

Science and Engineering Library Instruction Program Plan

INLS 214

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Organization Description

I am the head of the science and engineering library at Hypothetical University. The university grants both doctoral and master's degrees in addition to bachelor's degrees. The student population, approximately 30,000, is split evenly between undergraduates and graduates. There is a main library in addition to the science and engineering library. The law library is administered separately. A well-established instruction program exists that was chiefly created for first-year composition classes. There is little discipline-specific library instruction for students beyond what they receive their first year. The libraries are interested in expanding to serve students in the sciences and engineering. Generalized library instruction is not enough as they need to learn how to successfully use subject-specific databases and other resources which can have very different features from the generic models presented in the composition classes (Bracke and Critz). This will require the librarians in the science and engineering library to teach discipline-specific information literacy skills.

Instruction will be aimed primarily at upper level science and engineering majors and first- and second-year graduate students in those fields. They are just beginning to perform original research and to delve into the literature of their fields. There are approximately 10,000 undergraduate and graduate students in science and engineering. Of these, about 3,500 would be in the categories identified as needing instruction.

Five science and engineering subject librarians report to me. Their areas of responsibility are divided as follows: life sciences and geology; astronomy, mathematics, and physics; chemistry and chemical engineering; engineering and computer science; and forestry and agriculture. Most of the librarians have very little teaching experience

although the mathematics, physics, and astronomy librarian taught bibliographic instruction classes at another library before coming to this university.

Instructional Program

Our current modes of instruction are limited to reference desk interactions, more extensive research consultations, and the occasional tour at the request of faculty members. We have not previously attempted a more formal program of instruction. Bracke and Critz recommend information literacy instruction for science and engineering students “be specific, context-based, and highly relevant to their current information needs.” Students are most likely to come to sessions and use guides and tutorials that are related to course assignments (*i.e.*, required). Therefore, course-integrated face-to-face 50 minute group sessions and online guides and tutorials will be the main focus for our efforts as it seems to be the best use of resources.

For in-person group sessions, we will rely on faculty requests to a certain extent for developing plans that are tailored to specific courses. However, in preparation for the launch of the program, librarians will develop prototypes of materials aimed at classes they consider good candidates for library instruction in order to have something concrete to share with the course instructor. This approach is discussed more fully in the **Publicity** section.

Many online instructional materials will be created initially without specific courses in mind because they are likely to find a wider audience and will be available on the science and engineering library’s webpage. However, they can easily be linked from course webpages, and we will work with faculty members who would like to incorporate them into their classes or develop more specific resources. We will be developing a series

of online “cheatsheets” with tips on using important resources for scientists and engineers such as Beilstein, an organic chemistry database; INSPEC, an engineering and physics database; and Web of Science, which includes the Science Citation Index. We will also be creating online tutorials for finding different types of resources that are specific to science and engineering such as technical reports and patents.

The tasks of teaching and developing instructional materials will, for the most part, be divided between librarians on the basis of their subject expertise. The creation of guides for interdisciplinary resources and tutorials for sources used by different kinds of scientists and engineers will be divided equitably between the librarians depending upon how much they are already doing that is specific to their areas of responsibility. We expect that, at least during the planning stages, the science and engineering librarians will need to devote about 20% of their time to work on the instructional program.

Training

All five subject librarians in the science and engineering library will be providing instruction in their areas of expertise. They are well-versed on the material they will be teaching, but training them how to best share what they know will be necessary.

The campus center for teaching and learning will be our primary external resource for training. The center for teaching and learning offers workshops on pedagogy and teaching skills that can be tailored to specific populations. The science and engineering librarians will attend a series of workshops designed to give them background information and some hands-on practice. Once the librarians have begun teaching, they will be expected to take advantage of the individual consultations the center offers in order to improve their teaching and hone their skills.

The presence of a well-established instruction program within the libraries means there are knowledgeable librarians whose experience we can take advantage of. Science and engineering librarians will periodically sit in on the classes of more seasoned instructors to watch them in action in the months before they begin teaching. The instruction librarians will be the chief resource for teaching the science and engineering librarians technical skills such as web-authoring and how to best use different types of equipment for presentations. During the initial development phase of the instructional offerings, instruction and science and engineering librarians will meet as a group in order to brainstorm ways to incorporate active learning techniques into teaching science and engineering students. The expertise of the astronomy, mathematics, and physics librarian who taught bibliographic instruction sessions at a previous job and thus has experience teaching scientific information literacy will be useful in these meetings.

Publicity

Because the librarians doing instruction are subject specialists, they already have relationships with faculty in their subject areas. A key strategy will be taking advantage of those existing relationships in promoting the instruction program.

Michael Fosmire discusses marketing bibliographic instruction, specifically in physics libraries. He suggests that librarians consider it as a process of persuasion in which faculty go through five steps before changing their behavior: awareness, interest, evaluation, trial, and adoption. In the early stages, awareness and interest will be most important. Evaluation, trial, and adoption will become more important as the program progresses and grows.

Our promotional efforts must go beyond awareness, or merely alerting people to the existence of the instruction program, although it is an important first step. To this end, librarians will send e-mails to instructors in their subject areas as well as speaking at faculty and TA meetings and the new faculty and graduate teaching assistant orientations early in the year.

From their work at the reference desk, the librarians have an idea of where in the curriculum of their subject areas it might make sense to incorporate an information literacy instruction component. Familiarity with course syllabi, frequently available online, for those classes, will help librarians target particular instructors and ask them to consider including an instruction session or online instructional materials created by the librarians in their courses. This will help address the issue of creating interest in instruction, especially if the librarians approach faculty with specific ideas for instruction and what students will gain from it. Once some faculty have had experience with incorporating information literacy instruction into their courses, they will be a useful resource for promoting the program to other faculty by word-of-mouth and more formal means such as presentations given jointly with librarians.

Finally, we will address the issues of evaluation, trial, and adoption by being well-prepared and continually working to improve our offerings (see **Feedback and Evaluation** section). We must demonstrate that our program is worth the time of the science and engineering faculty, notoriously loath to use their class time to cover material they see as outside the scope of their course, in order for them to try it out and continue using it.

Infrastructure and Policies

We plan to launch the instruction program in the beginning of the fall semester. That gives us about 6 months to train librarians and develop our curriculum and course materials as well as online guides and tutorials.

There is not a classroom that is equipped with computers in the science and engineering library. The main library has a instruction lab which is equipped with 30 networked computers and an LCD projector and screen. Depending on the wishes of the instructor and the type of instruction we will be providing, sessions can be held in the main library instruction lab or in their regular classroom. Fortunately, upper-level and graduate science and engineering classes are far smaller than the lower-level classes, and the instruction lab should be sufficient for our needs.

A form for requesting instruction for students that science and engineering faculty members, teaching assistants, and adjunct instructors can submit online is available on the university libraries' webpage, and we will use that form as well. Course instructors can also contact the librarian responsible for their subject area in order to request instruction sessions or the creation of online tutorials to use in conjunction with their courses.

Once faculty members have requested instruction, the appropriate subject librarian will meet with them in order to determine how best to serve the needs of their class by looking at their goals and objectives for the course and library instruction. Linking to relevant online materials we will have already created such as the "cheatsheets" or tutorials from their course webpage may be all that they need. The subject librarian is responsible for scheduling and confirming instruction with faculty in

their areas of responsibility. We prefer that course instructors give us at least one week's notice to give us adequate time to prepare for a session.

Feedback and Evaluation

Since most of the science librarians are just beginning to teach, experienced instruction librarians will sit in on the first few sessions they lead in order to give them feedback and suggestions for improvement. Also, staff members from the Center for Teaching and Learning will observe early sessions as part of individual consultations that will be focused on the aspects such as classroom dynamics, incorporation of active learning, and development of teaching skills for that particular librarian.

In addition to having experienced instructors evaluate the teaching of the science and engineering librarians, it is important to gauge how useful students and instructors find what and how they are teaching. After each face-to-face session, we will request that students and course instructors fill out evaluation forms in order to help us understand what we are doing right and what needs improvement (see *Appendices 1 and 2* for sample evaluation forms).

After the first semester of the instruction program, we will look at the success of the program by considering evaluations from other librarians, center for teaching and learning staff, and students and faculty. A year into the program, we will repeat that process and solicit the opinions of faculty who have taken advantage of the program as to what effect they feel library instruction has had on their students. Subsequently, we will continue to re-evaluate our program on a yearly basis and use the summers to make changes and develop new materials and skills.

References

Bracke, Marianne Stowell and Lori Jean Critz. "Re-Envisioning Instruction for the Electronic Environment of a 21st Century Science-Engineering Library." *Science & Technology Libraries*. 20.2-3 (2001): 97-106.

Fosmire, Michael. "Bibliographic Instruction in Physics Libraries: A Survey of Current Practice and Tips for Marketing BI." *Science & Technology Libraries* 19.2 (2001): 25-34.

Appendix 1.

Library Instruction Evaluation Form for Students

We would like to know what you thought in order to help us evaluate and improve our library instruction sessions. Thank you for your time!

Date of session _____

Course number and name _____ (e.g., PHYS 225) Section _____

Course instructor _____

Library instructor _____

Class level:

First year Sophomore Junior Senior Graduate student Other

1. The librarian was well-organized and presented information clearly.

Strongly Agree Agree Neutral Disagree Strongly Disagree

2. The librarian was knowledgeable and helpful.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3. The librarian encouraged questions and responded to them clearly.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. The level of instruction was just right for me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

5. The pace of the instruction was just right for me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

6. Library instruction should be included as part of this class in the future.

Strongly Agree Agree Neutral Disagree Strongly Disagree

7. What was the most useful thing that you learned and/or experienced in this session?

8. What was the least useful thing that you learned and/or experienced in this session?

9 . Do you have any questions that weren't answered during the session?

10. What other comments do you have about this instruction session?

Appendix 2.

Library Instruction Evaluation Form for Course Instructors

We would like to know what you thought in order to help us evaluate and improve our library instruction sessions. Thank you for your time!

Date of session _____

Course number and name _____ (e.g., PHYS 225) Section _____

Course instructor _____

Library instructor _____

1. How do you think the library instruction session contributed to your course?

2. How have your students benefited from the library instruction session?

3. What response have you received from your students about the session?

4. What additions or changes to the presentation would you suggest?

5. Was the format of the presentation effective? If not, what changes would you suggest?