Women in Engineer (WIE)

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Fees Request for 2014 - 2015 Academic Year

N/A

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“We acknowledge that the Fees Committee does not award actual dollars, but rather a penny fee that earns dollars based upon student enrollment levels. Any differences between anticipated and actual income resulting from changes in enrollment are the responsibility of the student organization, not of the Fees Committee.”
Is your organization an IRS 501 (c)(3) not-for-profit?  Yes __________  No  X

If yes, please provide proof of your organization's 501(c)(3) status.

Funds are being requested for (check all that apply):

General Operating Support:  X  Start-Up Costs:  X  Capital:

Project / Program Support:  X  Technical Assistance:  Other (List):

Budget

Dollar Amount Requested  $ 14,500

Total Annual Organization Budget  $18,900

Total Program Budget (apart from General Operating)  $38,532
Section 1: Narrative

Brief summary

The WIE group was officially founded on September 2013. The concept for WIE was envisioned by Sera Shane, Melissa Neumann, Meghan Fears, and Sandra Arnold in our electric drives class while pondering the scientific achievements in our generation. Initially, our group was a fun way to get freshman women into electrical engineering and computer science. Within the first month of our group being formed, we had over 20 members, the mission matured and was refocused to address the creative needs of students here at the University of Minnesota. We wanted to do outreach for secondary schools in the urban areas, do projects and also recruit more women in Electrical Engineering and Computer Science. The ratio of women to men in electrical engineering is 1:10 with the one of the lowest numbers. Our president, Melissa Neumann, made a successful effort to include men into the group and not shy away from our name generating the coed, interdisciplinary group composition we have today.

We craved an interactive approach to our education, and the chance to apply our skills and knowledge to scientific projects of our own. We wished to provide a flexible environment where students might gather and produce their own unique projects; expressing their creativity and developing their organizational skills. By establishing a positive community atmosphere and nurturing a can-do attitude, we embarked on a mission to produce visionary leadership in science and technology by allowing students to experiment and collaborate on challenging projects, outreach events and recruitment, all the while developing their own sense of confidence and resourcefulness.

We have done over 6 outreach events within the last 5 months, going to elementary and secondary schools to do demos. Our demos ranged from conducting glass to plasma demos. We
also have done 5 projects that are currently in the works which will be showcased in the public event in April 2014. Those include bioluminescent bacteria to nanocube construction. We have also done a public event in which students can create organic solar cells within 30 minutes, on campus in where 100 students attended.

Our mission does not end here, though. We would like to provide resources to continue to do projects and also do more outreach to the urban areas. We would also like to do more outreach on campus to diversify the campus and let non-engineering and engineers from other disciplines do fun demos such as making their own solar cells or other fun events that are both hands on and educational. We want to provide a mentorship program for women who are in electrical engineering and computer science. We would like to invite more speakers to campus to talk about the future of technology and integration with other fields.

**Organization Mission, Vision, and Core Values**

**Vision**

To revolutionize the way students interact with experiments in order to produce greater innovators, leaders, and inventors.

**Mission**

To enrich students with the knowledge, insights, and wisdom of great minds and provide the tools and confidence to create new paths for themselves by providing hands on experiences and giving live demonstrations.

**Core Values**

**Passion** – Passion drives and challenges WIE members to create new inventions and spread their love of new ideas, as well as pass this passion onto elementary school, middle school and highschool students.
Dedication to projects – WIE encourages sophisticated projects and outreach and gives students the tools and resources they need to create high quality results, every time.

Communication of ideas – WIE fosters an atmosphere that encourages constructive feedback and provides opportunities to share and express ideas with peers.

Creativity and curiosity – Creativity and curiosity drive WIE members to think in unique ways and provides the campus with a unique perspective.

Outreach on Campus – WIE makes an active effort to diversify the campus by showing other non-engineering students engineering crafts or demos and speakers on the integration of science and art. We want to show people how passionate we are about the sciences, and would like other students to share in our appreciation. We want to do this by having events such as the organic solar cell event.

Outreach to secondary schools – we want to try to recruit students and inspire students to go to the university in urban areas.

Safety – Foresight to carry out innovative experiments in a safe environment.
Goals of WIE

As a group who wishes to address the needs of students here at the University, we also endeavor to incorporate the desires of our members into the vision and structure of our organization. Below are some of the various responses from our members to the question, “What would you like to get out of WIE?”

1. Act as a catalyst for providing the organizational and technical skills which will assist students in finding satisfying and engaging jobs, internships, or acceptance into higher-level education.

2. Invent products with economic values

3. Encourage students to be creative, and share their potential with the world.

4. Publish research papers

5. Engage freshman in stimulating and productive activities while introducing them to the incredible University resources available to them.

6. Incorporate student leadership, invention, and innovation skills in all aspects of our projects and organization as a whole.

7. Facilitate a close and effective channel of communication and collaboration with University administration and faculty.

8. Collaborate with faculty from a variety of departments while creating active dialogue about their expertise in their field of study and how it pertains to current projects.

9. Gather the brightest students at the U to work together on cross-disciplinary projects

10. Become nationally recognized as a group, and better able to advertise the potential of students here at the University of Minnesota.
11. Bring technical experts and business leaders to speak and engage students in our group.

12. Change the way success is recognized at the University of Minnesota.

13. Have many projects dedicated to bringing the community together for a common experience.

14. Work with other student groups on a project.

15. Inspire secondary school students to get an education.

We as a student group take to heart the passions and innovative potential of our members, and work tirelessly to incorporate the members’ visions into our decision-making process.
Relationships

WIE’s initiates technical activities similar to other organizations such as Tesla Works, Innovative Engineers, Engineers without Boarders, Triangle Fraternity, KHK Engineering Fraternity, Go First, and Solar Car. However, we provide a unique and necessary aspect to the university by providing a loosely-structured environment for the university community to come and implement their own ideas. This structure consists of a formal proposal-writing process for members to obtain a project slot, and a body of leadership who can both oversee and advise the process of planning, delegation and execution of these ideas. However, the planned projects are not preconceived, but instead introduced by the members themselves. We attract the self-starters, and though we participate in similar activities, it is our distinct philosophy which brings out the creativity and motivation of our members.

Our relationships with student groups include the CSE expo, IEEE, Student Today Leaders Forever, Society of Physics Students and Solar Car. We plan to continue our connections with these student groups to ensure the best and brightest students maintain important connections with a large number of diverse and technical communities.

Illustrate the need

WIE is one of the only groups on campus that does outreach in engineering to post-secondary schools and does projects. This type of flexible group leaves students lots of room for innovation and invention. It is not constrained by the limits of a project. WIE does not focus on just one project, discipline, or idea but on a host of different projects, cross-disciplinary cooperation, and brainstorming.
We need money to continue to do outreach events on campus, continue to fund our materials costs and also continue to do outreach events off campus. We kind of scrape at the bottom of the barrel and have been lucky to get money here and there as well as using materials previously used by other groups or donated to us. Because our group is new and we are passionate, we want to be able to formalize this and have the resources we need; Material costs for projects, for outreach events on campus and outreach events off campus. We will have some access to labs and we also have our own room, we need to be able to provide a culture for our group and need some operating cost. As of now, we have most of our spending going to the projects that are going to be showcased at an event in April 2014, during CSE week. We also want to provide a community for our members (anyone can be a member) and help them succeed and give them support to succeed. We have goals, and we have demonstrated that even with a limited budget (7000$) we have done so much. We need to continue this way and also expand to accommodate for more of a need on campus. It would be impressive to do projects with the secondary school students and also throw bigger interactive events on campus to diversify the campus culture. We would also like to provide a community for the members, to help them support their education. We would like to be able to subsidize conferences in interested fields. Invite speakers and organize public colloquia on campus.

**Student Benefit**

- **Diversify the campus**: we want non-engineering and engineering students from other disciplines to share our passion by creating public events that are hands on and interactive.
- **Projects:** Students can join the fun and do projects. Anyone can do a project, even non-members. We have 10 non-members doing a microwaves project.

- **Events on Campus:** An example we have already hosted is a solar cell event, in which students got to make organic solar cells within 30 minutes without any prior knowledge. 100 people attended this event.

- **Self development:** Students can take the initiative and organize the outreach, organize and sustain their own projects. We also have a mentorship program and have a community to support each other. Lastly, we try to develop ourselves and any student who wants to take advantage of this, with speakers from industry and also colloquia. We also hope to be able to send students on conferences.
Section 2: Organization Chart

President: Melissa Neumann
Vice President: Sandra Arnold
Treasurer: Sera Shane
Secretary: Kellie Ryan
Event Planning Coordinator: Meghan Fears
Section 3: Performance Reports

**Organic solar cell event:** 100 student attended and 20 students prepared and organized the event. Attendees were able to make and test their own solar cells with raspberries.

**Microwaves project:** students got to make an RF amplifier.

**Outreach events:** We have done 6 around the area. The last at Garlough elementary with over 400 students in attendance, we did each class separately and had 7 demos.

**Demos we worked on:**

- **Jacob’s ladder:** 15 students made a jacob’s ladder which allows air to ionize and become conductive.
- **Methyl borate:** Green fire that shows how combustion engines work. 5 students made this.
- **Conductive glass:** 2 students performed this demo to make glass conductive!
- **Rocket fuel:** We used gummy bears to show how rocket fuel worked. 50 students attended watching this demo on campus.
- **XBEE:** We showed how data bits are transferred and students could program their own. 10 students

Many many more. We’ve probably done 10-30 demos.

**Self playing piano:** 20 students continued the work on a self playing piano.
Nanocube:  Self folding nanocube with 10 students and 1000 middleschool students will get to see at the event in April and also the student body. With help from professor.

Bioluminescent bacteria:  10 students worked on finding a strain and helping it develop with help from a professor. Also at the event in April with 1000 people in attendance.

Visitors:  Rep from Medtronic to come talk to our group
           Rep from Digi to come talk to our group
           Rep from Spectrum to come talk to our group

Mentorship:  We have paired our members

Social events:  Girl’s tea with someone from industry
               Coffee with someone from industry
Section 4: Reserve Accounts

WIE has two accounts and will be transferred to one. Our total balance is 750$. We need this money on hold in case we spend more than we anticipate.
Section 5: Fees Request

We are requesting 14,500 for our first request. We will probably have summer meetings half time.
Section 6: Description of Impact of a 10 Percent Reduction in Fees Request

10% impact would mean we would have to cut corners on our projects and also not get us all the operation costs and such. We are very careful to estimate our projects and also need the exact amounts for what we need.