

Jordan C. Hanson
Assistant Professor
Dept. of Physics and Astronomy
Whittier College

Outline for Assessment Section of Motorola Solutions Foundation Preliminary Grant Proposal

1. Pieces of Information from ASAP Grant Assessment Process
 - a) Measurable project goals were defined in advance
 - i) Increasing Hispanic participation in STEM majors, research and graduation
 - ii) Goals should be measurable
 - b) Formative and summative evaluations were conducted
 - i) Formative in first year or so
 - To determine if programs were being implemented: personnel hiring, internships launched, STEM research being completed
 - To determine quality of implementation
 - ii) Summative evaluation in final year of project
 - Were defined goals met, and how was this measured
 - Examples: Hispanic students participating in STEM by declaring majors and graduating on time, performing research
 - c) External group (Cobblestone Inc) was used to make key measurements and observations
 - d) To track things like demographics of student participants, need to conduct surveys
 - i) Survey both the direct participants and indirect participants
 - ii) Count people, so we can report numbers for each unique component
2. How can we apply the ASAP experience to this program?
 - a) Research Fellowships
 - i) Defined goals for Research Fellowships
 - To boost Diverse and First-Generation participation in engineering research at Whittier College through direct recruitment
 - To acquire 3D printer and related accessories for RF system fabrication
 - Implement CEM coding boot-camps and measure progress
 - Translate designs into practical formats for 3D printing
 - Use 3D printer to fabricate working designs and test them
 - ii) Assessing the goals for Research Fellowships
 - (**Formative**) Create and implement entry form for direct participants, capturing demographic information, personal goals, how they heard about the program
 - (**Formative**) Checklist to be completed by PI: have we acquired the 3D printer and appropriate accessories on schedule?
 - (**Formative**) Coding boot-camp: measure participation hours, retention of CEM and Python skills, with survey and pre/post skill checkpoints
 - (**Summative**) Design translation period: log man-hours spent moving CAD designs into format compatible with 3D printer, meet with past Fletcher-Jones participants to share knowledge. Survey direct participants to determine usefulness of knowledge transfer
 - (**Summative**) Form to be completed by PI, for checkpoints in 3D printing: how many working prototypes have been produced, as quantified by RF bench testing
 - b) Curricular Integration
 - i) Defined goals for Curricular Integration
 - Student-led presentations of research process and findings to introductory

electromagnetism courses. Live demonstrations and discussion panel for future recruitment to engineering and technology research

-Student-led presentations of research process and findings to advanced courses in electromagnetism and digital signal processing. Live demonstrations and data-sharing for analysis activities, plus discussion panel for future recruitment to engineering and technology research

ii) Assessing the goals for Curricular Integration

-(**Summative**) Examine course evaluation data for courses that included curricular integration for evidence the research enriched the courses relative to past years

-(**Summative**) Survey the students specifically about the research-based activities, either through existing course evaluation software or separate survey

-(**Summative**) Count everyone to calculate total indirect participant contact hours