum for discussion of major energy-related topics, highlighting excellent energy-related projects; identifying externally-sponsored projects. For more information contact Prof. John Orr (orr@wpi.edu).

**SUSTAINING WPI PROJECT CENTER**

Director, Suzanne LePage, Kaven Hall 209A

Many activities are taking place to enhance the sustainability of the campus and of WPI as an institution. Most recent is the WPI Sustainability Plan, which addresses campus facilities, the educational curriculum, research and scholarship, as well as civic engagement. This center was developed to support and coordinate project work (both MQPs and IQPs) in all aspects of energy and across all areas of academic inquiry at WPI. The principles of sustainability, in both traditional and renewable forms of energy, will play important roles in all of the center’s activities. The center identifies current project needs and provides support to the Administration, Faculty, Staff, and Students for a myriad of sustainability planning efforts. Center activities include the following: communication of WPI’s Sustainability Planning activities; establishment of a clearinghouse for project topics and the formation of project teams; organization of a forum for discussion of major energy-related topics, highlighting excellent energy-related projects; identifying externally-sponsored projects. For more information contact Suzanne LePage (slepage@wpi.edu).
OVERVIEW

The Humanities and Arts Requirement empowers students to meet the broad educational goals of WPI. The balance between technological and humanistic education and the emphasis on inquiry-based approaches to student learning have been and remain hallmarks of a WPI education. In concert with WPI’s other degree requirements, the Humanities and Arts Requirement embodies the institute’s definition of an educated person. The Humanities and Arts Requirement engages students with theory and practice – Lehr und Kunst – through the following educational goals.

GOALS OF THE HUMANITIES AND ARTS REQUIREMENT

• to introduce students to the breadth, diversity, and creativity of human experience as expressed in the humanities and arts;
• to develop students’ ability to think critically and independently about the world;
• to enhance students’ ability to communicate effectively with others in a spirit of openness and cooperation;
• to enrich students’ understanding of themselves;
• to deepen students’ ability to apply concepts and skills in a focused thematic area through sustained critical inquiry;
• to encourage students to reflect on their responsibilities to others in local, national and global communities;
• to kindle in students a life-long interest in the humanities and arts.

MEETING THE REQUIREMENT

Students fulfill the humanities and arts degree requirement by completing two units of work consisting of five student-selected courses followed by a 1/3 unit Inquiry Seminar or Practicum (HU 3900, HU 3910, or equivalent). In selecting the courses, students must complete depth and breadth components of the requirement, as described below. At the end of the Inquiry Seminar or Practicum, every student will submit a completion-of-degree requirement form (CDR) to certify completion of the requirement.

DEPTH COMPONENT:

The WPI Plan calls for students to develop a meaningful grasp of a thematic area of the humanities and arts. To ensure this depth, students complete at least three courses of thematically-related work prior to a culminating Inquiry Seminar or Practicum in the same thematic area. Thematically-related work can be achieved in two ways:

1. Focusing on one of the following disciplines or disciplinary areas:
   • art/art history (AR)
   • music (MU)
   • drama/theatre (EN/TH)
   • literature and writing/rhetoric (EN, WR, RH)
   • history and international studies (HI, HU)
   • philosophy and religion (PY, RE)

    Paths for foreign language study are described below.

2. Defining the thematic area across disciplines or disciplinary areas in consultation with a Humanities & Arts faculty member.

To ensure that students develop a program of increasing complexity, at least one of the three thematically-related courses that precede the Inquiry Seminar or Practicum must be at the 2000-level or above. Students are strongly encouraged but not required to include a 3000-level course within their depth component. The structure of the requirement remains flexible so that students will become intentional learners as they select a sequence of thematically-related courses.

BREADTH COMPONENT:

To ensure intellectual breadth, before taking the final Inquiry Seminar or Practicum, students must take at least one course outside the grouping in which they complete their depth component. To identify breadth, courses are grouped in the following manner:

• art/art history, drama/theatre, and music (AR, EN/TH, MU);
• foreign languages (SP, GN, AB, CN);
• literature and writing/rhetoric (EN, WR, RH);
• history and international studies (HI, HU);
• philosophy and religion (PY, RE).

WPI offers a flexible curriculum to entrust students with a significant amount of choice and responsibility for planning their own course of study. At the same time, WPI requires students to take at least one course outside the depth area in order to provide exposure to more than one disciplinary approach within the arts and humanities, which include the creativity of the fine and performing arts, modes of communication in languages and literature, and the cultural analysis of the past and present. Students are encouraged to experiment and to take courses in more than one group outside the depth area if they wish. By providing exposure to multiple areas, the breadth component encourages students to appreciate the fundamental unity of knowledge and the interconnections between and among diverse disciplinary fields.

The one exception to this breadth requirement is that students may take all six courses in a foreign language.

DEPTH AND BREADTH COMPONENTS IN FOREIGN LANGUAGES:

Development of proficiency in a foreign language necessitates sustained engagement in the language beyond the elementary and intermediate level. Foreign language instruction is broadly interdisciplinary and includes elements of the history, literature, and culture of a particular language area. A student in foreign languages must still meet the depth component of the requirement by taking 6 courses in the foreign language, one of which is approved as the final Inquiry Practicum or Seminar. Additional information about options for the Inquiry Practicum or Seminar in German (GN) and Spanish (SP) can be found later in this section. A student who begins foreign language study is not compelled to remain in that subject, but could choose to switch to another subject of study and complete the depth component in another thematic area.
INQUIRY SEMINAR OR PRACTICUM
The culmination of the depth component of the Humanities and Arts Requirement is an inquiry seminar or practicum. The educational goals for the seminar or practicum are the same regardless of the format.

OBJECTIVES OF THE INQUIRY SEMINAR OR PRACTICUM:

- **Critical inquiry:** to develop each student’s ability to apply concepts and skills learned in the humanities and arts, the seminar/practicum offers opportunities to engage in sustained critical inquiry, analysis, or problem-solving in a focused thematic area.
- **Research and investigation:** to engage students in research, discovery, creativity, or investigation, the seminar/practicum provides opportunities for students actively and critically to seek and evaluate new information and insights using multiple sources. These opportunities need not necessarily be research papers.
- **Communication and writing:** to develop each student’s ability to communicate effectively both orally and in writing, the seminar/practicum includes discussion of appropriate communications skills and provides opportunities to revise written work after receiving feedback from the instructor.
- **Intellectual independence:** to foster independence of thought, the seminar/practicum offers significant opportunities for individual, self-directed work.
- **Conversation and dialogue:** to promote individual reflection and the appreciation of diverse perspectives, the seminar/practicum consists of classroom activities other than traditional lecture to encourage discussion and collaborative learning in a spirit of openness, cooperation, and dialogue with peers. The thematic focus, structure, and assignments for each seminar or practicum are to be determined by each individual instructor to achieve these goals.

INQUIRY SEMINAR
The Inquiry Seminar, usually taken in the sophomore year, represents the culmination of the Humanities and Arts Requirement. The Seminar provides an opportunity for students to explore a particular topic or theme in the humanities in greater depth. The Seminar has two primary goals. The first is to foster independence of student thought, typically through some form of self-directed activity. The second is to encourage a cooperative, dialogic approach to inquiry, through open exchanges with peers in a small, intensive classroom setting (typically 12 students or fewer). Students learn how to frame questions in the context of a particular discipline or field of study, and to explore or investigate problems using methods appropriate to work in the humanities and arts.

As the student’s capstone experience in the humanities and arts, the Inquiry Seminar is intended to help students take their knowledge of the humanities to a higher level. The purpose of the Inquiry Seminar, therefore, is not to provide a broad survey or general introduction to a given discipline, but to provide a structured forum in which students might approach a specific humanities-related problem or theme at a deeper, more sustained level of intellectual engagement than would normally be possible within a traditional course setting. The pedagogical idea behind the Inquiry Seminar is that work in the humanities and arts is at once an intensely personal enterprise, in which the individual freely draws on her or his own particular interests, abilities, passions, and commitments, and at the same time a form of ethical community in which the practitioner is always in conversation with and accountable to others.

While the specific content and requirements of the Inquiry Seminar vary from instructor to instructor, all Inquiry Seminars incorporate self-directed learning as a significant part of the curriculum. It is the department’s expectation, therefore, that by the time they enroll in the Seminar, students should have sufficient background in the humanities and arts to be able to work independently and to pose questions of their own. Students will be asked to research and write a term paper, to assemble a portfolio of writings or exercises, or otherwise to demonstrate their ability to pose a question of relevance to humanities inquiry, and to answer it. At the same time, the Seminars are designed to foster an atmosphere of intellectual collaboration and discovery. Students are required to participate fully in seminar discussion, to share the results of their own research or activities, and to engage the ideas and interests of their peers in a constructive and collegial way.

INQUIRY PRACTICUM
Students in the performing arts have the option to complete their Humanities and Arts sequence with an Inquiry Practicum in music or drama/theatre. A practicum shares the same goals and objectives of an inquiry seminar but provides students with a production/performance experience which emphasizes the hands-on, practical application of skills and knowledge gained from previous Humanities and Arts courses. Samples of practicums in music include composing, arranging, or performing a solo recital. Drama/Theatre students may choose to act, direct, or design for a campus production. In addition to weekly meetings, students may be required to attend rehearsals and performances. The design of the final project is determined through conversations between instructors and students. Due to the unique nature of the practicum, permission of the instructor is required to enroll in a practicum.

FOREIGN LANGUAGES: PRACTICUM OR SEMINAR
Students in foreign languages may complete the Humanities and Arts Requirement in one of the following three ways:

1. **Practicum in the sixth and final course in a foreign language.**
   The practicum will include evaluative components or exams to demonstrate overall language skills in four areas: listening, speaking, reading, and writing. The practicum will require students to demonstrate breadth of cultural knowledge of the language area. (Examples of practicum courses: GN 3512, GN 3515; SP 3522; SP 3527)

2. **Advanced language seminar after five previous courses in the foreign language.** The seminar will explore a thematic topic and provide opportunities for individual inquiry. (Seminar examples: GN 3513, GN 3514; SP 3523, SP 3524, SP 3525, SP 3526, SP 3528, SP 3529, SP 3530, SP 3531)
3. **Advanced language seminar after advanced-level language courses combined with courses from other areas of study.**

Students who demonstrate basic oral, written, and cultural knowledge of a foreign language in a placement test at the advanced level may combine courses from other areas for their requirement. (Seminar examples are the same as option 2.)

Option 1 and 2 require students to take six courses in a foreign language. For example, in option 1, a student without prior language training might begin with GN 1511 Elementary German I and conclude with a practicum in GN 3512 Advanced German II. In option 2, for example, a student might start with SP 2521 Intermediate Spanish I followed by five Spanish courses which culminate in one of the designated seminars. In option 3, students who demonstrate knowledge of the foreign language at the advanced level may mix courses from other areas in their course sequence. For example, a student might take two courses from history, philosophy, music, etc. along with four advanced Spanish courses which would culminate in a designated seminar. Students in all three options for foreign languages would be required to submit the same materials to demonstrate completion of the requirement as students whose culminating experience was an inquiry seminar or practicum in another area of the Humanities and Arts.

**HUA FACULTY ARRANGED BY DISCIPLINARY GROUP**

**Art/Art History (AR)**
Joseph Farbrook (AR)
Joshua Rosenstock (AR)
David Samson (AR)

**Music (MU)**
Scott Barton (MU)
Fred Bianchi (MU)
John Delorey (MU)
Richard Falco (MU)
V.J. Manzo (MU)
Eunmi Shim (MU)
Douglas Weeks (MU)

**Drama/Theatre (TH)**
Erika Hanlan (TH)
Susan Vick (TH)

**Languages (AB, CN, GN, SP)**
Mohamed Brahimi (AB)
Ulrike Brisson (GN)
Aarti Madan Smith (SP)
Ingrid Matos-Nin (SP)
Angel Rivera (SP)
Xin Xin (CN)

**Literature/Writing/Rhetoric (EN, ISE, RH, WR)**
Esther Boucher (EN, ISE)
Kristin Boudreau (EN)
Joel Brattin (EN)
Jim Coca (EN)
Jennifer deWinter (RH, WR)
Michelle Ephraim (EN)
Brenton Faber (RH, WR)
Erika Hanlan (EN)
Lorraine Higgins (RH, WR)
Kent Ljungquist (EN)
Wesley Mott (EN)
Svetlana Nikitina (EN, HU)
Lance Schachterle (EN)
Ruth Smith (RH, WR)
Ryan Madan Smith (RH, WR)
Susan Vick (EN)

**History/International Studies (HI, HU)**
Bland Addison (HI)
William Baller (HI)
Steven Bullock (HI)
Constance Clark (HI)
Joseph Cullon (HI)
James Hanlan (HI)
Peter Hansen (HI)
Thomas Robertson (HI)
Jennifer Rudolph (HI)
David Spanagel (HI)

**Philosophy/Religion (PY, RE)**
Bethel Eddy (PY, RE)
Roger Gottlieb (PY, RE)
Jennifer McWeeny (PY)
Geoff Pfeifer (PY, RE)
John Sanbonnatsu (PY)
Ruth Smith (PY, RE)

**AP CREDIT POLICY**
The Humanities and Arts Department will accept a maximum of 1/3 unit of AP credit towards the Humanities and Arts requirement. Students who score a 4 or 5 on the AP test in German or Spanish automatically receive 1/3 unit of credit in the language, provided they do not begin German or Spanish study at WPI with Elementary German I (GN 1511) or Elementary Spanish II (SP 1523). Students who score a 4 or 5 on the AP test in studio art may be eligible for HUA credit, subject to a portfolio review by art faculty. Students who score a 4 or 5 on the AP test in other subject areas of the humanities and arts will receive credit in the relevant discipline. AP credit beyond one course (1/3 unit) in the Humanities and Arts may be counted toward other requirements such as free elective credit or particular majors and minors at WPI.

**TRANSFER STUDENTS AND THE HUMANITIES AND ARTS REQUIREMENT**
Students who transfer fewer than six Humanities and Arts courses from another institution must complete an inquiry seminar or practicum to complete the Humanities and Arts Requirement. Students who transfer six or more courses in Humanities and Arts will have the option of submitting a CDR form or engaging in additional work (or documentation of work) to earn an “A” on the CDR, in accordance with current transfer rules (see below).

All students may have the option of completing their Humanities and Arts Requirement while enrolled for 1 unit of coursework at an off-campus project center where one-third unit of the coursework shall include an inquiry seminar or practicum.
Transfer credit in the Humanities and Arts at WPI is granted on a course-for-course basis. All Transfer students entering WPI with fewer than six courses or their equivalent of transfer credit in the Humanities and Arts must complete work in the Humanities and Arts, including an Inquiry Seminar/Practicum to the extent that the overall Humanities and Arts credit totals two units.

No credit toward the Humanities and Arts Requirement is given for introductory-level foreign-language courses unless the entire program is in that foreign language. Usually only one transfer course in Freshman English can be applied toward the requirement. In all cases, the professor for the Inquiry Seminar/Practicum has the final decision on what courses are acceptable within the student's sequence leading up to the project. Up to one unit (i.e. three courses) of transferred work in the Humanities and Arts that is not credited toward the Humanities and Arts Requirement can be credited toward the fifteen-unit graduation requirement; such courses shall receive credit under the category of EL 1000.

If a Transfer student has completed two units of acceptable college-level work in the Humanities and Arts prior to entering WPI, a Completion of Degree Requirement form will be submitted by the Humanities and Arts Department Coordinator for Transfer Students at the request of the student. The grade for such a Humanities and Arts Requirement met by transfer credit is normally a grade of “CR”. Students whose grades on transferred courses average A can engage in additional work or submit samples of their previous work and may be awarded an A for the Humanities and Arts Requirement. Alternately a transfer student may elect to undertake an Inquiry Seminar/Practicum in an effort to achieve an A grade. These evaluation options must be exercised prior to the Department's submission of the Completion of Degree Requirement form to the Registrar.

Decisions concerning credit toward the Humanities and Arts Requirement are made by the Humanities and Arts Department Coordinator for Transfer Students, Professor James Hanlan. He can be contacted in room 28 of Salisbury Laboratories, or at extension 5438, or email jhanlan@wpi.edu.

GUIDELINES FOR GRANTING TRANSFER CREDIT TO U.S. STUDENTS FOR FOREIGN LANGUAGE STUDY

A. Credit for study on the high school level:

1. Transfer credit of 1/3 unit is given for Advanced Placement with a score of 4 or 5.

2. Students with three or more years of foreign-language study in high school, but who have not taken the Advanced Placement examination in that language, may receive 1/3 unit credit for their high school language study upon satisfactory completion of two courses in the same language on the intermediate level or above. (Note: Courses in German and Spanish in addition to those offered at WPI, as well as courses in other languages, are available at other colleges in the Consortium.)

3. In either case 1. or 2. above, in order to receive 1/3 unit credit, students must begin their WPI course sequence at the Elementary II level or above.

B. Credit for study at other colleges and universities:

1. Language study which is done at other universities and colleges prior to entering WPI, or done with the prior written permission of the student's Humanities and Arts Consultant (not the Department Head) as part of an agreed-upon Humanities and Arts sequence, transfers on a course-for-course basis.

2. Language study which is done at foreign universities, language institutes, cultural institutes, etc., prior to entering WPI, or done with the prior written permission of the student's Humanities and Arts Consultant (not the Department Head) as part of an agreed-upon Humanities and Arts sequence, is assessed by the Foreign Languages Consultant on the basis of matriculation papers and the level of work accomplished.

OTHER OPTIONS

INTERDISCIPLINARY STUDY AT THE AMERICAN ANTIQUARIAN SOCIETY

A unique opportunity for interdisciplinary work in the humanities and arts is offered by the American Studies Seminar sponsored each fall by the American Antiquarian Society. Organized in collaboration with Worcester's five undergraduate colleges and universities, this seminar focuses on topics that allow students to investigate the Society's rich holdings in early American history, literature, and culture. The Society's unparalleled collection of documents is a short walk from the campus. Information on application deadlines and academic credit toward the Humanities and Arts Requirement is available from the WPI Campus Representative to the American Antiquarian Society.

OFF-CAMPUS HUMANITIES AND ARTS OPTION

WPI offers the option to complete the Humanities and Arts Requirement during one term of study at several Project Centers. Normally, students complete the requirement through at least six courses or independent-study projects on campus. However, the "Off-Campus" option allows students to combine at least three courses on campus with one term studying the humanities and arts at a Project Center. Since this one-term project is equivalent to three courses, students may use it to complete the requirement.

Off-campus projects are available in Germany for the study of foreign languages and in London and Morocco for other fields. These off-campus programs have a flexible format. Students devote themselves to one term studying the history, literature, language or culture at the project site with a WPI faculty advisor. The program might combine a thematic seminar in an area of the faculty advisor's expertise with visits to museums, the theatre, musical performances, or cultural excursions.

Although themes or areas of emphasis vary from year to year, all off-campus Humanities and Arts activities culminate in a written report in an area of interest to the student.
To be eligible for this one-unit activity, students must have already completed three courses in humanities and arts before they leave campus. Students may apply to the off-campus program before they have taken all three courses. However, students may not participate in the program unless they successfully complete one unit of work in humanities and arts before the term of the project. In addition, students going to any Project Center must complete all of the forms required by the Interdisciplinary and Global Studies Division.

Requirements:
• Students must have completed at least three courses in the Humanities and Arts at WPI, or have earned equivalent course credit approved by the Humanities and Arts Department, before the term of the off-campus activity. The Department may allow students to count transfer or advanced placement credits toward the three course minimum;
• Students must be accepted into the off-campus Humanities and Arts program by the Humanities and Arts Department, and complete all forms required by the Interdisciplinary and Global Studies Division, in order to register for these projects.
• Students might be required by the faculty advisor to complete a PQP or attend required meetings before the off-campus project;
• Students must submit a written report or paper at the end of the project. Students also may be required to submit written updates at various times in the course of the project. In all cases, the faculty advisor at the project site will determine the precise form of the written requirements.
• Students may be required to give an oral presentation at the end of the project;
• Under normal circumstances, students must complete the project within one term in order to receive the full unit of credit;
• Only members of the Humanities and Arts faculty at WPI may advise off-campus Humanities and Arts projects.

OFF-CAMPUS RECOMMENDATIONS
All off-campus programs benefit from advance planning. Discuss the possibility of an off-campus activity with your academic advisor at the beginning of the freshman year. Consult with the WPI faculty who will advise these off-campus projects as early as possible, since they may be able to suggest useful courses or other background resources for the projects. Also keep in mind that three courses are the minimum required, but many students find it advantageous to take additional courses before going away.

The interdisciplinary London and Morocco programs are open to students with a background in areas of the humanities and arts besides foreign languages, including art history and architecture, drama/theatre, history, literature, music, philosophy, religion, or writing/rhetoric. After taking at least three courses in any of these areas on campus, you could then go to London to complete your project. Some students also have gone to London with this program to study beyond the Humanities and Arts Requirement for international studies, history, literature, music, theatre, or other areas.

WPI offers programs in the German language at Darmstadt. This program requires completion of foreign language courses through the level of intermediate II or above (2000-level or above) before going abroad. For students who have taken foreign language courses in high school, language placement exams are available during New Student Orientation. Some students with basic foreign language preparation have completed their arts projects in Germany. We welcome a creative approach to off-campus study.

More advanced students may participate in these off-campus programs by doing work toward a minor or major. A student who had already completed their Humanities and Arts Requirement on campus, for example, might be able to work in the humanities and arts on an Independent Study Project that could count toward a minor. Or a student at one of these sites could work on a Major Qualifying Project in fields such as Humanities and Arts, International Studies, or Professional Writing.

The Humanities and Arts Department advertises upcoming project locations and application deadlines at the Global Opportunities Fair each September. Future project opportunities might include other foreign locations or projects that provide the context for an intensive study of humanistic themes associated with particular locales within the United States. Contact the Department of Humanities and Arts for more information.
Social science deals with the behavior of individuals and groups as well as the functioning of the economic and political systems and institutions that shape and control our lives. As such, it offers a perspective that is essential for anyone desiring a well-rounded education.

Therefore, WPI, in common with other colleges, requires some exposure to the social sciences for its graduates. In satisfying the two-course social science requirement, students are free to take courses in any of the traditional social sciences: economics, political science, sociology, and psychology. Courses with the following prefixes may be counted toward the social science requirement: ECON, ENV, GOV, PSY, SD, SOC, SS, STS. The social science courses offered at WPI are grouped into two broad categories. The first consists of core courses that introduce students to the social sciences and help them understand the scope and limits of social science approaches and how they might be related to the design of Interactive Qualifying Projects. The second, more advanced, set of courses looks in depth at particular issues and problems, providing students with a more detailed understanding of social science disciplines and their use in social problem solving and interactive projects.

To obtain maximum benefit from their study of social science, students should choose courses that will provide knowledge and skills relevant to their Interactive Qualifying Project. These courses should be taken prior to or concurrent with undertaking the IQP and should be selected, if possible, after the student has identified the general topic area in which his or her interactive project work will be carried out.

More information on the alternatives available and the factors that should be considered in choosing courses to satisfy the social science requirement are available on the Social Science and Policy Studies department website at www.wpi.edu/Academics/Depts/ssps.html.