**Evaluation form for students**

1. What grade are you in? 4 (11th), 3 (12th)
2. Are you male or female? 3 Male, 4 Female
3. Where did you hear about this masterclass? 6 his/her physics teacher: 1 WIPAC
4. Tell us about your motivation to participate in the IceCube Masterclass (select all that apply)
   1. I was curious about the format
   2. I wanted to learn more about IceCube
   3. I love science 1
   4. I´m interested in physics and astrophysics 3
   5. I wanted to meet real researchers
   6. Other: specify all of the above 3
5. General assessment of the masterclass: “The schedule was well-organized.” (select only one option)
6. I strongly disagree
7. I disagree
8. I agree 5
9. I strongly agree 2
10. Assess each event. Give a mark from A to E: *A - excellent, B - above average, C - average, D - below average, E - very bad!*
    1. South Pole webcast 2A, 4B, 1C
    2. IceBreaker 4A, 2B, 1C
    3. Lectures 2A, 3B, 2C
    4. Analysis activities 4A, 2B, 1C
    5. Virtual sessions with peers from Delaware 2B, 3C,2D
11. What did you like most about the masterclass?

3 analysis, 1 icebreaker, 2 hearing from everyone about their experience, 2 generic learning about astrophysics/science

1. What did you like least about the masterclass?

3 too much talking/lectures, 1 engineering parts, 2 tight schedule

1. What were the two things (bits of knowledge, or experiences) that you think you’ll most remember from this masterclass?

Statistics, types of particles (2), skyping with the south pole, DOMs are like reverse lightbulbs, Jake’s enthusiasm for sky maps, how to reject atmospheric neutrinos, look for cascades, experiment is 1 cubic-km, the icecube model, learning about the huge undertaking project, barbeque flavor pizza, that we can map the universe by looking through solid objects, the effort to build this project, and the future projects to come.

1. Do you think your experience today will help you with school science classes? (select only one option)

Yes 4 No Not Sure 3

* + 1. Why/why not?

1. Did the masterclass make you feel … (select only one option)
2. More interested in studying science  4
3. The same, I already wanted to study science  3
4. The same, I don’t want to study science
5. Less interested in studying science
6. Had you heard of IceCube before this masterclass?

Yes 7 No

1. What do you think of IceCube’s research?

Interesting (4), cool people, fascinating (2), conflict between the usefulness of research and how interesting it its (still gathers some valuable information), intriguing, cool

1. Would you recommend the IceCube Masterclass to other students? (select only one option)

Yes 7 No Not Sure

1. Why/why not?
2. Do you have any other comments or suggestions that you´d like to share with us?

-Thanks for holding the masterclass

- Would be nice if you could produce some videos or articles for students to watch before arriving at the masterclass so that the level of knowledge is more similar

Maybe some more introductions to meet the other participants.

**Feedback from Teacher**

This was the list of questions sent, as an example of things we would like to learn from him

1.- Would you support student participation in upcoming editions?

2.- What did you like most/least in the current program?

3.- How could we improve the experience for the students?

4.- Are the resources on the website and wiki useful for you? Why?

5.- Can you point to resources, activities, or ideas from this masterclass that you think could be integrated into a classroom activity with proper support from IceCube?

6.- Please let us know any other comments/suggestions you might have.

And this is the feedback from the teacher:

Thanks again for the amazing session you put together for the Masterclass. I really enjoyed it a lot! Here is some feedback according to your questions:

1. I would support students participating in the class

2. I liked a lot the talks by the researchers, technicians and postdocs, as they allowed students to see the passion that these people have for their work. I liked the introductory activity where students became aware of the specialness of the neutrino.

3. I think a quick overview of IceCube would have been good for students that had had not exposure. Perhaps the Wiki was supposed to do this for the students, but I am not sure how much they used the materials I sent them ahead of the class. Perhaps after the introduction with the different particles summarize clearly why is the neutrino so different and hard to measure. I would then explain Cherenkov radiation and how DOM's work. Jim's talk was very good. It would be good to have a summary at the end saying specifically that detecting high energy neutrinos requires a large volume of transparent material and therefore the connection to the pole. At this point students would know that neutrinos are hard to detect, that Cherenkov radiation allows their detection and why in the South Pole. This would set the floor for the rest of the talks.

I really liked the class. These are a few suggestions that might or might not work.

4. The resources on the Wiki are great. In retrospect I should have become more familiar with them and create some assignments for my students. I just made the links available for them to read. I think having specific questions or tasks to do based on that material would have helped. I would propose coming up with a list of requirements that students need to satisfy before the class in terms of their content knowledge. Do you want them to arrive knowing about Cherenkov radiation, for example? Then have them perform a task based on the Wiki content in which they learn about Cherenkov radiation. That way this no longer needs to be explained during the class.

5. I have a lot of idea embryos that I need to develop more. As I mentioned before, I am working on developing a unit for Astronomy based on particles. I will let you know as this idea progresses.

6. Thanks again for this great opportunity!