



SAINT LOUIS
UNIVERSITY

Saint Louis University
Program Assessment Plan

Program (Major, Minor, Core): Graduate Programs in Geoscience, Graduate Programs in Atmospheric Science

Department: Earth & Atmospheric Sciences

College/School: College of Arts & Science

Person(s) Responsible for Implementing the Plan: Department Chair

Date Submitted: 31 May 2017, Updated 6 Oct 2017

| Program Learning Outcomes | Curriculum Mapping | Assessment Methods | Use of Assessment Data |
|--|---|--|---|
| <i>What do you expect all students who complete the program to know, or be able to do?</i> | <i>Where is the outcome learned/assessed (courses, internships, student teaching, clinical, etc.)?</i> | <i>How do students demonstrate their performance of the program learning outcomes? How does the program measure student performance? Distinguish your direct measures from indirect measures.</i> | <i>How does the program use assessment results to recognize success and "close the loop" to inform additional program improvement? How/when is this data shared, and with whom?</i> |
| The Goals below are based on the 5 goals specified by the University | Students are expected to progress towards their goals in classes, journal club, seminars and most of all during their research. | Graduate program assessment will take place in the Spring semester of a graduate student's first year, when students defend their Master's thesis and when they defend their PhD thesis. Three members of the thesis committee will evaluate the 6 goals selected using the rubrics listed below. The student will self-evaluate for each item for all 6 goals. A 5 point Likert scale will be used for each item. | A graduate education committee consisting of the graduate program coordinators and 2 other professors will meet at the end of each academic year to review the data. They will write a short report to share the findings with the full faculty and make recommendations for the future year. These will be discussed in a faculty meeting. |

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| <p>Goal 1: Assess relevant literature or scholarly contributions in the Earth & Atmospheric Sciences</p> | <p>Journal Club, Seminar, Graduate Classes, Research</p> | <p>1.1: Student can list the main journals in the field. 1.2: Student can outline the main areas of research in their field of study. 1.3: Student can identify notable research groups and investigators. Student can demonstrate broad knowledge of areas outside of their sub-specialty, and specific knowledge of publications in their field. 1.4: Student can indicate the current key issues and highly-cited papers in the field and identify emerging trends and new research directions. 1.5: Student can identify the most important historical contributions in the field and outline their importance.</p> | <p>See Above</p> |
| <p>Goal 2: Apply the major practices, theories, or research methodologies in the Earth & Atmospheric Sciences</p> | <p>Directed research</p> | <p>2.1: Student is aware of different skills needed to carry out research in E&AS, eg. data analysis, field work, numerical modeling, computational competence. 2.2: Given a figure, student could describe a method that could be used to generate it. 2.3: Student has demonstrated competence with several different skill sets. 2.4: Student has reached expert level in one type of skill. 2.5: Given a paper in the student's specialty, the student could create a plan to reproduce the study.</p> | <p>See Above</p> |
| <p>Goal 3: Apply knowledge from the Earth & Atmospheric Sciences to address problems in broader contexts</p> | <p>Presentations, outreach talks, seminars</p> | <p>3.1: Student can identify the main areas of societal relevance in E&AS. 3.2: Student can explain how their field impacts society. 3.3: Student can apply their knowledge to current policy debates. 3.4: Student can create an engaging presentation for the general public about their research. 3.5: Student can evaluate policy prescriptions and political debates in the light of their discipline.</p> | <p>See Above</p> |

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| <p>Goal 4a: Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in oral forms</p> | <p>Journal club, research presentations, conferences, classes</p> | <p>4a.1: Student can give a prepared talk. 4a.2: Student integrates figures and graphics into their presentation. 4a.3: Student answers questions competently and adjusts their presentation style based on audience feedback. 4a.4: Student uses technical words precisely and is able to explain concepts without jargon. 4a.5: Student is familiar with examples of outstanding speakers in the field and aspires to excellence themselves.</p> | <p>See Above</p> |
| <p>Goal 4b: Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in written forms</p> | <p>Class papers, extended abstracts, publications</p> | <p>4b.1: Student is familiar with examples of excellent writing and with sources of advice on scientific writing. 4b.2: Student can write about their work clearly. 4b.3: Student can create publication quality figures and graphics. 4b.4: Student revises their written work based on feedback. 4b.5: Student writing is clear and concise while avoiding confusing sentence constructions.</p> | <p>See Above</p> |
| <p>Goal 5: Evidence scholarly and/or professional integrity in Earth & Atmospheric Sciences</p> | <p>Directed research activities, mentor-mentee relationship, classes</p> | <p>5.1: Student knows about cases of fraud in science and can explain the importance of integrity in research. 5.2: Student cites work appropriately. 5.3: Student describe both positive and negative results and give sufficient detail about their work so that it can be replicated. 5.4: Student describes weaknesses in their own work. 5.5: Student is able to question themselves, accept criticism and grow from it.</p> | <p>See Above</p> |

- 1. It is not recommended to try and assess (in depth) all of the program learning outcomes every semester. It is best practice to plan out when each outcome will be assessed and focus on 1 or 2 each semester/academic year. Describe the responsibilities, timeline, and the process for implementing this assessment plan.**

The committee decided that we would prefer to fill out the evaluation form for all 6 goals each year rather than for a subset of the goals. The assessment plan was tested in the 2016-2017 Academic Year. The updates from 6 Oct 2017 will be applied for the 2017-2018 Academic Year.

- 2. Please explain how these assessment efforts are coordinated with Madrid (courses and/or program)?**

This is not applicable as there are no graduate EAS programs in Madrid.

- 3. The program assessment plan should be developed and approved by all faculty in the department. In addition, the program assessment plan should be developed to include student input and external sources (e.g., national standards, advisory boards, employers, alumni, etc.). Describe the process through which your academic unit created this assessment plan. Include the following:**

- a. Timeline regarding when or how often this plan will be reviewed and revised. (This could be aligned with program review.)
This plan will be under development next year as the department carries out program review.
- b. How students were included in the process and/or how student input was gathered and incorporated into the assessment plan.
Graduate students provide annual feedback on the program at the time of their annual reviews. This will be reviewed at the same time as the program evaluations by the graduate education committee at the end of each academic year.
- c. What external sources were consulted in the development of this assessment plan?
We consulted other plans available online and discussed the plan with the university coordinator.
- d. Assessment of the manageability of the plan in relation to departmental resources and personnel
The plan is carried out by the thesis committees which adds some burden to committee members. A new Graduate Education Committee will be formed and will require an additional department faculty meeting per year to discuss the results.

Graduate Program Assessment: Evaluation Sheet to be completed by Professors / Advisors

Student:

Program:

No. Semesters in Department:

Date:

Evaluator:

For each item below, please rate the student's strength on a scale of 1 to 5 where 1: not achieved yet, 2: beginning, 3: making progress, 4: meets expectations, 5: exceeds expectations.

Please add a short comment for each goal to illustrate the way in which the student demonstrated attainment.

Note that the purpose of this evaluation sheet is to assess the program, not the student.

Goal 1: Assess relevant literature or scholarly contributions in the Earth & Atmospheric Sciences:

- ___ 1.1: Student can list the main journals in the field.
- ___ 1.2: Student can outline the main areas of research in their field of study.
- ___ 1.3: Student can identify notable research groups and investigators. Student can demonstrate broad knowledge of areas outside of their sub-specialty, and specific knowledge of publications in their field.
- ___ 1.4: Student can indicate the current key issues and highly-cited papers in the field and identify emerging trends and new research directions.
- ___ 1.5: Student can identify the most important historical contributions in the field and outline their importance.

Comments:

Goal 2: Apply the major practices, theories, or research methodologies in the Earth & Atmospheric Sciences:

- ___ 2.1: Student is aware of different skills needed to carry out research in E&AS, eg. data analysis, field work, numerical modeling, computational competence.
- ___ 2.2: Given a figure, student could describe a method that could be used to generate it.
- ___ 2.3: Student has demonstrated competence with several different skill sets.
- ___ 2.4: Student has reached expert level in one type of skill.
- ___ 2.5: Given a paper in the student's specialty, the student could create a plan to reproduce the study.

Comments:

Goal 3: Apply knowledge from the Earth & Atmospheric Sciences to address problems in broader contexts:

- ___ 3.1: Student can identify the main areas of societal relevance in E&AS.
- ___ 3.2: Student can explain how their field impacts society.
- ___ 3.3: Student can apply their knowledge to current policy debates.
- ___ 3.4: Student can create an engaging presentation for the general public about their research.
- ___ 3.5: Student can evaluate policy prescriptions and political debates in the light of their discipline.

Comments:

Goal 4: Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in both oral (4a) and written (4b) forms:

- ___ 4a.1: Student can give a prepared talk.
- ___ 4a.2: Student integrates figures and graphics into their presentation.
- ___ 4a.3: Student answers questions competently and adjusts their presentation style based on audience feedback.
- ___ 4a.4: Student uses technical words precisely and is able to explain concepts without jargon.
- ___ 4a.5: Student is familiar with examples of outstanding speakers in the field and aspires to excellence themselves.

Comments:

- ___ 4b.1: Student is familiar with examples of excellent writing and with sources of advice on scientific writing.
- ___ 4b.2: Student can write about their work clearly.
- ___ 4b.3: Student can create publication quality figures and graphics.
- ___ 4b.4: Student revises their written work based on feedback.
- ___ 4b.5: Student writing is clear and concise while avoiding confusing sentence constructions.

Comments:

Goal 5: Evidence scholarly and/or professional integrity in Earth & Atmospheric Sciences:

- ___ 5.1: Student knows about cases of fraud in science and can explain the importance of integrity in research.
- ___ 5.2: Student cite work appropriately.
- ___ 5.3: Student describe both positive and negative results and give sufficient detail about their work so that it can be replicated.
- ___ 5.4: Student describes weaknesses in their own work.
- ___ 5.5: Student is able to question themselves, accept criticism and grow from it.

Comments:

General Comments:

Graduate Program Assessment: Self-Assessment

Program:

No. Semesters in Department:

Date:

For each item below, please rate your strength on a scale of 1 to 5 where 1: very weak, 2: weak, 3: average, 4: strong, 5: very strong, relative to your fellow graduate students.

Please add a short comment for each goal to describe one of the more significant areas of progress you feel you have made, and progress you plan to make.

Note that the purpose of this evaluation sheet is to assess the program, not the student.

Goal 1: Assess relevant literature or scholarly contributions in the Earth & Atmospheric Sciences:

- _____ 1.1: Student can list the main journals in the field.
- _____ 1.2: Student can outline the main areas of research in their field of study.
- _____ 1.3: Student can identify notable research groups and investigators. Student can demonstrate broad knowledge of areas outside of their sub-specialty, and specific knowledge of publications in their field.
- _____ 1.4: Student can indicate the current key issues and highly-cited papers in the field and identify emerging trends and new research directions.
- _____ 1.5: Student can identify the most important historical contributions in the field and outline their importance.

Something I've progressed on:

Something I plan to work on:

Goal 2: Apply the major practices, theories, or research methodologies in the Earth & Atmospheric Sciences:

- _____ 2.1: Student is aware of different skills needed to carry out research in E&AS, eg. data analysis, field work, numerical modeling, computational competence.
- _____ 2.2: Given a figure, student could describe a method that could be used to generate it.
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- _____ 2.5: Given a paper in the student's specialty, the student could create a plan to reproduce the study.

Something I've progressed on:

Something I plan to work on:

Goal 3: Apply knowledge from the Earth & Atmospheric Sciences to address problems in broader contexts:

- _____ 3.1: Student can identify the main areas of societal relevance in E&AS.
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- _____ 3.4: Student can create an engaging presentation for the general public about their research.
- _____ 3.5: Student can evaluate policy prescriptions and political debates in the light of their discipline.

Something I've progressed on:

Something I plan to work on:

Goal 4: Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in both oral (4a) and written (4b) forms:

- _____ 4a.1: Student can give a prepared talk.
- _____ 4a.2: Student integrates figures and graphics into their presentation.
- _____ 4a.3: Student answers questions competently and adjusts their presentation style based on audience feedback.
- _____ 4a.4: Student uses technical words precisely and is able to explain concepts without jargon.
- _____ 4a.5: Student is familiar with examples of outstanding speakers in the field and aspires to excellence themselves.

Something I've progressed on:

Something I plan to work on:

- _____ 4b.1: Student is familiar with examples of excellent writing and with sources of advice on scientific writing.
- _____ 4b.2: Student can write about their work clearly.
- _____ 4b.3: Student can create publication quality figures and graphics.
- _____ 4b.4: Student revises their written work based on feedback.
- _____ 4b.5: Student writing is clear and concise while avoiding confusing sentence constructions.

Something I've progressed on:

Something I plan to work on:

Goal 5: Evidence scholarly and/or professional integrity in Earth & Atmospheric Sciences:

- _____ 5.1: Student knows about cases of fraud in science and can explain the importance of integrity in research.
- _____ 5.2: Student cite work appropriately.
- _____ 5.3: Student describe both positive and negative results and give sufficient detail about their work so that it can be replicated.
- _____ 5.4: Student describes weaknesses in their own work.
- _____ 5.5: Student is able to question themselves, accept criticism and grow from it.

Something I've progressed on:

Something I plan to work on:

General Comments on your Graduate Program: