This **Summer Arch** guide is intended to help students understand the Summer Arch option being offered in the summer of 2017.

**Summer Arch, what is it?**

Summer Arch is a restructuring of the Rensselaer academic calendar that will create exciting opportunities for experiential learning (through co-ops, internships, research, civic engagement, travel abroad, and more) to better prepare Rensselaer students for 21st century technological careers, as well as graduate or professional school. As a Summer Arch participant you will

- Spend the summer following your sophomore year on campus in an immersive small-group learning environment taking courses towards your degree and participating in co- and extra-curricular activities.
- Spend a semester during the junior year away from campus pursing valuable personal and professional experiential opportunities: co-ops, internships, research, entrepreneurship, study/travel abroad, and service activities.

**Benefits**

- An exciting opportunity for experiential learning that prepares you for future career and allows you to explore your professional and personal passions.
- A unique summer semester that includes exciting co-curricular activities including trips to local companies, exploration of the Adirondacks and local culture, and more.
- Enhanced access to faculty and staff, smaller student to faculty ratios.
Co- and extra-curricular activities planned for Summer Arch 2017:

The Innovators in Engineering Series

Engineering entrepreneurs will come to campus to spend time visiting with students in a workshop environment to share personal and professional experiences that helped them form successful companies or innovate within a larger corporation.

Enhanced Interactions with Faculty and Staff

Pop-Up Courses by faculty and staff to introduce and teach a unique subject in a few hours (e.g. Electron Microscopy, Basics of Motors, Etiquette for Business Meals, Indian Music, My Time In a Rock n Roll Band).

Lunch or excursions with a faculty member.

Trips to local companies for in behind-the-scenes tours / special workshops at Rensselaer facilities:

General Electric Power Generation, Global Foundries Processing Facility, Ecovative, Intermagnetics General, Adirondacks for field experiences, etc.

Local Social Events

Rock Concerts at SPAC, Tanglewood, EMPAC, Hikes with Profs, Lake George.

And more...
Summer Arch Course Offerings (Engineering and Science)

For engineering templates see: http://provost.rpi.edu/summer-arch/curricular

Full class schedule will be posted on SIS on September 10, 2016. Please register your interest in Summer Arch on SIS from mid-September through November of 2016.

**School of Engineering**

BMED 4010  BME Laboratory
BMED 4200  Modeling of Biomedical Systems
CHME 4010  Transport Phenomena I
CHME 4030  Chemical Process Dynamics Control
ECSE 2010  Electric Circuits
ECSE 2050  Introduction to Electronics
ECSE 2100  Fields and Waves I
ECSE 2410  Signals and Systems
ECSE 2500  Engineering Probability
ENGR 1100  Introduction to Engineering Analysis
ENGR 1200  Engineering Graphics and CAD
ENGR 1300  Engineering Processes
ENGR 1600  Materials Science for Engineers
ENGR 2050  Introduction to Engineering Design
ENGR 2090  Engineering Dynamics
ENGR 2250  Thermal and Fluids Engineering I
ENGR 2300  Electronic Instrumentation
ENGR 2350  Embedded Control
ENGR 2530  Strength of Materials
ENGR 2600  Modeling and Analysis of Uncertainty
ENGR 4010  Professional Development III
ENGR 4760  Engineering Economics
ISYE 4140  Statistical Analysis
ISYE 4600  Operations Methods Research
MANE 4010  Thermal and Fluids II
MANE 4020  Thermal and Fluids Laboratory
MANE 4030  Elements of Mechanical Design
MANE 4050  Modeling and Control of Dynamic Systems
MANE 4060  Aerospace Structures and Materials
MANE 4070  Aerodynamics I
MTLE 4100  Thermodynamics of Materials
MTLE 4250  Mechanical Properties of Materials
MTLE 4xxx  Skills in Materials Engineering
### School of Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCBP 4760</td>
<td>Molecular Biochemistry I</td>
</tr>
<tr>
<td>BIOL 1010</td>
<td>Introduction to Biology</td>
</tr>
<tr>
<td>BIOL 1015</td>
<td>Introduction to Biology Lab</td>
</tr>
<tr>
<td>BIO 2500</td>
<td>Genetics and Evolution</td>
</tr>
<tr>
<td>BIO 4760</td>
<td>Molecular Biochemistry I</td>
</tr>
<tr>
<td>CHEM 1100</td>
<td>Chemistry I</td>
</tr>
<tr>
<td>CHEM 1200</td>
<td>Chemistry II</td>
</tr>
<tr>
<td>CHEM 2230</td>
<td>Organic Chemistry I Lab</td>
</tr>
<tr>
<td>CHEM 2240</td>
<td>Organic Chemistry II Lab</td>
</tr>
<tr>
<td>CHEM 2250</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM 2260</td>
<td>Organic Chemistry II</td>
</tr>
<tr>
<td>CHEM 4760</td>
<td>Molecular Biochemistry I</td>
</tr>
<tr>
<td>CSCI 1100</td>
<td>Computer Science I</td>
</tr>
<tr>
<td>MATH 1010</td>
<td>Calculus I</td>
</tr>
<tr>
<td>MATH 1020</td>
<td>Calculus II</td>
</tr>
<tr>
<td>MATH 2010</td>
<td>Multivariable Calculus and Matrix Algebra</td>
</tr>
<tr>
<td>MATH 2400</td>
<td>Introduction to Differential Equations</td>
</tr>
<tr>
<td>MATH/CSCI 4800</td>
<td>Numerical Computing</td>
</tr>
<tr>
<td>PHYS 1100</td>
<td>Physics I</td>
</tr>
<tr>
<td>PHYS 1200</td>
<td>Physics II</td>
</tr>
</tbody>
</table>

### Humanities, Arts, and Social Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTS 1XXX</td>
<td>Art History</td>
</tr>
<tr>
<td>ARTS 1961</td>
<td>Deep Listening</td>
</tr>
<tr>
<td>ARTS 296X</td>
<td>Site Specific Sculpture</td>
</tr>
<tr>
<td>LANG 1410</td>
<td>Chinese I</td>
</tr>
<tr>
<td>LANG 2420</td>
<td>Chinese III</td>
</tr>
<tr>
<td>WRIT 1110</td>
<td>Writing for Classroom and Career</td>
</tr>
<tr>
<td>WRIT 2310</td>
<td>Creative Writing: Poetry</td>
</tr>
<tr>
<td>WRIT 2320</td>
<td>Creative Writing: Non Fiction</td>
</tr>
<tr>
<td>WRIT 2330</td>
<td>Creative Writing: The Short story</td>
</tr>
<tr>
<td>WRIT 2340</td>
<td>Speech Communication</td>
</tr>
<tr>
<td>COMM 4880/6880</td>
<td>Interactive data visualization</td>
</tr>
<tr>
<td>PHIL 2100</td>
<td>Critical Thinking</td>
</tr>
<tr>
<td>PSYC 1200</td>
<td>General Psychology</td>
</tr>
<tr>
<td>PSYC 2730</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>PSYC 2962</td>
<td>Positive Psychology</td>
</tr>
<tr>
<td>PSYC 4310</td>
<td>Research Methods &amp; Stats II</td>
</tr>
<tr>
<td>PSYC 4370</td>
<td>Cognitive Psychology</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>PSYC 4400</td>
<td>Personality</td>
</tr>
<tr>
<td>PSYC 4960</td>
<td>Mindfulness</td>
</tr>
<tr>
<td>ECON 1200</td>
<td>Introductory Economics</td>
</tr>
<tr>
<td>ECON 2010</td>
<td>Intermediate Microeconomic theory</td>
</tr>
<tr>
<td>ECON 4130</td>
<td>Money and Banking</td>
</tr>
<tr>
<td>COMM 1600</td>
<td>History and Culture of Games</td>
</tr>
<tr>
<td>COMM 296x</td>
<td>Must See Films for Game Design</td>
</tr>
<tr>
<td>COMM 496x</td>
<td>Video Game Level Design</td>
</tr>
<tr>
<td>ARTS 496x</td>
<td>Virtual Reality Studio</td>
</tr>
<tr>
<td>ARTS 496x</td>
<td>Animation Workshop</td>
</tr>
<tr>
<td>COGS 2520</td>
<td>Intro to Game Design</td>
</tr>
<tr>
<td>COGS 2961</td>
<td>Intro to Game Programming</td>
</tr>
<tr>
<td>STSS 4120</td>
<td>How to Read the NY Times</td>
</tr>
<tr>
<td>STS/H 4XXX</td>
<td>In Culture: A</td>
</tr>
<tr>
<td>STS/H 4XXX</td>
<td>In Culture: B</td>
</tr>
<tr>
<td>STS/H 4XXX</td>
<td>In Culture: C</td>
</tr>
<tr>
<td>STS/H 4XXX</td>
<td>In Culture: D</td>
</tr>
<tr>
<td>STS 4270</td>
<td>Sustainability Problems</td>
</tr>
<tr>
<td>STSH/S 4XXX</td>
<td>PDI Summer Sustainability Studio</td>
</tr>
<tr>
<td>STSH/S 1110</td>
<td>Public Service Internship</td>
</tr>
<tr>
<td>STSH/S 4XXX</td>
<td>Professional Development II</td>
</tr>
</tbody>
</table>
Summer Arch Frequently Asked Questions

FAQ -- ACADEMICS & CO-CURRICULAR ACTIVITIES

- When will the Summer Arch option be offered?

The School of Engineering and the Lally School will offer the first Summer Arch option in the summer of 2017 for the class of 2019. All schools at Rensselaer will offer a Summer Arch option in summer 2018 (for the class of 2020). Beyond this point, Summer Arch will be a required experience for all Rensselaer students. E.g., students in the Class of 2021 will be required to participate in the Summer Arch program in summer 2019.

- What does the Summer Arch calendar look like?

Courses will be offered in a mixture of 6-week and 12-week modes, with class times throughout the day. Wednesdays are nominally reserved for co- and extra-curricular activities as well as for studying. There will be no courses offered on Saturday or Sunday, although co-curricular/fun activities (e.g., an optional hike with a faculty member) may be planned on a weekend.

- What co/extra-curricular activities are available?

The School of Engineering will be offering an exciting set of activities in the Summer Arch, including special seminars, workshops, field trips, and exploration tours, etc. Indeed, summer offers many ways to engage across the greater Hudson Mohawk Region and beyond, through unique multicultural events, and experiences. The Rensselaer Union will also expand the capacity of existing summer programs and services. This includes, but is not limited to, intramurals, fitness classes, movies, food festivals, and promotion of area summer festivals and destinations. The student jazz ensemble established during summer 2015 will continue. In addition, the Mueller Center is developing a robust summer outdoor recreation program such as hiking, rock climbing, kayaking, and camping.

- What will be the average class size?

We anticipate a significantly smaller class size, and smaller student-to-faculty ratios in the Summer Arch courses. Depending on the major, most classes will likely be capped at 30 seats.

- Will the clubs continue?

Clubs can continue to operate through the summer.
FAQ -- DORMS, CLASSROOMS, FOOD, ETC.

- Will I be staying in the residence halls?
  Yes, students are required to stay in the residence halls.

- Will there be air conditioned residence halls and classrooms for all students during the Summer Arch?
  There is an AC plan in place so that all Summer Arch students will be in air conditioned residence halls (and air conditioned classrooms and laboratories).

- What are the dining options?
  Yes, there will be dining options open around campus (Commons, McNeil room, etc.). An innovative dining experience will bring students, faculty, and staff together to engage in academic conversations and socialize.
FAQ -- EXPERIENTIAL LEARNING/AWAY SEMESTER

- Will I go “away” in Fall or Spring of the junior year?

This depends on your major and/or preference. In some programs, you will have options to go away in either term. Some terms may be better for the away term depending on availability of and your preferred away experience.

- Does this mean it will take more than four years to graduate?

No – as usual, engineering students can still graduate in four years. With the exception of students in the five-year bachelor of architecture program, matriculation to degree completion is not intended to take more than eight terms at Rensselaer. To accelerate your academic progress, and graduate in fewer than eight semesters, you may take classes elsewhere prior to enrollment at Rensselaer, obtain AP/IB credit from high school, take summer courses in subsequent summers, study abroad during the away semester, or some combination of these options.

- What will I do on my semester “away” from Rensselaer?

You can take advantage of numerous co-curricular and experiential activities available off campus, including international travel, internships, co-ops, research opportunities, and engagement in government or community service projects.

- Will I have help in finding a co-op or internship?

Yes, the Center for Career and Professional Development will continue to provide programming and resources to assist students in their search for co-op and internship opportunities. Students seeking Abroad Experiences will work with the Office of International Programs. Once you elect to participate in the Summer Arch pilot, you will be notified of CCPD programming that you should attend to better prepare for your search and your semester away. You are also encouraged to attend to the CCPD’s Summer Arch programing this fall – details will be available on JobLink and via the CCPD’s weekly newsletter.

The CCPD will also host Walk-In hours in the SoE HUB each Thursday from 2 to 4 p.m. Please drop in for a quick review of your resume or cover letter, to get interviewing tips, or discuss how to best prepare for your semester away.

- During the “away semester”, can I go away to another university for a semester and transfer credits? Can I accelerate my degree?

Yes, but see below regarding financial aid.
• Will a research intensive experience on the Troy campus count as the “away” semester?

One goal of the Summer Arch initiative is to enhance experiential learning through a variety of opportunities away from the campus. Therefore, we encourage a truly away experience. For research experiences on campus that include about a month of time in a collaborators laboratory off campus and the opportunity to attend a national/international meeting in your field, an exemption can be requested from the Office of Undergraduate Education.

• What if I want to study abroad?

Study abroad has become an integral part of a well-rounded undergraduate experience. The Summer Arch provides additional experiential learning opportunities for students to gain a greater understanding and appreciation of other cultures and customs. This includes short-term and faculty-led international programs, and other international experiences such as internships and service learning.

Formal study abroad through our exchange programs would not be considered an away semester as students’ pay Rensselaer tuition.

Students can, however, also pursue study abroad during their away semester through non-affiliated programs. In that case students pay tuition to the host institution.

• Do I have to pay tuition during my "away" semester?

No. The semester away is an opportunity to pursue internships, co-ops, and collaborative research, as well as athletic, entrepreneurial, philanthropic, and community service activities.
FAQ -- FINANCIAL AID

- Will financial aid be available for the Summer Arch semester?

Federal, NY State, and Rensselaer financial aid will be available as long as you meet eligibility requirements. The Summer Arch semester is like any other semester – you attend full-time.

- Will I get the same amount of financial aid in the Summer Arch semester as I would if I was attending a standard academic year (i.e. fall/spring)?

Yes, in theory. However, need based aid is determined by your Cost of Attendance. The Summer Arch semester is shorter in length than the fall or spring semester, so your expenses for the summer semester might be less which may mean less need based aid. Every attempt will be made to allow you to have as much financial aid as possible and renew awards you currently would have prior to your Summer Arch semester. Merit based awards are never impacted.

- When should I apply for financial aid (i.e., file my FAFSA)?

We will be providing a timetable for students planning on attending the Summer Arch semester to complete the Free Application for Federal Student Aid (FAFSA). It will be earlier than our normal April 1st deadline because we need to be able to review your FAFSA data and create a financial aid package for you prior to the start of your Summer Arch semester so your family can plan appropriately. It will be important for you to submit any information that the Office of Financial Aid requests from you as quickly as you can. You should also check your financial aid status using your SIS access to see if there are any outstanding requirements you may need to submit to us so that an aid package can be created for you.

- I'm not interested in any federal or state financial aid. Do I still need to complete the FAFSA?

If you just have Rensselaer merit awards (i.e., Rensselaer Leadership Award, Rensselaer Medal Award, Rensselaer Recognition Award) and are not interested in federal or state aid then you do not need to complete the FAFSA. However, if you have Rensselaer need-based grants (i.e., Rensselaer Grant, Rensselaer Access Grant, President’s Assistance Grant) and you wish to be considered for renewal of these awards then you must complete the FAFSA even if you are not interested in federal or state financial aid.

- Is financial aid available for my away semester?

If you are doing a co-op, you are presumably getting paid sufficient amount by the company. As for financial aid, only federal aid is potentially available. In most cases, it is expected that students participate in experiential learning experiences that do not include taking classes. Therefore, using federal aid during the away semester is generally discouraged. Calculations of
federal aid available to each student are based on need per academic year. If the aid is used during the away semester, less will be available during the two semesters on campus.

You cannot use Federal Work Study during your away semester. You must be taking at least six credits at RPI, or participating in an approved co-op, or an approved study abroad program to qualify for federal financial aid. To note, credit-bearing internships do not count because students are not able to receive Rensselaer credits during the away semester unless an exception is being considered.
FAQ -- CO-OP

• What is a co-op? And how does it differ from an internship?
A co-op is a full-time, paid position directly related to a student’s field of study. At Rensselaer, co-op entails both a summer and a semester experience – the two experiences do not need to be consecutive nor do they have to be with the same employer. An internship can be full-time or part-time, paid or unpaid. For purposes of the Summer Arch Semester Away, academic credit cannot be earned for internships and students must work a minimum of 20 hours per week for a minimum of 10 weeks. Please speak with a Career Counselor to get more details.

• What are the requirements for the Co-op Program?
  o A minimum 2.0 GPA and good academic standing.
  o Complete the first year of studies before applying or have at least one semester of study (12 credits) remaining before graduation
  o Attend a “Co-op Briefing” after accepting a position; register on JobLink
  o Write a 2-4 page “work report” at conclusion of co-op term(s); if multiple co-ops are completed, you are only required to write one report.
  o Note: You are only required to attend one briefing, regardless of how many times you co-op.

• How will I find a job?
Most applicants find their job through the co-op program or one of the career fairs. However, you may also search for a job on your own. If you pursue a job on your own, the position should be cleared with the CCPD before accepting. If you are having difficulty finding job leads, please make an appointment with a Career Counselor or stop by the CCPD during Walk-ins.

• How do I apply?
Activate your account on JobLink, post your resume, and indicate the terms that you are applying for the program in the “Academic” section of your Profile. This will enable you to participate in on-campus recruiting activities and to submit resumes.

• Can I get academic credit for Co-op?
Currently, no academic department offers academic credit for co-op. While credit is not given, your Co-Op experience will be noted on your transcript with an S or U as a grade earned depending on your completion and submission of the required Work Report.

• What do I do about medical insurance while on Co-op?
While on co-op, you have the option of taking the insurance through your family or signing up for the Student Accident and Sickness Insurance policy (which must be done by September 15 each year!). If you live within 25 miles of campus, you will automatically be charged the Student Health Center fee and may use the Health Center as though you were taking classes.

- **What do I do about housing and transportation while I am on Co-op?**

  Although you are ultimately responsible for finding housing and transportation, your co-op employer may assist you in the housing search. During your co-op interviews, it is appropriate to ask if the employer offers assistance in finding housing and if you will need a car as transportation to work. A career counselor will also be happy to provide advice on securing housing.

- **Could Co-op affect my Financial Aid?**

  There is no guarantee your co-op earnings will not impact your financial aid package. Potentially any aid except merit awards could be impacted. Please see the Co-op Guide or the ‘Financial Aid & Co-op’ handout for more detailed information.

- **May I walk with my class during May Commencement ceremonies if I graduate in December because of Co-op?**

  Undergraduate students who have participated in the Co-op program and are in good academic standing, with no more than 12 credit hours remaining towards completion of their degree(s), can petition the Office of the Registrar for permission to participate in the commencement exercises, but will not receive their diploma.
Co-op in Engineering

https://www.rpi.edu/dept/cdc/students/experience/coop/index.html

Engineering students have worked for over 200 companies for co-ops and internships. The average salary for engineering students is over $20 per hour but is dependent on major and class year.

The following is a sample of companies Rensselaer engineering students have had co-ops with.

Advanced Testing Laboratory  IBM
Amazon                        Intel
American Airlines             Jet Propulsion Laboratory
Apple                         Johnson & Johnson
Applied Materials             Keurig Green Mountain
Ashcroft, Inc.                Microsoft
Atlantic Testing Laboratories MIT Lincoln Laboratory
BD Diagnostics                Moog
Becton Dickinson              Motorola Solutions
Boeing                         NASA
Bose Corp.                    Paradigm Precision
Bristol Myers Squibb          PepsiCo
Chicago Bridge & Iron         Philips
Cisco Systems Inc.            Pratt & Whitney
Corning Inc.                  Regeneron Pharmaceuticals
Covidien                      SABIC Inc. Plastics
Disney Worldwide Services     Sandia National Labs
Energizer/Playtex             Schick
Ethicon                       Siemens Corp Research
ExxonMobil                    Sikorsky
General Dynamics              SpaceX
General Electric              Stryker Orthopedics
Global Tungsten & Powders Corp. UTC Aerospace
GLOBALFOUNDRIES              Vicor Corp.
Hamilton Sundstrand           Vital Vio
Hasbro                        XL Group
Honda