

16 Aug 2021



## CAPSTONE Marketplace PROJECT PROPOSAL INSTRUCTIONS

### GENERAL INFORMATION

The System Engineering Research Center’s (SERC) Capstone Marketplace has posted new announcements for university senior design teams, “2021-2022” Research Topics” on the [www.capstonemarketplace.org](http://www.capstonemarketplace.org) website. Academic institutions intending to pursue a SERC award for their students are encouraged to submit an “Expression of Interest” (EOI) to SERC, using the website template. Request For Proposals (RFP) will be sent to universities as long as Research Topics remain open. Awards to multiple teams at different universities, for selected Research Topics are possible, and collaborative efforts between universities 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.

### REQUEST FOR EXPRESSIONS OF INTEREST (EOI)

Universities and faculty start their participation in the award process by submitting an Expression of Interest (EOI) to the Capstone Marketplace website. Project Topic titles shown on the website are updated with the number of EOI’s received for each Topic. A fillable EOI template is available on the website in the “Process” section and can be sent directly to the Marketplace. Information requested on the form is as follows:

- a) Name of University: \_\_\_\_\_
- b) Problem Numeric Designator: **(sample) 2021 NSWG 31**
- c) Problem Short Title: **(sample) Dry Combat Submersible Fatigue/Stress Management**
- d) Faculty Advisor(s): \_\_\_\_\_
- e) Academic Department(s): \_\_\_\_\_
- f) Contact Information  
(email and phone number): \_\_\_\_\_  
\_\_\_\_\_
- g) Comments: \_\_\_\_\_  
\_\_\_\_\_

## RFP and PROJECT PROPOSALS

As Expressions of Interest are received at the Capstone Marketplace, SERC issues a “Request For Proposal” for each EOI. If the Research Topic is no longer open, universities who have submitted EOI’s for the topic will be notified. The website will be updated periodically to indicate Research Topics that are closed. Along with a Request For Proposal, universities will be given access to additional project information, including detailed problem descriptions, background information, and government points of contact. Faculty and team advisors are requested to submit project proposals to the Capstone Marketplace as early as possible. This can be done without student teams assigned. SERC’s normal Capstones are two-semester projects. Proposals shall include a budget estimate and a schedule of proposed project milestones

**Universities pursuing multiple Research Topics are encouraged to designate a “Capstone Coordinator” who will be the single point of contact on campus for administrative details, including schedules, communications, deliverables, and other issues.**

The proposal describes the Faculty Advisor’s intentions for the conduct of the Capstone Project. **The Project Description is generally brief and should not exceed three (3) pages in length. Shorter is OK.** Project information sheets and Budget sections do not count against this limit. “SERC Capstone Marketplace Objectives” in the “Resources” section of the website gives guidance on what SERC is looking for--application of basic system engineering techniques in Capstone Projects. Proposal formats are provided in this document.

## PROPOSAL SUBMISSION

**Proposals may be submitted at any time after RFP. Proposals in advance of student team assignments are acceptable.** Proposals must be submitted electronically to [capstonemarketplace@stevens.edu](mailto:capstonemarketplace@stevens.edu). Please also send copies to [wshephe1@stevens.edu](mailto:wshephe1@stevens.edu) and [mdelorme@stevens.edu](mailto:mdelorme@stevens.edu). Attachments should be in MS Office or PDF formats.

Proposers should include “Proposal for (Short Title of Research Topic)” in the email subject line, and request a “read receipt” on submission. Universities are expected to submit a proposal for each project team. Multiple teams from different universities may be engaged on a single research topic, **but SERC expects only one proposal on a particular topic from any university.** There is no limit to the number of different Research Topics that may be awarded to a university.

## CONTRACT FORM

SERC will award Firm Fixed Price contracts to universities, with specific deliverables and incremental payments.

## AWARDS AND FUNDING

Proposals will be evaluated, and awards announced as rapidly as possible. SERC intends to complete awards for the upcoming academic year by mid-September. 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. **Appropriate justifications must be made in budget estimates**, in order that as many schools as possible may receive Capstone funding. In exceptional circumstances, awards of up to \$10,000 may be made.

**Government funds are not generally available until the end of the Calendar Year. All universities will be given an agreement that Capstone work is “at risk” until government funds are received at SERC and can be disbursed.** Milestone payments will be as specified in contract agreements; normally 4 milestones will be required, 2 per semester. Universities may invoice SERC after the successful completion of each milestone. **Copies of deliverables must be received at and accepted by the Capstone Marketplace for liquidation of invoices.**

A typical schedule of milestones will include:

- Completion of Kickoff Meeting with Customer, acceptance of written Project Plan and “Quad Chart”
- End of 1<sup>st</sup> Semester Interim Design Review
- 2<sup>nd</sup> Semester Interim Design Review (usually before Spring Break)
- Final Deliverables, Demonstrations, Final Report and Presentations (at the end of the Academic Year)

## ADDITIONAL NOTES ON SELECTION AND AWARD PROCESS

1. Universities must have a current Capstone Marketplace account. Instructions for joining the website are available on [www.capstonemarketplace.org](http://www.capstonemarketplace.org).
2. Capstone Marketplace Research Topics are posted on the website. This list contains Problem “Numeric Designators” and “Short Titles” (for Example: “2021 NSWG 31 Dry Combat Submersible Fatigue/Stress Management”), as well as a paragraph on the “Problem Description”. Topics for research have been submitted to SERC by government organizations using a standardized Problem Nomination Worksheet form, which will be made available to schools who have expressed interest to submit proposals. This worksheet includes background, previous research efforts, government “customer” expectations for project outcomes, and Points of Contact.
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 project documentation, to allow the Marketplace to track numerous team efforts.
4. University-Unique Research. Universities may now submit their 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. Considerations will include:
  - 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 which may be relevant
  - e. Alignment with SERC “Capstone Marketplace Objectives”
  - f. Past performance on Capstone projects
  - g. Funding requested (Please note SERC policies on administrative overhead and direct labor costs)

### **“Short” is OK when submitting proposals**

8. Awards will be announced as rapidly as possible, to facilitate the start of Fall Semester academic activities. SERC intends to complete awards on current 2021-2022 Research Topics by the end of September. Some “Research

Topics” may not be pursued; the scope of awards will be based on the extent of academic interest, government sponsor participation, and funds available.

9. Additional Research Topics from Capstone sponsors may be announced on the website at any time.
10. Research Topics that are not assigned in the Fall may be available for Spring Semester project starts.

## **POST AWARD**

Capstone student teams will have government organizations and Subject Matter Experts as their “customers”. SERC’s “Capstone Marketplace Objectives”, referenced on the website, document SERC’s concepts for teams’ and academic advisors’ relationships with government organizations. 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 to know the terms and conditions of the SERC contract, including descriptions of deliverables. An early 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 agreement between the student team and a government “customer” to manage expectations on the conduct of the project. The plan is presented by students at a “Kickoff” meeting or First Design Review. The plan should include:

- a. Statement of Work (what the Project Team is to do, including objectives and specific deliverables)
- b. Project Organization (students and “customers”)
- c. Facilities and Equipment
- d. Schedules and Reporting Plan (including development path and milestones)
- e. Budgets and Spend Plan
- f. Intellectual Property
- g. Closeout Plan for Project, including disposition of residual funds, materials, government property, etc.

(see website Project Plan Outline for more information)

## CAPSTONE MARKETPLACE PROPOSAL

### I. PROJECT INFORMATION SHEET:

- a) University Name: \_\_\_\_\_
- b) Numeric Designator  
and Research Topic Short Title: \_\_\_\_\_
- c) Faculty Advisor(s): \_\_\_\_\_
- d) Academic Department(s): \_\_\_\_\_
  
- e) Contact Information.  
Include Academic and  
University Business Office contacts: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
- f) Project Period: \_\_\_\_\_
  
- g) Project Team Name (if known): \_\_\_\_\_
  
- h) Requested Amount: \_\_\_\_\_
  
- i) Additional Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### II. PROJECT DESCRIPTION (3 pages max)

**Description should include the following:**

- a) **Project Title** (please include Numeric Designator and Research Topic “Short Title”)
- b) **Organization**
  - i. Faculty supporting Capstone Project
  - ii. Approximate composition of student Capstone Team

**c) Project Execution**

Proposals in advance of student team assignments are expected. Proposers are to provide general descriptions of how their design team will be guided for the duration of the project, with special attention to any restrictions that may result from current health and safety considerations. Detailed descriptions of specific technical approaches to solutions are not required; these technical details are expected later from the student teams as they commence their design processes. The Capstone Marketplace web document

“SERC Capstone Marketplace Objectives” lists desired additional attributes regarding how student teams develop their designs.

Execution description should include:

- I. Intended activities
- II. System engineering and development approaches to be used
- III. Schedules
- IV. Closeout procedures planned
- V. University facilities, equipment, and resources available to Capstone Project
- VI. **Health and Safety during pandemic. Describe procedures for classes, access to facility/lab/equipment, or other student limitations that may affect completion of Capstone design projects.**
- VII. Previous Research applicable to Capstone Project
- VIII. Relationships with any government organizations or others relevant to Project (where applicable)
- 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, fabricating, copying, etc.)	
3. Travel	
4. Publications, periodicals, etc. (literature relevant to the project)	
5. Other	
6. Special use supplies or items	
<b>Total Direct Costs</b>	
<b>Indirect Costs (include F&amp;A and other)</b>	
<b>Total Project Budget</b>	
Comments: SERC Capstones are enrichment opportunities for students. We Universities are expected to collaborate with minimal 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**

Anticipated travel must be limited and justified. Provide estimates of trips, personnel, durations.

4. **Publications**

5. **Other:**

a. **Special use supplies or items. Examples may include:**

- i. Computer hardware and software not provided by the university
- ii. Laboratory and shop equipment

(please see notes below on purchase of capital equipment)

**Special use supplies will require compelling justification.**

**Additional Notes**

**Facilities and Administrative Costs (F&A)**

SERC's policy on Facilities and Administrative costs in Capstone work is provided on the website. Capstone efforts are intended to be enrichment opportunities for undergraduate engineering students. Universities are expected to collaborate with project contributions including direct labor, facilities and equipment, material, services etc. to support student teams. F&A rates and other overhead charges which are minimized or eliminated will be factors in award selections.

**Status and Residuals**

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. 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:

- a. Purchase of capital equipment (purchase of durable items with a cost of \$5000 or more will require special permission)
- b. Personal items (t-shirts, banners, apparel, etc.)
- c. Personal computer hardware, software, electronics, or other IT support not required for the Capstone Project
- d. Books, magazines, periodicals, subscriptions, other reference material not required for Capstone Project execution
- e. Personal travel not required for Capstone work
- f. Direct labor charges for faculty, support staff, consultants, etc.

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

**SERC CAPSTONE – PROJECT REVIEW USE ONLY**

Date Submitted: \_\_\_\_\_ Date Reviewed: \_\_\_\_\_

Approved: Yes \_\_\_\_\_ No \_\_\_\_\_ Amount Funded: \_\_\_\_\_