Title of Project: Space Weather Education and Research Initiative

Opportunities for Undergraduates Questionnaire

Name:

University:

Department/Program:

Role: Teaching Prof. Research Prof. Researcher Other:

Approximate number of students in dept.: 10 20 >20

Approximate dates of your Fall Semester: \_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_

Approximate dates of your Spring Semester: \_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Learning Opportunities
2. Does your university already have space weather curriculum for undergraduate level (not grad/undergrad mixed) courses? Yes, No, Under Development
3. Does your university already have space weather curriculum for grad/undergrad mixed level courses? Yes, No, Under Development

We would like to set up a curriculum that can be utilized in **semester-long** courses ranging from basic introduction to space weather through advanced studies. The courses would be useful for broad educational opportunities, as well as preparation for space weather internships at the Community Coordinated Modeling Center (CCMC) and Space Weather Research Center (SWRC) at NASA GSFC. The potential students can be categorized in two ways: 1) science or non-science majors, and 2) interested or not interested in training for space weather operations internships. Our goal is to generate education material for students in all of these category combinations.

1. If an undergrad level space weather course were offered at Goddard, would your university give credits to your students (in some form like Special Topics/Directed Reading)? Yes, No
2. If undergrad space weather courses were offered at Goddard, indicate approximately how many students from your school might be interested in:
   1. 1 credit “Basic” Course intended for either non-science majors or those interested in a very broad introduction to space weather. This course is not sufficient to prepare a student for research in the field, or for forecasting duties. Recommended to students interested in SW-Dev and SW-Med internships. Spring 2013 \_\_\_\_\_\_\_ Fall 2013 \_\_\_\_\_
   2. 2 credit “Basic Plus” Course intended for non-science majors or science majors who are interested in forecasting (SW-Ops internship) and/or a more in-depth introduction to space weather than the “Basic” course. This course is not sufficient to prepare a student for research in the field (SW-Res Internship). Spring 2013 \_\_\_\_\_ Fall 2013 \_\_\_\_\_
   3. 3 credit “Advanced” Course intended for science majors who will probably do research in the field, or for science majors looking to fulfill degree requirements. Spring 2013 \_\_\_\_\_\_ Fall 2013 \_\_\_\_\_\_
3. Would you like to participate with the CCMC/SWRC in the development of undergrad space weather curriculum? This would include providing materials (if you already have experience teaching space physics), plus feedback and other input through emails (to begin soon), with the possibility of another half-day workshop at Goddard? Yes, No
4. We plan to generate online materials that professors from around the world can incorporate into their courses. The goal is to make informative but also interactive presentations by incorporating exercises and lab activities using CCMC tools. This includes narrated ppt presentations (with notes and possibly voice narration), all including links to iSWA layouts to use in labs. We will also continue to produce youtube videos. Is this type of content useful for you? What other type of education materials would be useful for you? (Like Quizzes, Exams, More extensive project ideas maybe)
5. Are you willing to help us coordinate with other departments at your university to encourage the use space weather materials in courses for non-majors? Yes, No
6. Are you interested in using CCMC tools (such as iSWA and Runs-on-Request) in the classroom? Yes, No, Already Used It
7. If you are interested in using CCMC tools (such as iSWA and Runs-on-Request) in the classroom, would you need our help to develop material/lesson plans? Yes, No, N/A
8. Are you interested in applying for funding opportunities to generate documentation for CCMC tools? Yes, No
9. Two-weeks Space Weather REDI camps: compressed intense-study (8h/day) version of 2 credit semester-long course to be offered ones or twice a year: during the first two week of summer internship (first two weeks of June), during winter breaks (TBD).
   1. Will your university give credits to your students (in some form like Special Topics/Directed Reading) for successful accomplishment of two-weeks intense-study course? Yes, No
10. Space Weather Operations Opportunities (SW-Ops Internships, paid, certification by the SW REDI management is required)
    1. Are there students in your program who may be interested in SW-Ops paid internships (8-16 hours/week during the academic year)?

Yes, No (if no, go on to Question 4)

* 1. Based on your knowledge of a typical course schedule in your program, does 8-16 work during evening/weekends seem feasible for the following: sophomores (Yes, No), juniors (Yes, No), seniors (Yes, No) If not, what would be more reasonable?
  2. To be admitted as a SW-Ops academic-year interns students have to be trained and certified by the SW REDI management as entry level forecasters. To fulfill training requirements students need to successfully accomplish semester-long 3 credit course OR two-weeks intense-study course. Certification by the SW REDI management as an entry-level space weather analyst/forecaster requires at least 20 full 8 hours shifts of shadowing advanced forecasters. Summer internship is recommended. Opportunities to fulfill these requirements: a) practicum during semester-long courses; b) 10-weeks summer SW-Ops internship, that includes 2-weeks of intense training (paid); c) 2-weeks intense training during summer or winter camps PLUS at least 20 full 8 hours shifts of shadowing advanced forecasters (unpaid apprenticeship).
  3. How many students from your program might be interested in participating in 2-weeks intense training during?:
     1. Winter break: \_\_\_\_\_\_\_\_
     2. Summer break: \_\_\_\_\_\_\_\_
  4. If we were to offer training during winter break, which dates would be best for your students?
  5. Would your university offer students financial support during the 2-weeks intense training camps?

Salary? Travel expenses?

* 1. Would your university offer students credits and/or pay a salary during the academic-year apprenticeship?

Both, Credits, Salary, Neither

1. Would you be willing to help us coordinate with other departments at your university to encourage space weather forecasting participation by non-physics/astronomy majors? Yes, No
2. Science Research
3. Are you interested in partnering with the CCMC/SWRC for undergrad research opportunities? Yes No (If no, go on to Question 6)
4. Do you already have one or more students who are interested in doing research? Yes, No (if No, go on to Question 3g)
5. If Yes, how many students? \_\_\_\_\_
6. If Yes, when would the student(s) like to begin research? \_\_\_\_\_\_\_
7. If Yes, what type of knowledge base does the student have in space physics? None, A little, Some
8. If yes, do you have a research project selected, or would the student develop an idea with the CCMC/SWRC team? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. Is it possible for students from your university to be on center during the hours they work on research? Yes, No
10. If remotely, would you pay to send them here for initial training during summer/winter training camps?
11. Will your university offer credits to students for CCMC/SWRC research? Yes, No
12. Will your university offer salary for students to do CCMC/SWRC research? Yes, No
13. Will your university consider part-time research internship (SW-Dev) as an option to fulfill some of the graduation requirements?

Yes, No

1. Are you interested in applying for funding opportunities to for undergraduate research (through the NSF, for example)?

Yes, No

1. In 2012, the CCMC held its first Student Research Contest (http://ccmc.gsfc.nasa.gov/support/contest-winners.php). Students were encouraged to submit projects from either coursework requirements or their own research. Two winners were selected, and travel support was awarded to the GEM and SHINE workshops. We plan to continue the contest in 2013 and 2014. Are you interested in participating? If so, would these be research students, or coursework, and approximately how many? This year, the deadline was May 1st. Does that deadline seem reasonable for spring courses with projects due at the end of the semester? If not, what deadline would work better?
2. Software Development
   1. Are you interested in partnering with the CCMC/SWRC for undergrad software development opportunities?

Yes No (If no, go on to Additional Comments Section)

Will your university consider part-time software development internship (SW-Dev) as an option to fulfill some of the graduation requirements?

Additional Comments: