Senior Capstone Project Proposal

The project is designed for a team of students working toward completion of a project, within two semesters[1].

Title	Power Line Carrier (PLC) Technology Study
Sponsor	Contact person: Brian Eicher Company name: Carrier Corporation
	Contact info: brian.eicher@carrier.com
Description	Identify Power Line Carrier technologies that meet the following requirements: 1. Low cost – Less than $5 in 100K qty 2. Reliability – Standard UTEC RES Validation requirements 3. Bandwidth – no less than 38.4K baud 4. Operate at least min 250ft on 18-31VAC signal 18-24AWG wire, non-twisted, non-shielded cable 5. Connection flexibility – Daisy chain, Star network, etc. 6. Multi-point taps – minimum of 5 devices on bus Make prototype of a system of the strongest candidates Test, validate, document results Include finding the boundaries of the technology. Test to failure. Where/when will it fail? Present and demonstrate results.
Disciplines (ME, EE, CS, etc.)	EE
For ECE	Hardware: RF assembly, Possible PCB design, Analog and digital HW design, Soldering techniques
Estimated budget	$2500

[1]In general, one semester has 15 weeks. For a 3 credit hours course, a student is expected to work minimum of 8 hours per week for the project which is equivalent to minimum of 120 hours.
[2]This information is for reference purposes only, and it will help us to identify a suitable faculty advisor and form student teams..

Technology Disclosed? If so, what?	No
Additional requirements	
NDA or IP Assignment agreement requested?	No

Technology and ECCN:
"If your project involves 'technology' that is either (a) not publicly available or (b) includes proprietary source code (not executable files), then it requires an ECCN." 'Technology,' for this purpose, is defined as "information necessary for the development, production, use, operation, installation, maintenance, repair, overhaul or refurbishing of an item. Technology may be in any tangible form, such as written or oral communications, blueprints, drawings, photographs, plans, diagrams, models, formulae, tables, engineering designs and specifications, computer-aided design files, manuals or documentation, electronic media or information revealed through visual inspection."

Interactive tool to determine ECCN:
https://www.bis.doc.gov/index.php/export-control-classification-interactive-tool

NDAs and IP Assignments:
The sponsoring company typically has NDAs and IP assignment forms that it wishes to use. Neither the NDA nor the IP assignment is an agreement with Purdue directly; these agreements are between the students and the sponsoring company. Of course, our office can review the company-provided documents to be certain it aligns with Purdue's standards. Alternatively, our office has draft agreements which we could provide for the sponsor's use. Again, as NDAs are between the student and the sponsor, Purdue cannot be a party to or advise the sponsor or the student on the NDAs, other than to outline some basic expectations as to fairness and suitability of the NDA to a student project.

Sponsor Acknowledgements:
By way of background, Purdue University professors who have senior capstone class projects involving outside sponsor companies notify our office so that we can prepare an acknowledgement form for the sponsoring company's completion. This is not a contract but an acknowledgement form signed by sponsoring companies which lays out Purdue's guidelines regarding class projects and outside company inputs, potential export control issues, and student intellectual property. Some sponsoring companies offer a monetary donation to the project, but that is not a requirement.

[1]In general, one semester has 15 weeks. For a 3 credit hours course, a student is expected to work minimum of 8 hours per week for the project which is equivalent to minimum of 120 hours.
[2]This information is for reference purposes only, and it will help us to identify a suitable faculty advisor and form student teams..