Effective and Efficient: Analytics for Successful Academic Program Development

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TExAS S TATE UNIVERSITY
SACSCOC Presentation
CS-13 12-9-2018

Context
- Large public institution (38,000+ students)
- Teaching heritage and research vision
- Primacy of academic affairs
- Faculty-driven governance and curriculum model
- Strategic planning and resource allocation
- State funding mechanism and standards
- Transparency

I. Agenda and Outcomes
- Describe the major elements of job market assessment and how it informs new program development
- Understand key factors for establishing the budget requirements of new academic programs
- Evaluate an institution’s approach to job market assessment and budget development for new academic programs
- Appreciate the value of team-based and analytics-based process for justifying new academic programs to stakeholders
II. New Academic Programs – Proposal

- Job Market Need + Existing Programs
- Enrollment Projections + Admissions Standards
- Curriculum + Degree Plan
- Marketable Skills + Higher Ed Board Mandates
- Readiness + Personnel Needs and Quality
- Facilities and Equipment
- Costs
- Funding
- Assessment

New Program Team and Iterative Process

III. Job Market Need

- Using official databases, demonstrate that the workforce needs additional graduates from the proposed degree program. Think: Unmet Demand
- Examine similar programs that already exist in Texas at public institutions, along with the number of graduates. Think: Existing Supply
- Calculate the gap between jobs available and graduates of existing programs in Texas.
- The gap needs to be sufficiently large so that existing programs cannot meet it by accepting and graduating a few more students per year.
**Jobs Available for Program Graduates**

- Determine CIP code of proposed program
- Use CIP to SOC crosswalk to identify occupations associated with the CIP code
- Review occupations to determine the level of education typically required (bachelor's, master's, etc)
- Review state, regional and national workforce projections for occupations identified
- Assess job openings against program graduates in the state to identify a gap between supply and demand

**Data Sources**

- Standard Occupational Classifications (OSSBLS)
- Classification of Instructional Programs (NCES)
- State labor market (Texas Workforce Commission)
- Similar programs and graduates (Texas Higher Education Coordinating Board)
- Regional labor market (Austin Chamber of Commerce)
- Industry reports
- Commissioned reports

**Try it yourself**

**Exercise:**
Assess the Need for a New Academic Program
Exemplar: PhD, Materials Science, Engineering, and Commercialization

- Prepares scientists and engineers to perform interdisciplinary research on scale-dependent materials and equips them as effective leaders and entrepreneurs in technological innovation.
- Demand in Texas for materials scientists will increase 18 percent and demand for materials engineers will rise 21 percent, far outpacing national projections.
- Texas Instruments: The proposed program will address the challenge we face with the growing shortage of appropriately educated and trained scientists, ... will also help to ensure that these scientists are sensitive to the interdisciplinary nature of the field of nanotechnology, and are equipped ... to the requirements of the successful delivery and commercialization of our technology.

IV. Curriculum Decisions and Outcomes

- Job market assessment
- Economic and labor forecasts
- Professional associations and industry groups
- Commissioned reports and surveys
- Marketable skills
- Accreditation and licensure

V. Resources and Budget Needs

- Budget is a five-year summary of costs and funding for the following:
  - Faculty, Graduate Assistants, and Staff
  - Equipment and Facilities
  - Operating Costs and Library
  - State Formula Funding
  - Designated and Graduate Tuition
  - Grants and Other Sources
- Proposal budgets are jointly developed with chairs, deans, AVPAA, Associate Provost, and budget staff
- Provost and President approve final budgets
VI. Curriculum & Enrollment Drive Costs

1) Determine new program curriculum sequence
2) Determine student enrollments
3) Map instructors to course sections
4) Map other academic programs in the same unit
5) Determine minimum number of new and replacement personnel to implement new program
6) Determine salaries and when to hire new and replacement personnel
7) Determine costs and when new facilities, equipment, and other resources are needed

Exemplar: PhD, Computer Science Curriculum Map

<table>
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<th>CRN</th>
<th>CS 702 (5 1/2 Yr students)</th>
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<th>CSCI 702 (PhD)</th>
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<tr>
<td>01559</td>
<td>Dr. Huy</td>
<td>Dr. Page</td>
<td>Dr. Tahir</td>
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Try it yourself

Exercise:
Map the Curriculum and Determine Faculty Needs
### Exemplar: BS, Civil Engineering Hiring Plan

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<th>Term</th>
<th>Faculty</th>
<th>2017-18</th>
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<th>2021-22</th>
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### Estimating Maintenance & Operating Budget Needs

- New and incremental M&O budgets are difficult to estimate.
- M&O allocations to academic units at Texas State are based on in-house formula to support travel, lab supplies, office supplies, etc.
- Formula weights:
  - Past expenditures
  - Expense per faculty FTE and SCH
  - SCH, course level, number of majors and minors
  - Headcount/FTE for faculty, staff, student assistants
  - Others
- Formula predicts M&O budget needed for new program proposals.

### VII. Curriculum & Enrollment Drive Revenue

- Review program hours and course schedule.
- Consider how course level, discipline, and delivery affects revenue (formula funding, differential tuition, distance education fees).
- Integrate enrollment projections, including attrition and time-to-degree.
- Estimate routine charges against revenue (mandated set-asides, discounts, exemptions).
- Add grants, contracts, reallocations, and other sources of revenue.
### Exemplar: MS, Data Analytics Revenue

<table>
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<th>Year</th>
<th>Total Revenue</th>
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<tr>
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### Perspectives and Best Practices

- Only programs on the university's strategic plan move forward.
- Proposal for a new academic program is a business plan that should reflect an economic wisdom for the state and the university.
- Analysis includes the new program as well as existing programs in the unit.
- Employer, industry, and testimonials from other universities are very convincing.
- Proposal is in a constant state of negotiation and editing until approved.
- Not all emphases of a proposed degree program are viable; adding tracks/concentrations later may be easier.

### Ideas, Questions and Contacts

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