ENVIRONMENTAL SCIENCE AND MANAGEMENT DEPARTMENT
GUIDELINES FOR RESEARCH (ESM 401)

I. ESM 401 – RESEARCH

Course Objectives

1. To provide an opportunity for an off-campus learning experience relevant to the student’s educational program.

2. To permit students to explore a field of interest and assist them in establishing and achieving appropriate career goals.

3. To increase student motivation by integrating classroom instruction with planned and supervised practical experience.

4. To prepare students for employment through field training and professional experience.

Operating Principles

1. Research Students should develop specific learning objectives that can be readily identified and reviewed throughout the work period.

2. Each research student should be supported by a member of the research faculty. The role of the faculty member is to assist identifying tasks, defining learning objectives, carrying through the ideas and projects initiated, and evaluating the student’s performance.

3. Each research student should assess the worth of the research experience and produces a report and a log of daily activities illustrative of the learning realized through the experience.

Placement Procedures

1. Research opportunities are initiated by the student being accepted for work in an active research laboratory.

2. On approval of the faculty mentor, a description of the research project (goals, objectives and hypotheses, research methods) and a schedule of anticipated activities should be completed. The student will submit three signed copies of the “Research Plan” (Appendix A) to the program coordinator, SRTC 218. At that time, if everything is in order, the agreement will be completed. This Plan and a completed “By Arrangement” form must be submitted no later than the end of the first week of the quarter.
3. The student may schedule the course for 1 to 12 credits. Normally research will be limited to six credits, the maximum number that can be applied to specific requirements for the major. In general, 1 credit equals approximately 30 hours of work over a 10 week quarter; 6 credits requires about 180 hours of work or about 18 hours/week.

II. RESPONSIBILITIES OF THE PRINCIPLE PARTICIPANTS

The Student

The student will seek placement opportunities by contacting members of the research faculty. With a project description and schedule of anticipated activities, the student completes the Research Plan (Appendix A) and submits three copies to the Environmental Science & Management Department office.

The student is expected to (1) complete the tasks and activities outlined in the Plan, (2) conform with the normal work hours, (3) support the research effort by keeping the research confidential (if necessary) and work for the best interests of the research group, and (4) submit a final report and a log of daily activities as indicated in the approved Plan.

The Faculty Mentor

The research supervisor is asked to help develop the research plan and schedule of anticipated activities, experiences and responsibilities. The final approval for registration is made by the program coordinator and the faculty mentor.

When the faculty mentor agrees to host a student, supervision of the student’s activities is expected, and the research program should be sufficiently flexible to permit student involvement on specific projects. The faculty mentor conducts regular reviews of the student’s performance (Appendix B). The evaluation form is forwarded to the program coordinator within one week of the completion of the student’s research.

The Program Coordinator

The program coordinator reviews the Research Plan (Appendix A) to determine whether the work (1) will be an academically meaningful experience, (2) involve meaningful responsibilities and assignments, in contrast to routine or continuously repetitive activities, and (3) includes appropriate supervision and direction.

The coordinator, the student and faculty mentor collaborate in processing the Research Plan. The coordinator acts on behalf of the University in granting an appropriate number of credits for the research. The faculty mentor’s evaluation and the timeliness and quality of the required reports, determines if the student’s performance has been satisfactory. At the end of each term, the faculty advisor, based on the supervisor’s evaluation and the timeliness and quality of the required reports, determines if the student’s performance has been satisfactory.
APPENDIX A
ESM 401
Research Plan

Student’s Name: ___________________________  Student Number: ___________________________
Major: ___________________________  College/School: ___________________________
Term: ___________________________  ESM 401 Credits Requested: ___________________________
Supervisor: ___________________________  Phone Number: ___________________________
Title: ___________________________
Department: ___________________________

I agree to conduct the research outlined in the attached plan and to prepare a detailed final written report explaining my research activities. The report should be submitted to the faculty supervisor by ____/____/_____.

___________________________  __________________________
Student’s Signature  Date

I agree to supervise the research work of this student and agree to evaluate the efforts of the student and forward an evaluation to the ESM Program Coordinator within one week after the completion of the research activities outlined in the attached research plan.

___________________________  __________________________
Supervisor  Date

Portland State University, through the Environmental Science & Management Department agrees to grant credit hours for ESM 401 to the student upon satisfactory completing the attached research plan.

___________________________  __________________________
Program Coordinator  Date

Attach narrative describing specific research objectives, methods and responsibilities.

Return three signed copies to: ESM Program Coordinator, 218 SRTC
Environmental Science & Management
Portland State University
P.O. Box 751
Portland, OR 97202-0751
III. GUIDELINES FOR FINAL REPORT

Upon completion of the research, students are required to submit a detailed final report.

The final report should be a **technical report** prepared in the style of a scientific paper. The required sections include:

- **Abstract** – one paragraph summary of the work,
- **Introduction** - description of the purpose of the work and appropriate background to set the stage for the project,
- **Material and Methods** – description of the experimental procedures used and the data analysis techniques employed,
- **Results** – summary of the collected data using tables and figures,
- **Discussion** – evaluation of the significance of the results in light of the stated hypotheses, objectives, and background information provide in the introduction, and
- **References** – a list of the literature cited in the report.

Students should refer to the Environmental Programs writing guide for details on referencing format, units of measure and other technical details.

If an alternative reporting format is necessary, the research plan should indicate the format that will be used for the final research report.

Students conducting research will be encouraged to participate in departmental research days, including the presentation of research results in poster format.
APPENDIX B

Faculty Mentor Evaluation of Student Performance
During Research (ESM 401)

Student: __________________________________________  Date: __________________

Project Title: _______________________________________________

Supervisor Making Rating: _____________ ______________________________________________________

Name (Type or Print) Signature

We would appreciate your cooperation in rating this student in terms of his or her internship performance in research. Your responses will help in identifying areas requiring attention in the student’s continuing professional development. Thank you for your cooperation.

<table>
<thead>
<tr>
<th>Performance Area (circle for each item)</th>
<th>Superior</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and punctuality during the period of research</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Ability to develop an understanding of laboratory or field procedures</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Development of effective working relationships with staff and other students</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Ability to accept supervision and constructive criticism</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Demonstrated capacity to relate learning to new experiences</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Professional attitude towards research work</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Effectiveness in communication observations, impressions, ideas</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Ethical behavior as expected of professionals</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Motivation and initiative</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Competence (given the level of experience in the field)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Based on your observations, the student’s overall performance with your organization has been (Circle one):

Satisfactory

Unsatisfactory
1. Was the Student adequately prepared to work in your program? What additional preparation would have been useful to improve the student’s skills?

2. What kind of training or orientation did you provide before the student began working?

3. How did the student show evidence of skills in working with complex situations? Did the student show responsibility?

4. In your opinion, what are the student’s areas of greatest strength, and what areas need improvement.

5. What recommendations do you have for us to include in this student’s academic program to more adequately prepare this student for further professional roles?

6. Would you employ this student or another student with similar background?

7. Do you object to our including your name in the information for students interested in supervised research?

8. Please provide any additional comments.

Please return this evaluation to ESM, Portland State University, PO Box 751, Portland, OR 97202-0751