

# GT Grand Challenge Scholars Program (GCSP)

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## Grand Challenge Scholar Vision

The Georgia Tech Grand Challenge Scholars Program encourages the development and growth of a diverse and dynamic community of students and faculty committed to engaging the most pressing challenges facing the global community. The GCS program at Georgia Tech will leverage existing curricular and co-curricular resources and opportunities while seeking and incorporating new ones to improve and enhance the leadership skills and social/global awareness of future engineers, scientists, and technologists. Our Scholars will exemplify the GT motto, *progress and service*, by seeking solutions to pressing problems, both locally and globally. Moreover, this program will embody Georgia Tech's mission which “is **to develop leaders who advance technology and improve the human condition.**” Georgia Tech’s GCS program will empower students to be fearless learners and problem solvers, leaders and inventors in their pursuit of novel but sustainable answers to complex challenges.

Georgia Tech GCSP participants will develop a coherent integrated plan with the assistance of a GCSP advisor as early in their academic career as possible. To achieve this goal, we will leverage many existing GT programs. The freshman Grand Challenges Living-Learning community (220 students) and the Start-up House and GT1000 classes will be major partners in recruiting freshmen and sophomores to the program. The Office for Undergraduate Research, the Office for International Education (OIE), and the Vertically Integrated Projects (VIP) program are all natural partners. Other partners will include the minor in Leadership for Global Engineering and the CREATE-X initiative that fosters entrepreneurial confidence through classes and *ideas-to-prototype* research experiences. In addition, we are looking to create a new cohort program that will actively engage students to work on interdisciplinary teams in an entrepreneurial way to address grand challenges that face humanity. Given the many venues and opportunities for students to fulfill GCSP requirements, we hope to build the program to achieve a strong number of candidates.

Building a GCSP community of scholars, graduate advisors and faculty will be essential to the expansion and sustainability of the program. Building a strong network of support will be instrumental in advising and mentoring new GCSP students. We will host both formal and informal gatherings for the GCS community, that is, meet-ups, sponsored talks, outings, lectures, student presentations. We see the scholars themselves taking significant leadership roles in the development and evolution of the program and associated activities.

## Five NAE GCSP Pillars

GC Scholars will develop individual plans to fulfill the five curricular and/or co-curricular components proposed by the National Academy of Engineering (NAE) given as:

a) ***Hands on project or research experience:*** This project will have a sustained duration of two or more semesters focused on a challenge of importance to humanity. This research project may also provide a framework through which students are able to fulfill all other components of this program.

b) ***Multidisciplinary experience:*** This requirement can be fulfilled through completion of two courses with a GC focus in the social sciences, arts, humanities, public policy or international affairs. It can also be fulfilled by participating on a multi-disciplinary design project at the capstone level or before. Students are encouraged to pursue courses that align with their research project so that they may gain further insight into the problem space. The GT GCSP cohort program will also help students find multidisciplinary teams to work on their projects together.

c) ***Entrepreneurship experience:*** This component focuses on translating an invention or innovation into a commercial venture linked to a grand challenge. It is worth noting that some research projects may lead to entrepreneurial opportunities, and students are encouraged to tie this component with their research project as well. At Georgia Tech there are a variety of programs that will help you create a for-profit business or non-profit organization to help scale your project ideas so that you can have large impact. The cohort program will also introduce students to entrepreneurial thinking through the use a variety of different entrepreneurial canvases to evaluate their project ideas.

d) ***Global/Cross-cultural experience:*** Participating in this activity will deepen a student's consciousness and motivation to bring technical knowledge to bear on global problems. This experience could be overseas through the Office of International Education, Engineers without Borders, Engineering World Health or in an under-served domestic community. Likewise, students are encouraged to explore how the problem space of their research project changes with different cultural perspectives. It can also be fulfilled through coursework.

e) ***Social consciousness and service experience:*** Develop/deepen social consciousness and motivation to bring technical expertise to bear on societal problems. When taking on a research project related to problems that exist in local communities, this component can be fulfilled through coordinated volunteering efforts that will also allow students to explore their problem space more thoroughly.

## Selection of GCSP Participants

To be considered for a spot in the GCSP program, students must fill out the initial application form which is found with the QR code in the next section. The advisory team will contact the student to help them work on a GCSP plan that will provide competencies in the NAE five pillars. The general requirements for each pillar are listed in a table at the end of this document.

**A new avenue** to become an NAE Grand Challenges Scholar is to be a part of a co-curricular **GT GCSP cohort program**. Registration for the program will be at the beginning of the Fall Semester, and you can begin this process with the application link that is found on the next page. Once registered for the cohort program, students will be divided into teams of 3-5 students. Each team will explore grand challenge problem types for which they can do both secondary and primary research to observe minute problem space details and understand complex interactions that are occurring in the problem space. Understanding the problem space and building a network of people (users, stakeholders, experts, etc...) will be of prime importance. The second phase will be for each team to develop an innovative solution to the problem they have chosen. Using entrepreneurial ideas to develop a coherent strategy to create a solution that users will want and use will include quick iterations with entrepreneurial experiments, creating mock demos, developing working prototypes, testing, and deployment of their solution. Each student will be expected to attend one workshop-session every other week where they will meet with their group and discuss any questions they may have with faculty or graduate students. Upon completion of the workshop series each student is expected to produce the following deliverables in order to be considered for the NAE GCSP designation.

1. A personal 1-page essay explaining reasons and goals for participating in the GCS program. This will be accompanied by a 2-page technical summary describing the problem that you would like to solve and a justification for the solution you are pursuing.
2. A 1-page description of what you learned working on an interdisciplinary team. This would be accompanied by documentation of at least two student evaluations from each group member over the course of the workshop series.
3. A business plan (either for profit or not-for-profit) that shows how your team's solution could be scaled to have large impact on the human condition.
4. An analysis of the multicultural implication of the problem and solution direction that is proposed which is accompanied by in-person or virtual interaction with stakeholders from different countries.
5. Documentation for the service component of the GCSP requirement which is 30 volunteer hours in the problem area that they have chosen.

The GCSP oversight committee will review these deliverables to determine if the student is awarded the GCSP designation. If not awarded, the committee will make recommendations for revisions to the work that would better illustrate that the student has demonstrated competence in the 5-pillars specified by the NAE. GCSP cohort students will be responsible for documenting approved activities and for meeting with their GCSP advisor at least once every term to evaluate progress and make changes as necessary.

## Application to GCSP

Please use the following QR code and complete the questions to begin the application process.



You can also use this link [here](#).

## Options for Fulfilling Component Requirements

GCSP Curricular Components	Georgia Tech Fulfillment Options
<b>Hands-on Project or Research Experience</b>	<p>Independent research must be approved by the GCSP Committee. Activities that could serve to demonstrate this competence is found below.</p> <ul style="list-style-type: none"><li>• One year of a <a href="#">Grand Challenges Living Learning Community</a> sponsored project</li><li>• Completion of the GT GCSP cohort program</li><li>• 2 semesters or more conducting research in an approved Georgia Tech, industry, or co-op laboratory</li><li>• Membership for two semesters or more on a <a href="#">Vertically Integrated Project (VIP)</a> team</li><li>• An approved intensive <a href="#">summer research project</a> (REU)</li><li>• Participation in the <a href="#">Petit Undergraduate Research Scholars</a> program</li><li>• Receiving and completing a PURA undergraduate research award</li><li>• Summer Undergraduate Research Experience (<a href="#">SURE</a>)</li><li>• Ideas-to-Prototype (<a href="#">I2P</a>) semester focused on a challenge</li><li>• Completion of the <a href="#">GT Research Option</a></li><li>• Two semesters of research with the Undergraduate Research Opportunity Program (<a href="#">UROB</a>)</li><li>• Completion of the <a href="#">Minority Undergraduate Scholars Engineering Research</a> program</li><li>• Two semesters of research with the Undergraduate Research Opportunities in Computing (<a href="#">UROB</a>)</li><li>• Two semesters of research with the Opportunity Research Scholars (<a href="#">ORS</a>)</li><li>• Two semesters of research with the <a href="#">Georgia Tech Research Institute</a></li></ul>

<p><b>Multidisciplinary Experience</b></p>	<p>Complete at least ONE of the following:</p> <ul style="list-style-type: none"> <li>• Grand Challenges Living Learning Community Fall AND Spring introductory courses</li> <li>• Completion of the GT GCSP cohort program</li> <li>• Three approved and related credit hours from the <a href="#">School of Literature, Media and Communication</a> (LMC) AND 3 approved credits from the <a href="#">School of History, Technology, and Society</a> (HTS)</li> <li>• An approved interdisciplinary certificate program</li> <li>• An approved minor in a non-engineering field such as Business, Economics, Public Policy or International Relations</li> <li>• Participation on an interdisciplinary Capstone Design Team AND presentation at the <a href="#">Capstone Design Expo</a></li> <li>• An approved student recommended multidisciplinary experience</li> <li>• Participation on an interdisciplinary <a href="#">Capstone Design Team</a> with non-engineering students AND presentation at the Capstone Design Expo</li> </ul>
<p><b>Entrepreneurship</b></p>	<p>Participate in at least ONE of the following activities:</p> <ul style="list-style-type: none"> <li>• Complete the requirement for the GCSP cohort program</li> <li>• Complete the <a href="#">Start-up Academy</a> one day workshop</li> <li>• Complete the <a href="#">Start-up Lab</a></li> <li>• Complete the <a href="#">Start-Up Exchange</a> Three Day Start-up Workshop</li> <li>• A minor in any of the following: Business Administration, Economics, Computing and Management, or Engineering and Management</li> <li>• Complete Scheller College of <a href="#">Business Entrepreneurial Certificate</a></li> <li>• Participate in the <a href="#">Create-X Start-up Launch</a></li> <li>• Participate in <a href="#">inVenture Prize</a> competition</li> <li>• Participation in <a href="#">National Science Foundation (NSF) Innovation Corps (I-Corp)</a> program</li> <li>• Complete CEE4000- <a href="#">Global Entrepreneurship Leadership Minor</a> class (3 credits)</li> <li>• Complete the <a href="#">Steven A. Denning Technology &amp; Management Program</a></li> <li>• Create a program that adds measurable value to a current campus club or organization</li> <li>• Add value to an existing company or non-profit organization by completing a student consulting experience</li> <li>• Completion of Lean-Stack Business Canvas that is approved by the GC LLC directors that is accompanied by an application to Create-X Startup Launch or InVenture Prize competition.</li> </ul>

<p><b>Multicultural Global Dimension</b></p>	<p>Complete the Global Perspectives Core Curricular requirement</p> <ul style="list-style-type: none"> <li>• <a href="#">Global Engineering Leadership Minor (GELM)</a></li> <li>• Completion of the GCSP cohort program’s multicultural requirement</li> <li>• A GT approved semester or summer <a href="#">study abroad</a></li> <li>• Two semesters in the <a href="#">Global Leadership Living Learning Community</a></li> <li>• An approved internship or co-op abroad</li> <li>• An approved global experience or global project within an existing internship or co-op</li> <li>• An approved international service/engineering trip such as <a href="#">Alternative Spring Break</a>, <a href="#">Engineers Without Borders</a>, or <a href="#">Engineering World Health</a></li> <li>• The <a href="#">Georgia Tech International Plan</a></li> <li>• Participate in a Global Internship</li> <li>• Participate in the <a href="#">Global Change Program</a></li> <li>• A minor in International Relations, Public Policy or Political Science</li> <li>• An approved global experience suggested by the student</li> <li>• The Georgia Tech <a href="#">International Plan</a></li> <li>• A minor in International Relations, Public Policy, or Political Science</li> <li>• An approved global experience suggested by the student</li> </ul>
<p><b>Social Consciousness and Service Experience</b></p>	<p>Complete at least ONE of the following activities:</p> <ul style="list-style-type: none"> <li>• <a href="#">ESI Service Break</a></li> <li>• Completion of the GT GCSP cohort program’s volunteer requirement</li> <li>• GT sponsored <a href="#">Alternative Service Breaks</a></li> <li>• Approved Service Trips such as <a href="#">Engineers Without Borders</a>, or <a href="#">Foundation for International Medical Relief for Children</a></li> <li>• An approved 30 hour community service project that incorporates engineering OR interfacing with a community targeted by the student’s chosen GCSP project</li> <li>• Participation in the <a href="#">Ideas-to-Serve Competition</a></li> <li>• Participate in the <a href="#">Serve-Learn-Sustain</a></li> <li>• Completion of <i>Community Engagement Methods with Applications to Sustainable Communities</i> course</li> </ul>