Stevens Institute of Technology

www.capstonemarketplace.org
Capstone email address:
capstonemarketplace@stevens.edu

July 2023

CAPSTONE Marketplace
PROJECT PROPOSAL INSTRUCTIONS

GENERAL INFORMATION

The System Engineering Research Center's (SERC) Capstone Marketplace will post new Research Topic announcements for university senior design teams on the www.capstonemarketplace.org website beginning in July 2023. Academic institutions intending to pursue a SERC award for their students are encouraged to give us an "Expression of Interest" (EOI) to SERC, using the short template and the automatic submission button on the website.

The EOI submission helps us identify interested students, faculty, and universities for each topic. The Capstone Marketplace will acknowledge receipt of each EOI. As long as Research Topics remain open, Requests for Proposals (RFP) will be sent to universities. We will need a proposal from each team, for each topic. Students or faculty may draft a proposal, but proposals sent to the Capstone Marketplace must be coordinated with university business offices.   Multiple awards to the same university, on the same Research Topic, will not generally be allowed. There is no restriction on the number of topics and awards that can be made to a single university. Collaborative and/or competitive efforts between different universities, on a particular topic are encouraged.

ELIGIBILITY

Proposals may be accepted from non-SERC universities, as well as from SERC consortium members. SERC awards Capstone Marketplace contracts to any U.S. educational institution, with ABET accreditation, conducting undergraduate engineering design projects. We encourage the participation of non-STEM students. Graduate students may participate in Capstone Marketplace projects.

REQUEST FOR EXPRESSIONS OF INTEREST (EOI)

Universities and faculty start by submitting an Expression of Interest (EOI) to the Capstone Marketplace website. We can accept EOI from interested students, as long as they can identify an appropriate faculty supervisor.   A fillable EOI template is available on the website in the "Process" section and will be sent directly to the Marketplace. Information requested on the form is as follows:

Name of University	
Research Topic Numerical Designator	2023 NSWG 31 (sample)
Research Topic Short Title	Fatigue/Stress Management (sample)

Faculty Advisor/s	
Contact Phone	
Contact email	
Additional Comments	

Request for Proposal (RFP) and PROJECT PROPOSALS

Each Expression of Interest received at the Capstone Marketplace will be acknowledged by an email response. The Capstone Marketplace will issue a "Request for Proposal" for each valid EOI, for Research Topics as they are available. Universities will be notified if a particular topic has been assigned to other schools. The website will be updated to indicate the status of available Research Topics. When the Capstone Marketplace requests an RFP, universities can email the Marketplace to receive additional project information, detailed problem descriptions, background information, and government points of contact they may use in preparation of their proposals.

The proposal describes the Faculty Advisor's intentions for the conduct of the Capstone Project. **The Project Description section of a proposal is brief and should not exceed three (3) pages in length.** Other Project information sheets and budget sections do not count against this limit. "SERC Capstone Marketplace Objectives" in the web sites' "Resources" gives guidance on proposal elements SERC seeks — faculty involvement, multidisciplinary approaches, application of system engineering techniques, adequate facility and university resources, and past performance.

Templates for proposals may be downloaded from the Capstone Marketplace website. We are emphasizing the inclusion of non-STEM students on this year's Capstone teams. These students can assist the team in its organization and management, resource tracking, scheduling, reporting, risk management, and other business operations typical of a small development organization.

Universities are requested to submit project proposals to the Capstone Marketplace as early as possible. As most proposals are submitted before the start of the Academic Year, a designated student team does not have to be identified in the proposal. A contract award will not be made unless there is faculty assurance that a student team will be assigned to the Research Topic selected.

Universities pursuing multiple Research Topics are encouraged to designate a "Capstone Coordinator", a single point of contact on campus for administrative details, including schedules, communications, deliverables, and other issues.

PROPOSAL SUBMISSION

Proposals may be submitted at any time after receipt of an RFP from the Capstone Marketplace. Proposals should be submitted using the proposal submission link found on the resources section of the Capstone Marketplace website. Documents and attachments shall be in MS Office applications or PDF formats. Proposal can be submitted via email to capstonemarketplace@stevens.edu. If email submission is used please also copy wshephe1@stevens.edu and mdelorme@stevens.edu on submissions.

Proposers are to include "Proposal for (Short Title of Research Topic)" in email subject lines, and should request a "read receipt" on submission. Some quick guidelines:

- Universities are to submit a proposal for each project team
- There is no limit to the number of different Research Topics that may be awarded to a university
- The Capstone Marketplace will accept only one proposal on a particular topic from any university
- Multiple teams from different universities may be engaged on a single research topic. Collaboration is encouraged

CONTRACT FORM

Contracts will be Firm Fixed Price awards to universities, with schedules for specific deliverables and incremental payments as sequential reviews are successfully completed.

AWARDS AND FUNDING

Contracts for the Capstone Marketplace, managed by the System Engineering Research Center, are administered by university business offices at Stevens Institute. The Marketplace will evaluate proposals and announce awardees as rapidly as possible. SERC Fixed Price awards to universities for Capstone Projects will normally be made in amounts up to $5000, for a total of two semesters of student design activity. In exceptional circumstances, additional funding may be authorized.
Budget justifications for requested funding must be made in each proposal. Allowances and restrictions for the use of Capstone funds are detailed on the Capstone Marketplace website. As a proposal is accepted, Capstone Marketplace will issue a "proceed at risk" notice to each university until contract agreements are complete.

Typically 4 milestones will be required in each Capstone project, 2 per semester. These are design reviews conducted in-person or by virtual means with government customers and Capstone Marketplace staff.

Schedules of milestones and deliverables shall include:

- Completion of a Kickoff Meeting with Customer, student presentation of a written Project Plan and a "Quad Chart" (first design review)
- End of 1st Semester Interim Design Review
- 2nd Semester Interim Design Review (usually before Spring Break)
- Final Design Review at the end of the Academic Year, with all deliverables, demonstrations, final reports, and other presentation material

Universities may submit a single final invoice Capstone Marketplace after the successful completion the project. **Copies of deliverables must be received at and accepted by the Capstone Marketplace for liquidation of invoices.**

ADDITIONAL NOTES ON SELECTION AND AWARD PROCESS

1. Capstone Marketplace Research Topics are posted on the website between Spring and Fall Semesters as they become available. Topics are listed with short titles and numeric designators. These assist Capstone Marketplace personnel in identifying each team and their topic (for Example: "2023 NSWG 31 Dry Combat

Submersible Fatigue/Stress Management "). Research Topics have a short problem description that forms the basis for a subsequent "Statement of Work" for the university's contract.

2. After Capstone Marketplace issues "Requests for Proposals" to universities for Research Topics, direct contact with the government customers will be established. Customer Subject Matter Experts will provide project details to assist faculty, administrators, and/or students in the preparation of proposals.

3. University students are free to name their team and their project as they see fit. **However, we ask that teams maintain the "Numeric designators" and "Short Titles" in their project documentation, to allow the Marketplace to track numerous team efforts.**

4. University-Unique Research. Universities may submit ideas for Research Topics to the Marketplace. These topics will be shared with government organizations to attract their interest for additional Capstone projects. A template and additional guidance for unsolicited research topics, titled "Academic Inputs for Capstone Marketplace Research Topics" is provided under the "Resources" tab on the website.

5. Graduate Students. Capstone teams may include graduate students. Please see additional information on graduate students in Capstone research under the "Resources" tab of the website.

6. Research Topic Updates. The Capstone Research Topic list will be regularly updated to show changes, fully subscribed topics, and new information regarding proposal requests and awards. Additional Capstone problems may be posted as government sponsorship and participation increases.

7. Proposals will be evaluated by Capstone Marketplace managers, SERC personnel, and government representatives. Selections for award will be based on:
   a. Faculty involvement and support of Capstone teams
   b. Approaches for guiding student teams in design processes
   c. University resources, labs and other facilities, equipment
   d. Previous research
   e. Alignment with SERC "Capstone Marketplace Objectives"
   f. Past performance on Capstone projects

8. Funding requested (Please note SERC policies on overhead and direct labor costs)

9. Awards will be announced as rapidly as possible, to facilitate Fall Semester academic activities. Some "ResearchTopics" may remain unassigned; the scope of awards made will be based on academic interest, government sponsor participation, and funds available. Research Topics that are not assigned in the Fall may be available for Spring Semester project starts.

10. Additional Research Topics from Capstone sponsors may be announced on the website at any time.

POST AWARD

Capstone student teams will connect with government Subject Matter Experts as their "customers". Student teams will be expected to work their projects like small industry research and development businesses. Student team members and Faculty Advisors will be responsible for meeting the terms and conditions of the SERC contract, including deliverables. A first team deliverable will be a Project Plan. The student team will be expected to write

this document, guidance is available on the website under the "Resources" tab. The Project Plan is an understanding of expectations between the student team and a government "customer" on the conduct of the project. The plan is presented by students at a First Design Review "Kickoff". The plan shall include:

  a. Statement of Work (what the Project Team is to do, including objectives and specific deliverables)
  b. Project Organization (students and "customers")
  c. Draft "Quad Chart"
  d. Draft "Concept of Operations"
  e. Schedules and Reporting Plan (including milestones and detailed development path)
  f. Facilities and Equipment
  g. Budgets and Spend Plan
  h. Intellectual Property
  i. Closeout Plan for Project, including disposition of residual funds, materials, government property, etc. (see Project Plan Outline on the website for more information)

CAPSTONE MARKETPLACE PROPOSAL TEMPLATE

I.   PROJECT INFORMATION SHEET:

a)	University Name:	
b)	Research Topic Numeric Designator	
c)	Research Topic Short Title	
d)	Faculty Advisor/s	
e)	Academic Department/s	
f)	Academic Contact Information	
g)	University Business Office Contact Information	
h)	Project Period	
i)	Project Team Name (if known)	
j)	Additional Comments	

II. PROJECT DESCRIPTION (3 pages max)
Description should include the following:

1) **Project Title** (please include Numeric Designator and Research Topic Short Title)

2) **Organization**

   a) Faculty supporting Capstone Project

   b) Composition of student Capstone Team (assinged or anticipated)

3) **Project Execution**
Proposals in advance of student team assignments are expected. Proposers are to provide general descriptions of how their design team will proceed for duration of the project, with attention to health and safety restrictions or special research such as the involvement of human subjects. Detailed descriptions of specific technical approaches to solutions are not required; additional technical details are expected from student teams as they work through their design processes. The Capstone Marketplace web document, "SERC Capstone Marketplace Objectives" lists

desired additional attributes regarding how student teams should develop their designs. The Execution portion of the proposal should include:

      I.   Intended activities

      II.   System engineering and other development approaches to be used

      III.   Schedules

      IV.   University facilities, equipment, and resources available to Capstone Project

      V.   Health and Safety and special research requirements (IRB, etc.)
      VI.   Previous Research applicable to Capstone Project

      VII. Relationships with government organizations or industry relevant to Project (where applicable)

      VIII. Closeout procedures planned

      IX.   Literature cited

III. BUDGET (the following budget table is provided as a guide)

Budget Category	Cost
1. Project Materials (including tools and non-capital equipment)	
2. Services (machining, copying, PC board fabrication, etc.)	
3. Travel	
4. Publications, periodicals, etc. (literature relevant to the project)	
5. Other	
6. Special use supplies or items	
Total Direct Costs	
Indirect Costs (include F&A and other)	
Total Project Budget	
Comments: SERC Capstones are enrichment opportunities for students. University collaboration is expected in order to minimize F&A and other overhead charges	

BUDGET JUSTIFICATIONS (please provide amplifying information for each category)

1) **Project Materials** (a general list of projected materials)

2) **Services**

3) **Travel**
    a) Anticipated travel must be justified. Provide estimates of trips, personnel, durations.

4) Publications

5) Other:

6) Special use supplies or items. Examples may include:
   a) Computer hardware and software not provided by the university
   b) Laboratory and shop equipment(please see notes below on purchase of capital equipment)

Special use supplies will require compelling justification.

<u>**Additional Notes**</u>

Facilities and Administrative Costs (F&A)
SERC's policy on university Facilities and Administrative costs on Capstone Marketplace awards is provided on the website. SERC's Capstones are intended to be enrichment opportunities for undergraduate engineering students. Universities are expected to collaborate on projects by contributing direct labor, facilities and equipment, material, services, etc. to support student teams. F&A rates and other overhead charges are factors in award selections.

Status and Residuals
SERC Contracts will be Firm Fixed Price awards with milestone payments. Universities shall include in their proposal, brief descriptions of how they will manage Capstone funds. Student team project reviews will be milestone deliverables under the contract. Updates on Project spend plans are expected in these reviews. Universities must state their intended disposition of residual monies at the conclusion of Capstone Project work.

Restrictions on the use of SERC funds
Capstone project funds are not allowed for:
1) Purchase of capital equipment (purchase of durable items with a cost of $5000 or more; these will require special permission)
2) Personal items (t-shirts, banners, apparel, etc.)
3) Personal computer hardware, software, electronics, or other IT support not required for the Capstone Project
4) Books, magazines, periodicals, subscriptions, other reference material not required for Capstone Project execution
5) Travel not required for Capstone work
6) Direct labor charges for faculty, support staff, consultants, etc.

For authorized Capstone Marketplace travel, expenses including transportation, lodging, meals, subsistence and miscellaneous shall comply with GSA regulations.