

PLANNING A COURSE

INTRODUCTION

In Chapter 1, we examined several characteristics of student learning. We considered ways in which individuals make the transition from novice to expert, and identified aspects of student backgrounds and interests which can impact learning. We also discussed models describing how the human mind processes information, and considered educational goals. How can you use this material as you plan a course? That is the subject of this chapter.

As a new faculty member with a recently completed Ph.D. thesis or post-doctoral work, you probably feel confident of your research skills. After all, you have devoted at least two or three years (or more) to your research project, and most of the interactions with your advisor have probably focused on research. You may also have had extended discussions on research questions with other graduate students, undergraduates, and staff members. In contrast to your experience in research, you probably feel much less confident about your ability to plan and teach a course. This is to be expected: few graduate students have as much experience in teaching as in research, and many have never taught by the time they receive their Ph.D.

Briggs and Wager (1981) define a course as "that organization of instructional activities, resources, and evaluation activities which leads to a prespecified directional change in the learners' behavior." This definition implies that many steps are involved in planning a course. In fact, developing a successful college-level course requires the same kind of effort as developing a successful research project. Although it *does* take a lot of work, there are many reasons why you

should adopt a serious attitude toward your courses, even if you are at an institution that emphasizes research.

1. Education is a primary function of any college or university, and as a faculty member, you play an essential role in making sure this function is carried out in the best possible way. For this reason, many schools now require instructors to allow students to evaluate their courses; the results may be used in the promotion process.
2. Students expect and deserve high quality courses. Most of them pay a high price for their degree in time, energy, and money, and it simply isn't fair to shortchange them.
3. The development of courses can help you to develop a research program more easily (and vice versa) because there are many common tasks. Furthermore, exposure through coursework can introduce talented undergraduate and graduate students to your research interests and can thus serve as a means of attracting students into your research projects.
4. Careful course planning is time-efficient for faculty members inundated during a semester with the many responsibilities of faculty life.
5. Teaching can provide "intrinsic rewards" such as the opportunity to help others expand their knowledge and skills. These intrinsic rewards are the mainstay of an academic career.

In this chapter, we first present some general principles in undergraduate education upon which the next several chapters are based. Then we consider the analogy between planning a research project and planning a course. Next, we examine each of several steps in the process of planning a successful course. Finally, we summarize the process and mention ways to continually improve existing courses.

HELPING STUDENTS LEARN: EIGHT PRINCIPLES OF UNDERGRADUATE EDUCATION

Several educators have summarized principles for teaching at colleges and universities. In this section, we present a set that is a variation of the seven principles proposed by Chickering and Gamson (1987) but have been reordered and modified. Such principles have been used to develop teaching inventories and have provided a basis for continuing research in education (e.g., Sorcinelli, 1991). The principles listed below provide a foundation for the specific suggestions on planning a course and teaching that follow.

1. *Encourage active learning.* Students should be prepared to work hard when they enter a classroom, taking an active role in acquiring and maintaining new information during the class. They should continue their interest after

class hours as they work on their homework assignments. You can encourage active learning by keeping the material relevant and interesting to the students. For example, you can ask frequent questions to arouse their curiosity, present thought-provoking problems to encourage critical thinking, and provide them with concrete, real-life situations to analyze. Virtually all students are motivated about learning *some* things; you need to get the students to include your course material on their list.

Note: In the exercises which follow, the questions are phrased assuming some prior teaching experience. If you have not yet taught a course, imagine how you would answer the question in your future teaching responsibilities.

Exercise: In the last class session you taught, what questions did you ask and what examples did you use to stimulate interest in the course? How much "air time" did students have to question and comment? How many concrete examples did you use? Did the students have opportunities in class to apply the new concepts?

2. *Design effective learning experiences for students.* Most of the learning in a typical course takes place out of class. It is therefore important to design activities that will help the students learn after class hours, such as reading assignments, homework problems, group projects, laboratory experiments, and computer exercises. It is often helpful to prepare assignments that apply the class material to new contexts; this can establish multiple cues that aid in retrieving the material from long-term memory the next time it is needed, as discussed in Chapter 1. Furthermore, the assignments can force the students to recognize the conditions under which the class material is most useful for solving problems.

Exercise: List the types of learning experiences you provided in the last course you taught. How did each experience contribute to achieving the goals of the course? Which were most successful and which were least successful?

3. *Provide prompt feedback.* Learning is an iterative process where students apply a new concept, discover errors in their application, and try again. Providing feedback to students is thus an essential part of teaching. Teachers should provide such feedback as promptly as possible, and it should be both corrective and supportive. Of course, feedback is distinct from evaluation: solution sheets for homework assignments and written comments on the students' papers can provide valuable feedback even when the assignments are not graded.

Exercise: In the last course you taught, how many short classroom problems did you use to give immediate feedback to the students? How long did it take you to return graded assignments and tests? In what ways did your

feedback provide support and encouragement as well as constructive criticism?

4. *Emphasize the importance of time and effort spent learning.* We saw in Chapter 1 that there is no substitute for hard work in learning a subject well. Students must make effective use of time both in the classroom and out of class in order to be successful. You need to emphasize that *everyone* who wants to learn a subject must put in the effort; you may also want to discuss effective study habits and time management strategies with your students. Obviously, you will need to plan all learning activities carefully to permit the best use of your time and your students' time.

Exercise: In the last course you taught, did you ever discuss time management and related strategies, either with the class or with individual students? What did you do about students who did not appear to be spending the time needed to learn the material?

5. *Encourage student-faculty contact.* Interaction between students and faculty members is at the very heart of the educational process; recall in the previous chapter that every expert had a teacher who was also an expert in the same discipline. You need to interact effectively with your students in the classroom, displaying enthusiasm, sensitivity, and command of the subject matter. You also need to allow time for effective interaction out of class; this may be confined to tutoring during office hours, but may also extend to nonacademic affairs such as department social activities.

Exercise: In the last course you taught, how many of the students did you know by name? How many times did students stop by your office to pursue course-related or non-course issues? In what ways did you show your students that you were receptive to helping them? Related to these issues, have you shown an interest in your students in other ways, such as by attending campus events sponsored by student groups?

6. *Encourage cooperation among students.* Promoting interactions among students in a class can have a marked positive effect. This type of cooperation can help students enhance their self-esteem, improve their collaborative skills, and develop personal responsibility. You can encourage these interactions in many ways. For example, you can organize cooperative in-class exercises such as group discussions, or you can assign group projects. The ultimate goal of such interactions is to help students learn from one another as well as on their own.

Exercise: In the last course you taught, how many projects were assigned in which students were required to work together? In what ways did you encourage students to interact with each other during class discussions? Out of class?

7. *Communicate high expectations.* Contrary to popular belief, students often give their highest ratings to the most difficult classes they take. Attendance and class participation are also greatest in classes where students have to work hard. The message is clear: teachers who demand a lot of their students have the most successful classes in terms of both student enjoyment and learning. Therefore, to be an effective teacher, you need to set high but attainable goals. You also must make your expectations clear to the students, explaining that they will need to work hard and that their efforts will be rewarded. The personal "intrinsic" rewards should be emphasized—how mastery of the material can help the students in later pursuits.

Exercise: In the last course you taught, did you clearly define what you expected the students to be able to do after they completed the course? What did you do about students who had low self-confidence and were performing poorly?

8. *Respect diverse talents and ways of learning.* Each student brings a unique set of abilities, interests, and experiences into the classroom, resulting in different ways of learning as outlined in Chapter 1. You need to be responsive to these differences, varying your teaching style to reach the concrete thinkers and the abstract thinkers, the competitive and the noncompetitive, the dependent and the independent. You also need to encourage all students to voice their views on a topic while respecting the views of others. It may take a special effort to ensure that all students understand the material, such as by using language and examples that do not exclude students of certain cultures.

Exercise: In the last few class sessions you taught, what were the different strategies you used to reach students with various learning preferences? To what extent did you challenge students to develop new learning preferences? For students who never really "caught on," did you attempt to discover the reason and possibly alter your approach accordingly?

These eight principles provide a framework for the suggestions that follow, both in this chapter on planning a course and in the next several chapters that cover different aspects of teaching.

ANALOGY BETWEEN PLANNING A RESEARCH PROJECT AND PLANNING A COURSE

Successful faculty members must be adept in both research and teaching. Although these two roles are sometimes viewed as conflicting, many of the same skills are, in fact, involved in both categories. This is evident if we compare the major steps in planning a research project, particularly one that requires a proposal for funding, and planning a course. Such a comparison is illustrated in

Table 2-1. Although we present these steps in a linear fashion, we recognize that planning a research project or a course is an iterative process.

There are many differences in the details within each list, but there are also some important similarities. In particular, characterizing the audience, defining the objectives and scope of work, developing the work plan to achieve the objectives, and evaluating the results are common to both research and course planning. Note that Chapters 7 and 8 cover the steps in planning research and writing a proposal.

STEPS IN PLANNING A COURSE

Developing a course requires considerable effort. However, careful planning before the semester begins can save time in the long run, and can result in far better learning experiences for the students. Each of the steps listed in Table 2-1 is discussed below.

Assess the Backgrounds and Interests of Your Students

In Chapter 1, we presented some examples of student characteristics that influence learning. Such characteristics are vital in designing a course. For example, you must make sure that the learning activities in the course are appropriate for the backgrounds of the students; you don't want to spend a lot of time converting centimeters to meters or grams to kilograms in a senior physics class. On the other hand, you had better not assume that beginning freshmen can convert centipoises to slugs per foot per second. And remember from Chapter 1 that there is almost certain to be a spectrum of student backgrounds in your classes. Most students are probably used to working in metric units, but you may find students with more exposure to the English system—and some may actually *prefer* it! There will also be a variety of different groups represented—men and women, fast learners and slow learners, students from different ethnic groups and nationalities—and you will want to think about these groups as you plan the course. Suggestions on how to account for such different groups in discussion classes and lectures are presented in later chapters.

As emphasized in Chapter 1, the interests of the students—what motivates them—are also very important. Many engineering freshmen want exposure to “real-world” engineering problems as soon as they arrive. Giving them lots of abstract mathematics before letting them see their first application to engineering is not likely to sit well. You will probably need to find creative compromises to satisfy their interest in problems that are beyond their current skills.

You can gather information about the students' backgrounds and interests through faculty colleagues who are familiar with the group of students you will be teaching. You also may want to use simple, anonymous questionnaires on the first day of the class. You can provide a number of topic areas where students can identify prior exposure, and you can ask them to list their interests and

TABLE 2-1

Steps in Planning a Research Project and Planning a Course

Planning a Research Project

1. For a particular category of research, determine the possible funding agencies and their interests.
2. Choose the objectives of the research based on these interests as well as your interests and expertise.
3. Choose the scope and content of the research based on time and money constraints.
4. Develop a research plan to achieve the objectives, within the scope previously determined. The plan may include theoretical work, experimental work in the laboratory or field, survey questionnaires, etc. The experiments must be carefully designed, and appropriate data analysis and interpretation techniques must be chosen.
5. Develop procedures to evaluate the success of the project, and disseminate the major findings through papers and presentations.
6. Prepare a final proposal based on the considerations above.

Planning a Course

1. For each course, determine the backgrounds and interests of the students likely to enroll.
2. Choose the objectives of the course based on these backgrounds and on the knowledge and skills which you deem appropriate to teach, as well as on your interest and expertise.
3. Choose the scope and content of the course based on time and money constraints.
4. Develop the learning experiences to achieve the objectives, within the scope previously determined. These experiences may include in-class activities such as lectures, recitations, and group meetings, as well as out-of-class activities such as required readings and homework assignments.
5. Plan feedback and evaluation of student learning through tests, written reports, and other assessment techniques.
6. Prepare a syllabus based on the considerations above.

expectations pertaining to the course. For certain courses, it may be appropriate to ask them to list their major and year in college. Some instructors also give a pre-test to determine the starting point for the course, including reviews of prerequisite concepts.

All of this information-gathering underscores an important point: an instructor must take the characteristics of the students into account as the primary factor in deciding how and what to teach. And because it may be difficult to get the information you need and to know exactly how to use it, accounting for student backgrounds and interests requires experimentation. Few instructors are able to design a course that fulfills their expectations on the first try.

Exercise: Consider the last course you taught. What questions would have been appropriate to include on a pre-test for the first day of class? How would you use the responses to design the learning experiences of the course?

Choose the Course Objectives

Objectives serve different purposes for the teacher and the students. For the teacher, objectives provide a road map by which the class will travel: they can help you to plan effective learning experiences. Students, on the other hand, can use these objectives as instructional cues that indicate what they should learn. In some cases, the objectives can help students to understand why you have assigned certain readings and created the exams in a particular way (e.g., Levin and Long, 1981). Recall that one of the eight principles in the previous section was to communicate high expectations to your students; a clear set of objectives tells the students what you expect them to learn.

The objectives should indicate the expected knowledge and competence of the students by the end of the course. Each objective should state what the students should be able to do if they successfully complete the course; in this way, you can observe and measure the extent to which a student has satisfied an objective. Chapter 1 noted that specific statements of what a student is expected to do can provide motivation by clarifying the goals of a course. Consider the following examples:

- ◆ The student will be able to identify the fundamental dimensions of force, momentum, energy, and other physical variables, and will be able to use relations involving these variables to solve simple problems in mechanics.
- ◆ The student will be able to construct the pole-zero diagram of a transfer function and relate the location of the poles and zeros to the impulse and step responses.
- ◆ The student will be able to make observations of a laboratory experiment and communicate these observations clearly in both written and verbal form.

- ◆ The student will be able to apply established engineering principles to solve problems in construction of a water distribution system.
- ◆ The student will be able to design and administer a questionnaire to determine public opinion on new designs for automobiles.
- ◆ The student will be able to argue effectively both sides of a debate on whether a natural wetlands area should be removed to construct a new shopping mall.

There is quite a bit of flexibility in choosing objectives. One course may be designed primarily to promote depth of knowledge in a particular topic, while another may focus on developing problem-solving skills. Nevertheless, the prudent instructor will consider a variety of objectives: students need a broad knowledge base and repertoire of skills to function effectively on-the-job, and they need to know when and how to use the information they have acquired. It is especially important that they understand how to continue learning independently once they leave college.

You may wish to consider the taxonomy of Bloom et al. (1956), discussed in Chapter 1, as you decide on course objectives. For example, you may determine that your students should be able to interpret a set of data (comprehension), use abstract information in a concrete situation (application), or state the underlying assumptions of a body of information (analysis).

Exercise: Consider the syllabus for the last course you taught. Were all your objectives stated in terms of what the students should be able to do by the end of the course? If not, how could the objectives be revised to indicate this?

Choose the Scope and Content of the Course

Here we come to a difficult issue: it seems that there is never enough time to cover all of the topics we feel are "essential" in a course. To solve this problem, some faculty will try to cram as much information as possible into a course, sacrificing depth. And the students learn very little, overall, except perhaps how not to teach a course. The truth of the matter is that *any* course could always cover more topics if we had infinite time—so let us admit that the best we can do is a "sampling" of topic areas within the broad subject of the course. As one of our colleagues often says: "Coverage is the enemy of teaching."

You should start at the level of understanding of the students as they enter your course. You then want to move forward at a pace that allows the students to learn the material thoroughly, getting as far as you can according to their backgrounds and abilities.

How can you make sure that the course will be of maximum usefulness, given the uncertainty in how far you can progress? One way is to begin your planning by listing topic areas that are candidates for the course. Then rank the topics in order of what you consider most important in the field and what you

believe will interest the students. Based on rough estimates of the time needed to cover each topic, you can then make a tentative plan as to the content of the course. There obviously must be compromises in sequencing the material: on one hand, there must be a logical flow to the topic areas, but you also want to be sure to include at least some of the most important ones.

You may want to discuss with the students why you chose certain topics and omitted others. Content selection and sequencing decisions are strongly related to the way you view your academic discipline: by letting your students know how you put the course together, they may more effectively understand the flow of the course and its relation to the discipline (Lowther et al., 1989).

In Chapter 1 and earlier in this chapter, we emphasized the wide range in backgrounds, interests, and abilities among students. To accommodate this variability, you may wish to consider three categories of subject matter to include in the course: *basic* material which should be mastered by every student who passes the course, *recommended* material which should be mastered by those students seeking a thorough knowledge of the subject, and *optional* material which is intended only for those students with special interests who desire to learn more than what is offered in the course (Davis, 1992).

Exercise: Consider the last course you taught. Obtain syllabi for this course from other faculty members who taught it previously—either at your institution or others. Compare the various syllabi and explore the differences. Can you defend your choice of the topics you covered, and the structure of your course overall? What changes may be worth trying?

Develop the Learning Experiences Within the Course

Keeping in mind the students' backgrounds and interests, the objectives, and the scope and content of the course, you must now attend to the specific learning activities that comprise the course. These may include lectures, recitation sessions, in-class problem solving exercises, tests, oral presentations, group projects, laboratory sessions, homework assignments, and other activities.

First, you must choose the textbooks or other reading material. If the course has been taught by others in previous semesters, you should examine the material they used—but don't adopt it without careful thought. You need to feel comfortable with the material: the way you teach the course is going to be somewhat different than the way others taught it. Consider factors such as the level of difficulty, the amount of detail, and the cost of the books. Note that the choice of reading material is a way to clarify objectives. For example, if you want to stress highly organized mastery of a body of information, a single text might be the best choice. If, on the other hand, you wish to have the students develop skills in comparing and evaluating disparate sources of information, a collection of materials may be justified. You need to think carefully about whether you want the reading material to elaborate on information presented in class, or

whether you intend the readings to convey additional information. It is important that you don't choose a text intending to simply repeat information from the book in class. For one thing, reiterating reading material is not effective use of class time, which is far too limited to cover everything of importance in the text. Furthermore, students will realize that there is no need to come to class if they simply read the text—depriving themselves of the student-teacher contact that is so important for effective learning. This is discussed further in Chapter 4 on Lecturing.

Second, examine the reading material critically to determine where to place your emphasis and the logical order of coverage. It is usually inefficient simply to plan your course around textbook chapters in the order they were written: other authors would probably have ordered the chapters differently. A good instructor often needs to rearrange the order of chapters, delete certain material, and supplement the textbook with readings from other sources. Be sure that the reading material is well-integrated, and that the course flows logically from one topic to another. Make sure that you explain to your students the reasons for deviating from the text. In introductory courses, e.g., for freshmen, you may want to adhere to the textbook more closely than in advanced classes to help beginning students avoid confusion.

Third, determine the types of activities that will provide the students with opportunities to practice newly acquired skills, apply new information in different contexts, and ultimately achieve the course objectives. For example, if you want your students to develop skills in conducting engineering analysis, you will probably want to include quantitative homework problems. Group projects should be included if the course emphasizes working with others. Learning to communicate effectively is an element of some engineering and science courses; assigning written and oral reports will help students develop communication skills. In any course, such activities are at the heart of learning, so you need to choose them carefully. Chapter 5 on preparing activities for students covers this topic in more detail.

Fourth, create a course schedule based on the university calendar and on the amount of time needed to cover each topic adequately. Choose beginning and ending dates for major units to avoid conflicts with holiday periods. Allow time for correcting papers so that students get feedback before the next assignment is due. It is best to schedule class activities, homework assignments, and examinations in advance, to the extent possible, when you put together the calendar for the course. This will help students to manage their time more effectively.

Finally, examine all of the components of the course to make sure that they are consistent and complement each other in the manner intended. For example, your students are more likely to read assignments day by day if readings are pegged to particular lectures, or if the reading material is mentioned explicitly in class. This step is necessary to insure that all components of the

course are coordinated, including lectures, recitations, reading materials, written assignments, projects, laboratory experiments, and examinations.

Exercise: Consider a course you are currently teaching. Are there a number of learning activities, or are students relying mainly on listening to lectures? If there are several types of learning activities, how does each activity contribute to achieving the objectives of the course?

Plan Feedback and Evaluation of Student Learning

After choosing the objectives, the scope and content of the course, and the learning experiences, you must plan methods of providing feedback to the students on their performance. This will enable them to determine how they should direct their future efforts in learning course material. You also need to consider how you will conduct evaluations, judging the "value" of the learning by each student. Recall that one of the eight principles was to provide prompt feedback; unfortunately, many new professors underestimate the difficulty of creating effective feedback and evaluation tools. Methods most commonly used include quizzes, examinations, formal student presentations, written reports, and problem sets given as homework. There are also a variety of classroom assessment techniques, essentially short in-class exercises, which can provide valuable feedback to both you and the students on the amount of learning taking place (Cross and Angelo, 1988). These exercises are discussed in Chapter 3.

College faculty too often base their choice of feedback and evaluation tools solely on personal preference, philosophical beliefs, time available, and habit (Lowman, 1984). It is important, however, to tailor your methods to the goals of the particular topic area. For example, testing the students on their creative problem-solving abilities may require you to develop open-ended problems. On the other hand, closed-form mathematical problems with unique solutions may be more appropriate for testing analytical skills. Written assignments may be best suited for testing synthesis and evaluation skills.

You should consider different ways in which you can provide feedback and evaluation. For example, you can use the results of a quiz to assign a grade or class rank, but you can also use the results as an indicator of where the student needs to place more effort or what topics need to be re-examined in lecture. To provide timely feedback, you may want to discuss the solutions to a quiz immediately after the students hand in their papers. Similarly, you may want to provide brief written comments on graded examinations and put together solution sheets to help students better understand their errors. Additional information on developing homework assignments and examinations is provided in Chapter 5.

Once you have chosen the individual components of the evaluation process, it is necessary to determine the appropriate weights in computing the final grade for the course. What fraction of the final grade will be based on performance on homework assignments? What fraction on the results of tests? The

weighting scheme is a guide to students which indicates the relative importance attributed to each component. You should provide this scheme in writing at the beginning of the semester. Related to this issue are the criteria you use for grading, which also should be made clear to the students. Grading criteria are discussed in Chapter 5.

Exercise: Consider a course you are currently teaching. What types of evaluation tools are used? How is feedback given for each (solution sets, written comments on student papers, comments presented in class, etc.)? Do you lean more heavily to evaluation than feedback?

Prepare a Syllabus for the Course

Just as a research proposal is the culmination of a considerable amount of preparatory work, writing the syllabus takes place only after you have attended to the many details of course organization. A syllabus tells students a lot about the instructor: a well-prepared syllabus can leave a lasting first impression which reflects the instructor's goals, direction, commitment, organization, and enthusiasm for the course. Furthermore, students learn more effectively when they understand the faculty member's intentions and expectations about a course.

Many faculty members and students view the syllabus as more than simply a list of information: they consider it a type of contract, presenting what students can expect from the instructor and, in turn, what the instructor can expect from the students. The students need to know where they are heading, why they are heading this way, and what requirements they must fulfill to be successful in the course.

The syllabus should explain the rationale, purpose, content, and procedures for the course. In a recent survey at our institution, we found that the following items were included in the most complete syllabi:

- ◆ The name and number of the course, number of credits, the name of the University, the date by semester and year, the classroom meeting place, and a list of prerequisites.
- ◆ The names, office locations, office hours, phone numbers and electronic mail addresses of the professor and teaching assistants.
- ◆ A brief course description that provides an overview of the subject matter and a brief explanation of why students might want to take the course. The syllabus might also contain a brief explanation of how the parts of the course fit together.
- ◆ A list of course objectives, stated in terms of what the students should be able to do by the end of the course.
- ◆ Information about the learning experiences in the course, including in-class

activities such as lectures and discussions, and out-of-class activities such as readings and homework assignments.

- ◆ Information about policies established for the course, including attendance, late work, and make-up work.
- ◆ A course calendar which includes (to the extent possible) a list of dates for homework assignments, readings, quizzes, tests, papers, projects, and other work.
- ◆ Information about how grades will be determined, including the percentage of the grade for each major element of the course.
- ◆ A caveat that indicates that parts of the course are subject to change to meet the needs of students in the course. This allows instructors to slow down or speed up the pace of the course if students show a need.

Some syllabi contain helpful hints to students on how to read certain material, take notes in class, or study for a particular type of test. These hints are particularly important for first year students who may not yet have adapted to the pace of university life or mastered effective study habits. Other syllabi provide study questions for students to think about as they read assignments outside of class; this technique is popular with faculty members who use case studies in class. Still other syllabi discuss issues of cheating and plagiarism, defining what constitutes each and outlining penalties for infractions.

A well-prepared syllabus can help both you and the students to achieve the course objectives. It is a necessary part of virtually any successful course.

Exercise: Look at one of your recent syllabi and compare it with the list above. Which items might you add to your syllabus to improve it? Are there items omitted from the list above that you feel should be included?

SUMMARY

This chapter has discussed the many issues related to planning a course. We begin by listing eight principles of undergraduate education as a foundation for future suggestions on course planning and teaching. Then we discuss similarities that exist between the steps in planning a research project and planning a course. Next, we discuss ways of determining the backgrounds and interests of students, provide examples of course objectives, and give suggestions for choosing the course content and learning activities. We also discuss ways of providing feedback to the students and evaluating their progress. Finally, we discuss the culmination of these efforts, namely preparing the course syllabus.

While the amount of work spent on planning a course is likely to be substantial, most faculty members report that they become more adept at the process with each new course. Also, as the course is taught in successive years,

much of the groundwork will have already been laid. Nevertheless, a good instructor always re-evaluates a course based on feedback from students, changes in available information, and opportunities to implement new teaching strategies. Furthermore, each group of students is different and thus most courses require changes in scope and content. A successful course requires continual iteration.

REFERENCES

- Bloom, B.S., J.T. Hastings, and G.F. Madaus, *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook 1, Cognitive Domain*, New York, NY: McCay, 1956.
- Briggs, L.J. and W.W. Wager, *Handbook of Procedures for the Design of Instruction*, Englewood Cliffs, NJ: Educational Technology Publications, p.77, 1981.
- Chickering, A.W. and Z.F. Gamson, Seven principles for good practice in undergraduate education, *AAHE Bulletin*, Vol. 39, pp. 3-7, 1987.
- Cross, K.P. and T.A. Angelo, *Classroom Assessment Techniques: A Handbook for Faculty*, Ann Arbor, MI: National Center for Research to Improve Postsecondary Teaching and Learning, The University of Michigan, 1988.
- Davis, B.G., *Tools for Teaching*, San Francisco, CA: Jossey-Bass, p.5, 1993.
- Levin, T. and R. Long, *Effective Instruction*, Alexandria, VA: Association for Supervision and Curriculum Development, pp. 27-28, 1981.
- Lowman, J., *Mastering the Techniques of Teaching*, San Francisco, CA: Jossey-Bass, pp.184-209, 1984.
- Lowther, M.S., J.S. Clark, and G.G. Martens, *Preparing Course Syllabi for Improved Communication*, Ann Arbor, MI: National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPAL), 1989.
- Sorcinielli, M.D., Research findings on the seven principles, in A.W. Chickering and Z.F. Gamson, editors, *Applying the Seven Principles for Good Practice in Undergraduate Education*, San Francisco, CA: Jossey-Bass, pp. 13-25, 1991.