



## New Program Proposal Template

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### INSTRUCTIONS

1. Please complete the following Template electronically, using as much space as necessary for each item - do not be constrained by the space between questions on the template. *The completed Template will also serve as the basis for the new program proposal to the HECB.*
2. You will need to complete the following *Workbooks* in order to answer some of the questions. Please work through both of the *Workbooks* first and forward them along with the template itself. (Details in the *Workbooks* will be used internally, but will not be forwarded to external agencies or reviewers.)
2. As examples, samples of Student Learning Outcomes and Assessment Plans are also appended to this Template.
3. In addition to your department and college, the following resources can answer questions:

Graduate School	335-3535
Provost's Office	335-5581
Budget Office	335-7783

4. Please forward the completed Template and *Workbooks* electronically to your college Dean(s)

(and Chancellor, if applicable), and *request that the Dean forward the proposal electronically to the Provost's Office* ([donnac@wsu.edu](mailto:donnac@wsu.edu) ).



## New Program Proposal Template

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This *Template* leads you to answer the array of questions about your proposed program that are important to your department, your college, the Faculty Senate, the Higher Education Coordinating Board, and to external reviewers.

Completing the analyses in the *Workbook for Analyzing Demand and Cost* and the *Workbook for Analyzing Library Capacity* puts you in a position to demonstrate convincingly the financial aspects needed to support the academic merit of your proposal. It helps you to think systematically about the fiscal side of a new degree proposal and integrates strategic, operational and financial planning.

By placing all proposals in a similar format, this template provides a common standard for comparison, ensuring that all potential programs can be evaluated in an equitable fashion. It can be used to determine whether or not a program is feasible within the university's academic and financial situation, and if it will have the resources to further the University's objective of providing high quality education and scholarship.

Finally, this template can become a framework to think about the viability of your ideas. It can thus be a tool for strengthening both your proposal and the resulting program itself, since a program that is starved for either students or resources from its inception will not become a high quality program.

Here are some of the things you will be asking as you complete the template:

What are your aspirations for the reputation of this program – local, regional, national? What will it take to make that a reality?

Who are we trying to attract with this new program? Will it bring new students to the university?

How strong is the demand for education of this kind, and what are the odds that someone who receives such an education will find meaningful employment?

How many students do we need to attract to break even, and can both the market and our capacity support this number?

Providing hard answers to such questions maximizes the likelihood that a new program will not just win faculty senate and administration acceptance, but ultimately will be successful in attracting new students and placing graduates.

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## **Workbook I -- Analyzing Library Capacity**

The Faculty Senate Library Committee reviews all proposals for new degree programs, new centers, etc., for adequacy of library holdings and services. To assist the committee in its deliberations, please address the topics below in your proposal in collaboration with the librarian(s) responsible for collection development in your discipline(s). The names of appropriate librarians are available from the Director of Libraries at 335-4558 or from your dean's office.

### **1. In specific terms, describe the adequacy of existing capacity:**

Questions to ask:

- How adequate are the existing library collections for the proposed program?
- How adequate is the existing library equipment for the proposed program?
- How adequate are the existing personnel and services for the proposed program?
- How will this program contribute to the funding of existing serials, given their ever increasing costs?

### **2. What is the need for new library collections:**

Areas to consider:

- a. Serials (e.g., journals or indexes in print, electronic format, microform, etc.):
  - 1) List new serials titles (and costs) that will be needed.
  - 2) What funds have been designated for these titles and for the ongoing serials subscriptions?
  - 3) Can any of your current serials subscriptions be cancelled to purchase the new titles?
  - 4) What additional library equipment will be needed and how will it be funded (e.g., terminals, CD-ROM readers, etc.)?
- b. Monographs (e.g., books in print, electronic format, etc.):
  - 1) Will monographs need to be purchased?
  - 2) Have continuing funds been designated for these and future purchases?
  - 3) What additional library equipment will be needed and how will it be funded (e.g., terminals, CD-ROM readers, etc.)?
- c. Media (e.g., films, videotapes, sound recordings, etc.):
  - 1) Are media materials needed?
  - 2) Have funds been designated?
  - 3) What additional multimedia equipment will be needed and how will it be funded?

### 3. What new library personnel will be needed?

Questions to ask:

- Will specialized expertise be required to serve your new program?
- Will additional library staff or faculty need to be hired?
- If so, how will the position(s) be funded?

### 4. What additional library services will be needed?

Questions to ask:

- To what extent will additional interlibrary loan services be required?
- On-line network access?
- References services?
- Library user education?
- If so, have funds been designated for this purpose?

**5. For programs offered away from the Pullman campus: To what extent will collections and services be provided from Pullman and to what extent by other campus or local libraries?**

**6. Are there any other library resource considerations (e.g., additional space):**

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## **Workbook II -- Analyzing Demand and Cost**

### **I. Situational Analysis:**

The purpose of this section is to identify the strengths and weaknesses of the department(s) as they relate to competition.

#### **Strengths:**

<u>Questions to ask:</u>
<ul style="list-style-type: none"><li>• What does our department do best?</li><li>• What have we done similarly that has worked well in the past?</li><li>• What do we believe are the key reasons for our department's success in the past?</li><li>• Which of these "key reasons" sets our department apart from our competitors (i.e., other departments and/or other educational institutions)?</li></ul>



#### **Weaknesses:**

<u>Questions to ask:</u>
<ul style="list-style-type: none"><li>• What does our department do least effectively?</li><li>• What do we consider to be or have been a "failure" within our department in the past?</li><li>• What are the key factors causing this deficiency?</li><li>• How are other departments or universities doing it better?</li></ul>

**Opportunities:** Opportunities, as related to this degree program, are developed from your department's strengths or positive circumstances.

**Questions to ask:**

- What is happening in the state/nation/higher education now that we can take advantage of?
- What prevents our department from taking advantage of it?
- How can we best take advantage of it?
- How long will this "window of opportunity" be available?

**Threats:** A threat is a problem. It is anything that appears to endanger your current situation or future opportunities.

**Questions to ask yourself:**

- What uncontrollable factors can influence our success?
- What is the worst that is likely to happen?
- For how long is the threat likely to continue?
- How can we eliminate or minimize its effects?

## II. Competitive Analysis:

The competitive environment includes other colleges and universities, both public and private.

**Determine who your top competitors are.** Examine other institutions providing a similar program. Be aware that the “competitor” may not look like Washington State University and may not provide education in the same manner that you are proposing. For example, the new online MIS program might compete for the same students not just with other MIS providers but also with some technical training and computer science programs. Don’t think too narrowly in this area. Choose competitors whom you believe are actively seeking the students you would like to attract. Competitors may include similar programs at WSU.

**Select a strongest, geographically nearest, and lowest price competitor that are accessible to the same pool of students, and describe each of them as completely as possible using the following characteristics:**

### **CHARACTERISTICS:**

**Name of program and credit hours** – indicate the program that is currently being offered. Theirs may not be exactly the same as yours, but should be similar enough to be considered a competitor.

**Total Enrollment** - number of existing students enrolled in this certificate and/or program.

**Cost per credit hour/Total for Certificate and/or Program**

**Access** – what medium is used to communicate with the students.

**Faculty to student ratio**

**Support Services** – Other than the instructor, what staff and/or services are provided for the student. How does the student gain access to these support services.

**How long has this certificate and/or program been offered?** – if not currently offered, what is expected timing of entry into the market.

**What is each program’s weakness?** – Think in terms of areas that may work to your advantage.

**What is each program’s advantage?** - What specific characteristic makes each institution “stand out”? Why would someone choose the other program over yours? This is also called a differential advantage – the trait that makes you “different” and puts you at an advantage. This should help you in determining what marketing strategy you will take. For example, if you know that one of the others is “cheaper”, you can then decide if you want to lower your prices to compete head-to-head, or take the “quality” approach in marketing your program.



**Washington State University:**

**Competitor 1** \_\_\_\_\_

**Competitor 2** \_\_\_\_\_

**Competitor 3** \_\_\_\_\_

### III. Demand Analysis:

**Demand** – the willingness of individuals to pay to participate in your program. It is a basic measure used in determining whether or not your program will be financially viable.

#### **FACTORS IN ASSESSING DEMAND:**

**Market** – the geographic area from which the program will attract students.

##### **Questions to ask:**

- Where are your potential students physically located? (e.g., international, national, state-wide, regional, local, etc.)
- Would potential students be required to relocate or can they remain at home via distance-learning?

**Market size** – the number of potential students in the market area.

##### **Questions to ask:**

- What is the current number of students in existing programs in your market area in this field?
- What is the potential number of students forecasted?

**Market share** – a portion of the total market for this type of program that belongs to one institution, usually represented as a percentage of the whole market.

Example: **Market:** all students enrolled in 4-year public colleges in state (WA)  
**Market size:** 89,200 students (source: internet sites for all 6 colleges)  
**WSU enrollment:** ~ 21,000 (all locations) (source: [www.wsu.edu](http://www.wsu.edu))  
**WSU's Market share:** approximately 24%

**Market capacity** – the upper boundary of a market. This would represent and include every potential student interested in the program within the market area. If all of the needs are served and there is an excess of supply over demand, then the market is considered saturated.

**Growth rate** – how rapidly institutions in the current market are introducing programs to reach market capacity. Often in new markets where demand is high, growth rates are extremely high. However, in markets that are more mature, the growth rate is usually flat or declining.

**Barriers to entry** – considerations that might inhibit institutions to enter this market. These might include required economies of scale, brand identity, accreditation standards, access to distribution, switching costs and government policy.

**Market Place Analysis:** (Please attach supporting documents such as information from professional societies and their publications, industry advisory groups and advocacy groups, internal studies, department of education, department of labor, or employment security department statistics, letters of support, etc.).

**What is the demand among students for your program?**

**What is the current employer demand for graduates of your program?**

**What growth rate do you project for this demand?**

**In your opinion, what is the market capacity?**

**What barriers exist to competitive entry into this market?**

### **Market Place:** Target Market

The first step in determining the “demand” for your program is to identify who is willing to “buy” it. What is the population of students that you want to serve? Are employers, as well as students, willing to pay for the program?

**Segmentation:** A selection process that divides the broad market into manageable groups with common characteristics.

Questions to ask:

- What are the characteristics of students currently in your department’s programs (age, location, employment, goals, etc.)?
- Why do they choose WSU?
- What kind of students choose to go elsewhere for programs like yours? Why?

**Target Market** – your primary target market is the first segment you will look at. This is the group of people whose needs you will focus on fulfilling better than anyone else does.

Questions to ask yourself:

- Who are they?
- What is their need?
- How will we serve it?

**Estimate the number of individuals you expect to enroll from your target market for the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years.** This market segment can be based on demographics -- e.g., the number of students who complete community college in WA each year with an AA degree with a business emphasis, or (for a graduate program) the number of students who graduate with an undergraduate degree in this field in the Northwest. This will help you identify potential trends and your target market.

Your **target market** is usually the segment that has the largest numbers of individuals in it. However, if that segment's needs are already being taken care of by one of your competitors, you may wish to target another group or go for the specialty "niche," or secondary market. Note that it may be better to target 50% of a smaller group rather than 2% of a global market

	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year
Target	_____	_____	_____
Secondary	_____	_____	_____

**To whom will your marketing efforts be directed? What are the key characteristics of that segment to which you will appeal?**

**TARGET MARKET:**

**Characteristics:**

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## **IV. Recruitment Plan**

**F. How and where are students going to find out about this program?**

**G. How are you going to educate and inform professionals who will assist you in promoting by word-of-mouth?**

**H. Who specifically will be helpful in your promotion activities? How will you access them?**

**I. How can you provide recruiting training to necessary departments and support staff? Who will represent this department in its promotion activities?**

**J. What specific venues can you use to promote an awareness of this new program?**

**K. What means will be used to access and educate businesses, industry, agencies, and/or institutions about this offering?**

## **V. Financial Analysis:**

One of the major factors in determining whether or not a proposed program is viable is its financial feasibility. A web link, [http://www.budget.wsu.edu/Cost\\_template.xls](http://www.budget.wsu.edu/Cost_template.xls) will take you to an Excel budget worksheet, which can be pasted into the proposal template document after it is completed. Both your college's Finance Officer and the University Budget Office are available to assist you with this worksheet.

### **Enrollment Projections**

Enrollment objectives are established to provide a measurement of the cost of the program. They are based on expected enrollment trends and the capacity of your unit to realize those opportunities by meeting student needs.

When considering a new program, the focus will be on its cost per student FTE (full time equivalent). There are guidelines available through the Higher Education Coordinating Board Cost Study (available in the Budget office) that help the University assess which programs are high or low cost, compared to other programs in the same discipline, as well as the overall cost mix for all University programs.

### **Cost Projections**

Many of the expenses involved in creating courses for new programs are absorbed into the existing structure. However, when one really evaluates the courses on a stand-alone basis, it is evident that there are many expenses involved.

**Fixed** expenses are those that your department will have in offering a course regardless of the number of students in the classes – they will not change (not considering inflation) as you move from Year 1 to Year N when you reach what you consider to be “Full Enrollment.” **Variable** expenses are those costs that vary depending upon the number of students. These costs will grow from Year 1 to Year N. Some costs exhibit a step function pattern; that is, they are fixed for X number of students, but increase for X+1 students and again for 2X students. For purposes of this worksheet, assume your enrollment goals will be met.

If you are using similar kinds and sizes of courses and similar methods of delivery as the existing program, you may be able to project the costs of the new program fairly closely by determining the cost of the existing program. If this site will use different delivery methods, start with fewer students, or otherwise differ from the existing one, this may not be the case. Check with your college's Finance Officer or the Budget Office for this information.

**Direct Expenses** - These costs are specifically tied to the proposed program.

- Instructor salaries and benefits
- Administrator salaries and benefits
- Clerical Support salaries and benefits
- Graduate Assistant salaries and benefits
- Equipment costs
- Travel costs
- Goods and Services – phones, copying, etc.
- Classroom materials costs
- Other

**Indirect Expenses** – These are costs that are often associated with existing or additional support services that increase incrementally because of the addition of the program. These costs should not be confused with the Facilities and Administrative (F&A) costs that are applied to grants and contracts. The indirect costs related to new programs are the facilities, academic support, administrative support and student services costs that are in place to support the delivery of the University's academic programs. The Budget Office tracks the overall cost of these services, and the appropriate rate is included in the template. (Note: if you are developing a program that will be delivered via EDP, you should reduce the indirect percentage to .32 in the template. Please call the budget office if you have questions).

**Opportunity Costs** – the cost of not doing something else. This is not a separate category, but should be kept in mind. For example, if an instructor or other existing resources are “re-allocated” to this proposal, what area will be affected and what is the value of these resources? Every time a new program or site is proposed, we should carefully consider that it is subtracting resources from other programs or sites. If a new program or site is not taking resources from other programs, it may imply that we have underutilized resources. How does your proposal address this?

**Instructions for use of the template:**

☐ The Internal Reallocation column indicates that the costs within the column will be covered by reallocation resources from other programs within the department or college.

☐ New State Funds should only be shown as a source when a program is being developed at one of the branches or if implementation will await the availability of new funds (e.g., state-funded High Demand FTEs). Note that listing items in the New State Funds column does not imply or guarantee that these funds will be available when needed.

☐ Other Sources of funding could, e.g., be matching funds for equipment or in-kind resources available to the program.

☐ Complete the template using your best estimates of the costs to deliver this new program, both in the first year of delivery and in the year that you expect it to reach full capacity (Year N). It is often true that the first



year of a program has higher costs per student FTE, as the enrollments in early years are lower than expected full capacity. Over time, as the number of FTE increase, the costs per FTE will decrease.

□The spreadsheet will calculate both the indirect and total costs, as well as the cost per student FTE.

□Please contact your college's Finance Officer or the Budget Office if you have questions.

**[Insert Table 4- Projected Revenues and Expenses and Table 5–Salary Cost Detail Year 1 and Year N from here]** Go to this link <https://universityportfolio.wsu.edu/degree/default.aspx> and click on the Budget Office Template in the left hand column. You'll need to use your WSU ID and password.

## Projected Revenues and Expenses

Summary of Program Costs - Year N - Full Enrollment (Replace "N" with academic year when pgm is expect to reach full enrollment.)					
Line Item	FTE Bnfits %	Internal Reallocation	New State Funds	Other Sources	Total
Administrative salaries					0
Benefits for Administrative	26.9%	0	0	0	0
Faculty salaries					0
Benefits for Faculty	26.9%	0	0	0	0
TA/RA salaries					0
Benefits for TA/RA	30.0%	0	0	0	0
Clerical salaries					0
Benefits for Clerical	30.0%	0	0	0	0
Contract Services					0
Benefits for contract salaries	30.0%	0	0	0	0
Goods and services					
Travel					
Equipment (describe)					
Other (describe)					
Subtotal	0.00	0	0	0	0
Indirect (if applied to pgm)					
Total Cost		0	0	0	0
Student FTE					#DIV/0!
Cost per student FTE					#DIV/0!

Specific instructions for use of the template:

□The Internal Reallocation column indicates that the costs within the column will be covered by reallocation resources from other programs within the department or college.

□New State Funds should only be shown as a source when a program is being developed at one of the branches or if implementation will await the availability of new funds. Note that listing items in the New State Funds column does not imply or guarantee that these funds will be available when needed.

□ Other Sources of funding could, e.g., be matching funds for equipment or in-kind resources available to the program.

□ Complete the template using your best estimates of the costs to deliver this new program, both in the first year of delivery and in the year that you expect it to reach full capacity (Year N). It is often true that the first year of a program has higher costs per student FTE, as the enrollments in early years are lower than expected full capacity. Over time, as the number of FTE increase, the costs per FTE will decrease.

□ The spreadsheet will calculate both the indirect and total costs, as well as the cost per student FTE.

□ Please contact your college's Finance Officer or the Budget Office if you have questions.

**NOW SUMMARIZE THE INFORMATION AND ANALYSIS FROM THE ABOVE WORKBOOKS IN COMPLETING THE FOLLOWING PROPOSAL TEMPLATE**



## Proposal to Offer a New Degree Program

### Overview:

#### Program Title:

Degree (level) \_\_\_\_\_ of (type) \_\_\_\_\_  
In (major or field) \_\_\_\_\_

**CIP Code (consult registrar):** \_\_\_\_\_  
(Classification of Instructional Programs)

Department: \_\_\_\_\_ College: \_\_\_\_\_

#### Departmental Contact:

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Phone: \_\_\_\_\_ e-mail: \_\_\_\_\_

#### Campus of Origin:

#### Starting Date:

#### Method of course delivery: (check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Classroom                                       | <input type="checkbox"/> AMS or Video-conferencing System |
| <input type="radio"/> Pullman  | <input type="checkbox"/> Distance Learning                |
| <input type="radio"/> Vancouver  | <input type="checkbox"/> Other (please describe)          |
| <input type="radio"/> Tri-Cities   |   |
| <input type="radio"/> Spokane  |   |
| <input type="radio"/> WSU Research, Learning, or Extension Center(s) at: |   |

## I. Mission Statement

### Washington State University

#### **Vision**

Washington State University offers a premier undergraduate experience, conducts and stimulates world-class graduate education, research, scholarship and art, and provides an exemplary working and learning environment that fosters engagement.

#### **Mission**

As a public, land grant and research institution of distinction, Washington State University enhances the intellectual, creative, and practical abilities of the individuals, institutions and communities that we serve by fostering learning and inquiry in all their forms.

#### **A) What is the Mission statement of your Department(s)?**

**Your College(s)?**

**Your Campus(s)?**

#### **B) Describe how this proposed program will complement or reflect these missions.**

Questions to ask:

- Where are we? (as a department/college/campus)
- Where do we want to go (or to develop, or to be perceived)?
- How will the proposed program help us get there?

## II. Program Description

Questions to ask:

- What is the nature and focus of this program?
- Is it interdisciplinary in nature? If so, what are the fields of study involved, and how will multiple units work together in delivering the program? (*Document support from all units involved.*)
- Within what discipline(s) does it fall? What distinguishes it from other similar disciplines or from other branches of the same field?
- Is it a broad, general program or will it focus on one specialization? Does it offer more than one option?

## III. State Need and Student Demand for the Program

Summarize your conclusions about need and demand from the *Workbook II - Analyzing Demand and Cost* here:

## IV. Goals, Objectives, and Student Learning Outcomes

### A. Goals and Objectives

Questions to ask:

- What are we trying to achieve with this program?
- How will we assess whether we are meeting our goals and objectives – i.e., how will we gather information and how will we use it?

## B. Student Learning Outcomes

Questions to ask:

- What will our graduates know and be able to do as a result of this program?
- How will we assess whether they are achieving the student learning outcomes – i.e., how will we gather this information and how will use it to improve the program?

## V. Curriculum

Questions to ask:

- What courses will be required?
- What electives (if applicable) will be available?
- What courses from other departments/colleges will be used? (*Document support from those units.*)
- If this is an undergraduate program, how have the needs of transfer students been taken into account in planning for it? What arrangements are in place to ensure that pre-requisites are readily available and that CC students will be appropriately prepared and well advised? If this is an undergraduate program offered at a location other than Pullman, how have local community colleges and their faculties been involved in planning for it?

## VI. Uses of Technology

Questions to ask:

- What kinds of technology will be used in teaching this curriculum?
- What technologies will the students learn to use in order to be employed in this field?

## VII. Delivery methods

### Questions to ask:

- Will this be an entirely site-based, face-to-face program, or will part or all of it be delivered off-campus and/or electronically.
- If the latter, what parts and by what media?

## VIII. Students

### A. How many students to you expect to serve with this program?

(If you expect a combination of part time and full time students, please use the FTE Calculator, at [Table 2](http://www.budget.wsu.edu/Cost_template.xls) of [http://www.budget.wsu.edu/Cost\\_template.xls](http://www.budget.wsu.edu/Cost_template.xls) , before completing this table.)

Number of Students	Year 1	Year 2	Year 3	Year ____*
Headcount				
FTE**				

\* Enter year number in which program anticipates reaching full enrollment

### B. Admission Requirements

#### Questions to ask:

- What are the certification requirements into this major (for undergraduates), or the departmental process and admission requirements (for graduate programs)?

### **C. Expected time for Program Completion**

Questions to ask:

- Will most students be full time or part time?
- How long will it take each type of student?
- If this is an undergraduate program, can it be completed in four years (if so, please outline a 4-year course of study; if not, please explain), and
- How can transfer students articulate smoothly into the program and complete it with approximately the same number of total credits as students who enter WSU as freshmen?

### **D. Advising**

Questions to ask:

- Who will provide academic advising for the students?
- How will advisors be assigned?

### **E. Diversity**

- Please describe specific efforts planned to recruit and retain students who are persons of color, disabled, or whose gender is underrepresented in this discipline.



## IX. Faculty and Administration

*[Insert TABLE 1 – PROGRAM FACULTY from [http://www.budget.wsu.edu/Cost\\_template.xls/](http://www.budget.wsu.edu/Cost_template.xls/)*

*[Insert TABLE 3–ADMINISTRATIVE/SUPPORT STAFF [http://www.budget.wsu.edu/Cost\\_template.xls/](http://www.budget.wsu.edu/Cost_template.xls/) ]*

## X. Facilities

Questions to ask:

- Will this program require new teaching laboratories?
- Will this program require new research facilities?
- Will this program require specialized equipment?
- If so, what resources are available for this purpose?

## XI. Finances

*[Insert Table 4- Projected Revenues and Expenses and Table 5–Salary Cost Detail Year 1 and Year N from [http://www.budget.wsu.edu/Cost\\_template.xls](http://www.budget.wsu.edu/Cost_template.xls) [here](#)]*

## XII. External Reviews

If this program is new to the Washington State University system, please provide the names and addresses of 3 – 4 external experts from similar institutions who could be contacted to provide reviews of this program.

- 1.
- 2.
- 3.

4.

## APPENDIX

### SAMPLE STUDENT LEARNING OUTCOMES AND ASSESSMENT PLANS

#### I. BS Bioengineering

For the BS Bioengineering program, educational objectives are defined with input from key constituencies and reviewed periodically for responsiveness to their needs. Educational outcomes are defined consistent with the program educational objectives while also encompassing all ABET-defined outcomes. Program faculty will have the primary responsibility for definition and execution of the assessment process, but they will also engage other program constituencies in the process. This will be achieved through establishment of a program advisory committee that includes representatives from prospective employers of graduates, relevant graduate and professional schools, faculty, and students. This advisory group will convene at least annually to guide program development, discuss assessment processes and results, and assist in program improvements.

Program assessment will be conducted on an annual basis. Assessment data will be acquired from various sources (see below) at appropriate times during the year. At the end of the academic year, assessment data will be compiled and analyzed to determine student achievement relative to established achievement targets. Program faculty will review results to identify program strengths and areas needing improvement. Faculty will then define action plans to address needs. Assessment results will be summarized annually with action plans and evidence of successes from previous actions taken.

#### Student Learning Outcomes Assessment Plan.

Assessment of student achievement will be determined at two levels. First, educational **objectives** achievement will be determined based on feedback from alumni and employers of graduates—to determine the success of the program in preparing graduates for success along their chosen career paths. As the program becomes established, this measure will be made for graduates at 1 year and 5 years after graduation. Second, student achievement of defined educational **outcomes** will be determined for students completing the BS Bioengineering degree program. These outcomes will be assessed in classes and through other means as defined in brackets [ ] after each outcome listed below.

The Bioengineering program strives to assess educational **outcomes** as indicated:

1. **Application of Math/Science/Engineering.** Students will demonstrate an ability to use foundational knowledge in mathematics, physics, chemistry, biology, and engineering sciences. *[In upper-division BE courses: Students will be able to apply and extend uses of foundational knowledge to bioengineering systems.]*
2. **Critical Thinking.** Students will demonstrate the general intellectual skills of critical thinking with respect to both professional and societal issues. *[In writing-in-the-major courses: Students will demonstrate critical thinking attributes as defined by WSU critical thinking rubric.]*
3. **Independent Learning.** Students will demonstrate an ability to learn independently to understand and address contemporary, societal, and technical issues they encounter. *[In capstone project courses: Students will demonstrate ability to locate relevant material and learn independently as required to address bioengineering problems.]*
4. **Systems Understanding.** Students will demonstrate broad engineering-related intellectual skills associated with analogous thinking, engineering synthesis and analysis, and integrative system

approaches in solving problems. *[In unified systems courses: Students will demonstrate ability to describe and analyze bioengineering systems.]*

5. **Teamwork.** Students will be able to work in teams comprised of scientists, engineers, and others. *[In capstone project courses: Students will demonstrate ability to work in multidisciplinary teams on capstone projects.]*
6. **Bioengineering Design.** Students will be able to creatively apply (design) engineering principles and methods to the solution of problems, recognizing the potential applications of both engineering principles to biology and biological principles to engineering. *[In capstone projects: Students will demonstrate ability to design while applying biological principles.]*
7. **Experimentation.** Students will be able to apply experimental methods and creativity to scientific investigation about the natural world. *[In capstone projects courses: Students will exhibit these abilities in completion and evaluation of capstone projects.]*
8. **Career Awareness.** Students will be aware of career options for which they are prepared, including entry-level jobs and professional and scientific careers that require advanced training. *[In exit interview with seniors: Students will demonstrate knowledge of a range of career options.]*
9. **Professional Ethics.** Students will be able to apply ethical principles to professional decision making. *[In capstone projects courses: Students will demonstrate awareness and application of ethical principles in project completion.]*
10. **Communication.** Students will be able to communicate effectively in an interdisciplinary world of engineers, healthcare professionals, and scientists. *[In writing-in-the-major classes and capstone projects courses: Students will demonstrate through oral presentations and written reports their abilities to communicate effectively to clients.]*

## II. Food Science

The undergraduate curriculum in food science is approved by the Institute of Food Technologists (IFT). The collaborative WSU/UI undergraduate curriculum was reviewed by the IFT Higher Education Committee in October 2002 and approved for five years. The joint WSU/UI food science curriculum committee has established and implemented the following assessment program:

### Core Competencies

Core competencies in the areas of food chemistry and analysis, food safety and microbiology, food processing and engineering, applied food science and success skills.

### Course Outcomes and Assessment

Learning outcomes for each course in the curriculum is documented. Each learning outcome is paired with an instructional activity and a related assessment technique.

### Curriculum Outcomes

Curriculum outcomes are revised every five years. The curriculum will next be reviewed by the IFT Committee on Higher Education in September, 2007.

### Curriculum Assessment

A variety of techniques are in place to assess curriculum outcomes, including:

- *Student performance in internship.*
- *Alumni surveys every three years.*
- *Exit interviews with graduating seniors.*
- *Meetings of FST External Advisory Board.*

- *Student performance.* The WSU/UI food science faculty together with the WSU Center for Teaching and Learning developed and tested 1) a survey instrument to assess job preparedness and the skill set obtained by food science curriculum graduates ([link to 2006 report](#)) and 2) a rubric to assess learning outcomes, with competency defined as professional level performance ([link to 2006 assessment progress report](#)). Graduates generally indicated satisfaction with their food science education and suggested they were adequately prepared for their employment. Over the last two years the learning outcomes assessment suggested upper division students improved on four of seven assessment measures, while lower division students improved on four of five measures. Twenty percent of 200 level essays were rated as competent, while 44% of 400 level essays were rated as competent.

Examples of changes generated by these assessment strategies include: Assignments have been revised to align with assessment criteria; assignments been developed jointly for target points in curriculum, including early level baseline, rising mid-program, and capstone; assignments have been designed to address key knowledge concepts (content) with skills or a single assignment or one with broad parameters for use at all targeted points in the curriculum.

### III. MATERIALS SCIENCE AND ENGINEERING

The Accrediting Board for Engineering and Technology (ABET) requires assessment of the status of every engineering program in meeting it's stated goals and objectives in educating undergraduate engineering students.

The undergraduate program focuses on (a) the relationship of the structure of a material at various length scales, e.g. crystal structure and defects, to the macroscopic properties of materials, e.g. strength, (b) experimental techniques for characterizing physical, chemical, and structural properties of materials and, (c) design and selection of appropriate materials for engineering applications.

We have identified many places in the curriculum that are suitable for assessing both the students meeting the goals and our ability to provide the resources and programming needed to meet these goals. One critical location is during the year-long senior thesis program. In MSE, students participate in both a team-based engineering design project in conjunction with the Mechanical Engineering program and an individual independent senior thesis project.

The first semester of senior year concludes with an oral project presentation that is evaluated according to the assessment rubric. The second semester has an oral defense, with a written report of the student's thesis project due at the end of the semester. Faculty members use the assessment rubric to analyze both the oral and written reports.

The rubric summarizes the outcomes addressed in the program. In general, the rubric is being continually refined as we determine areas of required improvement. For instance, the first rubric did not clearly identify the differences between the understanding of the work and the amount of work carried out in the project. The rubric is shared with the students so that they are clear on the methods and standards by which they will be assessed.

Using this approach, we learned that our students' ability to link their experimental results to fundamental materials knowledge and relevant literature is not as good as we would like. This year (2006-07) we implemented assignments, such as structured literature reviews, to get students to think more about the literature. Next semester we will assess whether this change has produced the desired improvement.

Examples from other courses can be found in the ABET accreditation documents, as can the results of other assessment strategies such as exit surveys, focus groups, employer / alumni feedback, and information gathered from our external advisory board meetings each semester.

#### IV. PLANT AND SOIL SCIENCES

WSU's undergraduate degree programs in Crop Science, Soil Science, and Horticulture initiated the development and implementation of an assessment process to gauge the extent to which WSU students in the plant and soil science programs meet university and program learning goals. This process was undertaken primarily to help improve our joint teaching efforts and students' learning; it also was encouraged by a need to better match our program learning goals with the University's newly developed Learning Goals of the Baccalaureate (LGBs).

The goal of our assessment plan is to engage faculty with a method that helps them understand *how* students learn as well as assess what they have learned, to understand how to improve future student performance and learning, and to put greater emphasis on reflecting on the collective impact of the courses that comprise the programs rather than simply "testing" students independent of the larger learning context. The faculty team first worked to align the existing program learning goals with WSU's six LGBs. We also surveyed the faculty about the extent to which they address the LGBs in each of the courses they teach. We examined the courses required by all students and chose two courses that required a substantial, comprehensive group project involving researching, integrating, and communicating. Successful completion of each task required proficient integration of key program and institutional goals. The rubrics used are at:

[http://www.css.wsu.edu/overview/ugrad\\_assessment/index.html](http://www.css.wsu.edu/overview/ugrad_assessment/index.html). The group project created a real-life, collaborative learning and assessment opportunity underscores the shift in the assessment focus from the individual to an assessment that engages faculty in collectively observing the impact of the program on students.

In the initial ratings, the average faculty rating for posters in the sophomore level course across all dimensions was 2.8, with a score of 4 as the minimum expected for a WSU student graduating with a Bachelor of Science degree. The average faculty rating for presentations in the senior level course across all dimensions was 4.5. The level of "progress," defined as the difference between senior and sophomore level ratings indicated that mean student performance increased from 'developing' at the sophomore assessment to 'proficient' at the senior level.

Current steps underway are to (1) strengthen the alignment between assignments and the university, program, and course learning; (2) use the assessment rubric more often in instruction and as a guide for grading; (3) reserve class time for norming sessions with students; (4) create assignments that require students to give peer feedback using the rubric, and offer students opportunities to revise work after receiving feedback from peers and/or faculty; (5) require students to attach a rubric-referenced self-assessment to key assignments; (6) monitor the use of the rubric in the programs'; 7) review the assignment documentation in each class and overall program instruction related to information literacy, particularly information documentation.