EXPLORATION OF THE MOON AND ASTEROIDS BY SECONDARY STUDENTS

MENTOR AND ADVISOR ROLES
The mentors (teachers) and advisors participating in the Exploration of the Moon and Asteroids by Secondary Students (ExMASS) are the program’s strongest, and most important, assets. The ability of these two roles to work in concert, and individually, is paramount to the success of the ExMASS program.

What is the role of the mentor? What is the role of the advisor? How do the mentor and advisor work together to ensure a great experience for students? These are important questions as the roles may not be well understood, particularly when both positions have limited experience mentoring/advising students in research. Both mentors and advisors have important solitary, and collaborative, roles. The figure below illustrates the individual roles of the mentor and the advisor, as well as where these roles intersect. The table on the reverse further outlines and elaborates on each role. Following the table is advice that new mentors and advisors to the ExMASS program may find helpful.
### Mentor Role

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
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<tbody>
<tr>
<td>Student Team Manager</td>
<td>- Set team deadlines/schedule based on ExMASS program deadlines; Provide team structure; POC w/ advisor; should initiate all contact.</td>
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<tr>
<td>Initial Content Expert</td>
<td>- Conduct Moon and Asteroid 101 (including presentations) over the summer preceding the program year.</td>
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<tr>
<td>Scientific Paper Reviewer</td>
<td>- Read, digest, and present information from scientific papers (recommended by advisor).</td>
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<tr>
<td>Information Gatekeeper</td>
<td>- Distribute/Withhold pertinent information as necessary.</td>
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### Advisor Role

<table>
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<tbody>
<tr>
<td>Scientific Content Interpreter</td>
<td>- Answering questions from student teams about content in a paper after reading the paper, or as students read the paper.</td>
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<tr>
<td>Scientific Paper/Resource Distributer</td>
<td>- Obtains and distributes relevant published papers, abstracts, etc. students should have at their disposal for their particular research topic; Identify relevant data repositories and assists student teams obtain relevant data.</td>
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<tr>
<td>Science Community Liaison</td>
<td>- Contacts other scientists with questions as necessary.</td>
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### Mentor and Advisor Role

- Assist student teams with deciding on a research topic (is it feasible given their time constraints, resources, etc.) and formulating their research question and research plan.
- Provide positive reinforcement/encouragement throughout the entire process.

### Advice for New Mentors

- Set consistent times for meetings.
- Emphasize the importance of commitment to the students.
- Using class time whenever possible makes it easier.
- Lean on the expertise of those who have experience in this competition.
- Be prepared to deal with even the smartest students being lost concerning a research project.
- Carve out the time in advance. Keep in touch with the program coordinator and your advisor. Be fearless.
- Be vigilant about setting deadlines for you and your team and ask lots and lots of questions. You don’t know which ones will lead in a useful direction.
- Make a schedule, stick to it, and get a leader in the group to be the bad guy.
- Stick with it and keep your students motivated - they will get frustrated a lot!
• Use your advisors, they are tremendously helpful.
• Do it, get a very responsible group of students involved before you apply for the program.
• Adhere very closely to the schedule, and make sure you get a good start on the research in November and December. Think about how to help the students divide up the research work so that everyone in the group buys in and makes a real contribution. This project was an official course for our students so they got academic credit and a grade. I would recommend doing so. If it's an extracurricular activity then getting students to commit enough time could be a challenge.
• Be ready to dedicate a lot of time! Students will need a lot of guidance and help. If you want a professional product, the students will need a lot of professional help (you as the teacher and your [advisor]).

ADVICE FOR NEW ADVISORS
• Set up a routine with the team, request weekly updates and really try to insert yourself at the end, at the very least, to help them with their interpretations and conclusions. Be supportive, even if the team begins to falter, try to keep them motivated to the end.
• Have fun and try to establish an effective form of communication with the team early on.
• Go with the flow & let the students do the work. Give solid advice and be straight forward with them. Don't be afraid to provide tough criticism on projects.
• Let the kids go where they want to go. That is when they get the most excited and things actually get done.
• Let the teachers and students do the work. Wind them up and point them in the right direction, giving them course correction along the way.
• Reach out to your team if you haven't heard from them for a while. Skype on occasion so you can see them in person, and take time to get to know the students and to tell them about yourself. Don't expect them to be an expert on the subject or on preparing presentations.
• Talk to them, via phone and e-mail, a lot. If you can possibly do a visit about 2/3 of the way through the project.