

IUPUI
Academic Policies and Procedures Committee
Minutes
Friday October 7, 2005

Minutes

- The minutes from the 9/2/05 meeting were accepted as distributed.

Announcements from the Chair

- Students displaced by Katrina
 - The students' home institutions are expecting the students to return for the spring semester
 - Enrollment Services is determining how to handle admission and registration of students who decide to remain at IUPUI but who do not have the documentation that is typically required
- Dual Credit policy for discussion at ICHE October meeting
 - Components of the policy
 - Dual credit liberal arts courses shall transfer to all public postsecondary institutions in the state and shall count in the same way that equivalent courses count on the receiving campus, as recognized by the Commission for Higher Education's Statewide Transfer and Articulation Committee (STAC).
 - In order for a lower division course in a specific liberal arts discipline to be counted for dual credit, it must be part of the Core Transfer Library, as defined by STAC.
 - Wherever possible, the course syllabi for dual credit courses in the liberal arts shall also prepare students for successfully passing Advanced Placement (AP) examinations in the same academic area.
 - Academic units should follow the discussion of the policy and be prepared for its adoption.
 - The possibility of IUPUI academic units offering dual credit courses was discussed briefly.
- SES Organization
 - Organization chart was distributed and discussed briefly. (The document is appended to the minutes.)

Academic Affairs Committee Report *Betty Jones, Chair*

- UFC- EPC has been discussing revisions in the admissions policy for Indiana University. President Herbert indicated in the State of the University address that each campus will establish its admissions standards consistent with the mission differentiation process. Clarification will be sought.
- IUPUI-AAC will bring the common policy for probation, dismissal, and reinstatement to the November UFC for second reading. The AAC will recommend that the actions be based on the IUPUI gpa so that students who intercampus transfer will not be penalized (or helped) by grades from their previous campus. This will be equivalent to how transfer students from nonIU campuses are handled.
 - Discussion of pros and cons occurred. The major pro was that students who intercampus transfer would not be penalized by grades from their previous campus. Cons centered on difficulties of determining the IUPUI gpa, as this is not calculated within SIS (and is likely not to be a high priority in terms of revisions to the software).

- Engineering and Technology must include Purdue grades and will need an exemption from the IUPUI gpa criterion
- Students will not have access to their IUPUI gpa since this is not calculated within SIS
- If the document is not adopted with the IUPUI gpa statement, the AAC may recommend that pursuit of a common policy be discontinued since the document has been under development for 4-5 years without reaching consensus

Items for Review, Discussion, or Action

- Academic unit policies on student emails from non-IUPUI email accounts—*Cathy Buyarski*
 - Deferred to November
- National Student Exchange—*Cathy Buyarski*
 - Deferred to November
- Transcript notations—*Mary Beth Myers*
 - The Academic Leadership Council (October 2005) agreed to a proposal submitted by IUPUI for the addition of specific notes to the official Indiana University transcript. It was agreed that there should be consistency across the university in the nature of these notations and it was also recognized that some campuses may elect not to use them.
 - Experiential Learning is defined as formal, supervised learning experiences that rely substantially on students' applying through direct experience the knowledge and information acquired through reading, simulations or electronic exercises, faculty instruction, or other modes of learning directly within the context and duration of the course. It entails the integration of knowledge, activity, and reflection. In making decisions about the classification of experiential learning, judgment of individual faculty and approval of the academic department will be required. Details of the procedures are being developed and will be shared shortly.
 - Once implemented, one or more of the following formal designations may be applied to a class or to an individual student in a class:
 - Community Based Research
 - Organized Community Service Activities
 - Significant Time in Community Setting
 - Immersed in Different Culture
 - Mention was made of the transcript notation that can be added at the time of graduation to denote research proficiency. This is a different process than the notation that will be attached to specific courses.
 - For more information on the Research Notation, see <http://www.urop.iupui.edu/transcript.html>
- Review of proposal for a new degree—BS in Biomedical Engineering Technology—*Ken Rennels and Barbara Christe*
 - Documents attached
 - After discussion, the APPC members agreed that we should endorse the offering of this degree.

Future Agenda Items

- Prior Learning Assessment--*Amy Warner*
- Intercampus Transfer & Returning Student Processes--*Enrollment Center*
- Retention Issues
- Transfer Students

- o Policy and Business Practice Impediments

Meeting Dates and Locations

September 2, 2005	1:00 to 3:00	CA 136
October 7, 2005	1:00 to 3:00	CA 136
November 4, 2005	1:00 to 3:00	CA 136
December 2, 2005	1:00 to 3:00	CA 136
January 6, 2006	1:00 to 3:00	CA 136
February 3, 2006	1:00 to 3:00	CA 136
March 3, 2006	1:00 to 3:00	CA 136
April 7, 2006	1:00 to 3:00	CA 136
May 5, 2006	1:00 to 3:00	CA 136

STATE OF INDIANA

COMMISSION FOR HIGHER EDUCATION

INSTITUTION: Indiana University Purdue University Indianapolis

COLLEGE: Purdue School of Engineering and Technology

DEPARTMENT: Electrical and Computer Engineering Technology

DEGREE PROGRAM TITLE: Biomedical Engineering Technology

FORM OF RECOGNITION TO BE AWARDED/DEGREE CODE: Bachelor of Science
in Technology

SUGGESTED CIP CODE:

LOCATION OF PROGRAM/CAMPUS CODE: Indianapolis

PROJECTED DATE OF IMPLEMENTATION: Fall, 2006

**DATE PROPOSAL WAS APPROVED BY
INSTITUTIONAL BOARD OF TRUSTEES:**

**SIGNATURE OF AUTHORIZING
INSTITUTIONAL OFFICER**

DATE _____

**DATE RECEIVED BY COMMISSION
FOR HIGHER EDUCATION**

COMMISSION ACTION (DATE) _____

A. ABSTRACT

The Bachelor of Science in Technology, Major: Biomedical Engineering Technology offered by the Purdue School of Engineering and Technology at Indiana University Purdue University Indianapolis

Objectives: Biomedical Engineering Technology (BMET) is a thriving and expanding career field which manages and supports the manufacture and use of existing medical devices and technology in patient care.

Clientele to be served: This program is designed for students who wish to study the devices and technology used in the delivery of health care at a baccalaureate level.

Curriculum:

total credit hours: 127 hours

credit hours for required courses: There are 112 semester credit hours of required courses.

additional credit hours: There are 15 semester credit hours of elective classes.

subject areas of required courses: The primary subject areas of required courses are in biomedical engineering technology (BMET) and electrical engineering technology.

internships or practica: The associate degree (currently in place) requires a four credit practicum in the sophomore year. This practicum requires a minimum of 180 hours in the clinical environment.

unique and innovative features: This program would be innovative and unique in three areas. First, within the health care community, a four-year program is needed by employers to generate critically needed graduates. As one of the few BS programs in the country, IUPUI would take the lead in BMET education. A second novel feature of the program is the partnership with Aramark Corporation. Their financial contribution to IUPUI will facilitate the highest quality course development with the involvement of in-the-field experts. This donation is intended to defray the costs associated with the development of the BS program, that is, online course development and publicity. Aramark is a fortune 100 corporation whose Clinical Technology Services Division is a leading service provider. Lastly, the program will use technology to offer the upper division BMET classes allowing student participation without regard to geography. Current AS students are located on several nationally located campuses including New Mexico State University at Alamogordo and Fox Valley Technical College in Appleton, Wisconsin. This degree program will leverage other upper division coursework in organizational leadership and supervision and technical writing which already offer their content using the Internet.

employment possibilities: This program will primarily educate graduates for careers in the clinical setting, employed by hospitals, medical device manufacturers and outside service organizations.

B. Program Description

1. Proposed Program and Stated Objectives

This is a proposal to award the degree of Bachelor of Science in Technology with the transcript notation of Biomedical Engineering Technology from the School of Engineering and Technology on the IUPUI campus. The proposed program has been developed by the faculty of the Biomedical Engineering Technology program in consultation with potential employers. Local practicing clinical engineers as well as nationally were sought after to advise IUPUI regarding the design of the ideal Biomedical Engineering Technology Program. Aramark Corporation, a Fortune 100 company which provides clinical equipment management services to about 500 hospitals nationwide, has partnered with IUPUI to design and fund the development of a program in which many of their employees will enroll.

This program will address a growing need for engineering technicians in the clinical environment who can support the rapidly expanding use of technology in patient care. The students will integrate the technical/electrical/computer aspects of medical equipment with the needs of the medical staff and patients. Graduates will be an integral member of the health care team, demonstrating excellent problem solving skills blended with an emphasis on customer service toward the medical staff to result in safe and effective patient care.

2. Admission Requirements, Anticipated Student Clientele, and Student Financial Support

- a. Admission requirements: Admission to the Biomedical Engineering Technology program will require the same standards necessary for admission to the technology programs in the School of Engineering and Technology.
- b. Prerequisite coursework and/or degrees: There are no prerequisites for the program beyond those necessary for admission.
- c. Anticipated clientele: The clientele for the Biomedical Engineering Technology program are those students whose would like to blend the technical challenges of medical equipment with the health care environment and customer service. Many students attracted to this field report a desire to “make a difference” in the workplace. This proposed degree will allow students currently enrolled in the associate degree program (in place since 1978) to continue their education and earn a bachelor’s degree. In addition, there are many graduates of associate degree programs nationally who would like to earn a bachelor’s degree but have no educational institution at which to earn it. This program is designed to work with the transfer students to package a four-year degree using their previous coursework and other IUPUI courses as necessary. The ability to participate in many of the courses over a distance will allow a larger number of students who are not located in Indiana to be served.
- d. Enrollment Limitations: While it is expected that this will be a popular program, student enrollment is not expected to exceed the support services currently in place.

Should individual class enrollments become large, the online environment will allow faculty to engage teaching assistants to cope with the volume.

3. Proposed Curriculum

a. Curriculum requirements: The Biomedical Engineering Technology program will have basic requirements similar to other programs in the electrical engineering technology department. The program will require 127 credit hours, including a foundation of 34 semester hours in electrical and computer engineering technology coursework, 24 semester hours in math and science, 27 semester hours in humanities and social science coursework, 9 hours in managerial electives and 29 hours in biomedical engineering technology courses. This curriculum has been designed to meet the guidelines set by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET).

b. Sample curriculum:

Bachelor of Science in Technology, Biomedical Engineering Technology

Plan of Study

<u>Course Number</u>	<u>Semester Hours</u>	<u>Course Number</u>	<u>Semester Hours</u>
I. Electrical and Computer Engr. Tech (38 hours)		IV. Humanities/Social Science (27 hours)	
*ECET 107#	4	*ENG W131#	3
*ECET 109#	3	*COMM R110#	3
*ECET 157#	4	*PSY B104#	3
*ECET 155#	3	*TCM 220	3
*ECET 164#	3	*TCM 370	3
*ECET 207#	4	*NURS B231	3
*ECET 209#	4	*Hum/Sco Sci	3
*ECET 234#	3	*Hum/Sco Sci	3
*ECET 284	4	*Hum/Sco Sci	3
*ECET 483	4		
*ECET 490	1		
*ECET 499	1		
II. Math and Science (24 hours)		V. OLS and Managerial Electives (9 hours)	
*MATH 153#	3	*BUS A200	3
*MATH 154#	3	*OLS elective	3
*MATH 221#	3	*OLS elective	3
*MATH 222	3		
*STAT 301	3	III. Biomedical Engineering Technology (29 hours)	
*PHYS 218#	4	*BMET 105#	1
*CHEM C111&115	5	*BMET 220#	3
		*BMET 240#	3
		*BMET 290#	4
		*BMET 310	3
		*BMET 320#	4
		BMET 420	3
		BMET 440	3
		BMET 470	3
		BMET 491	2

* denotes existing class

#indicates a course which is part of the current AS program

**IUPUI - Department of Electrical and Computer Engineering Technology
Associate of Science Degree in Technology, Biomedical Electronics Technology**

This two-year program culminates in an Associate of Science degree. A typical program of study is shown below:

First Semester

Crse #	Cr Hrs	Title
BMET 105		Intro to BMET
	1	
ECET 107		Introduction to Circuit Analysis
	4	
ECET 109		Digital Fundamentals
	3	
Math 153		Algebra & Trigonometry I
	3	
Engl W131		Elementary Composition I
	3	
BMET 220		Applied Human Biology for BMET
	3	
	<u>3</u>	
	17	

Second Semester

Crse #	Cr Hrs	Title
ECET 157		Electronics Circuit Analysis
	4	
ECET 155		Digital Applications
	3	
ECET 164		Applied Object-Oriented Programming
	3	
ECET 207		AC Electronics Circuit Analysis
	4	
Math 154		Algebra & Trigonometry II
	3	
	<u>3</u>	
	17	

Third Semester

Crse #	Cr Hrs	Title
ECET 209		Introduction to Microcontrollers
	4	
ECET 234		PC Systems I
	3	
BMET 240		Intro to Medical Electronics
	3	
PsyB104		Psychology as a Social Science
	3	
COMM R110		Fundamentals of Speech Communication
	3	
	<u>3</u>	
	16	

Fourth Semester

Crse #	Cr Hrs	Title
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BMET 320	Biomedical Electronics Systems
4	
BMET 290	BMET Practicum
4	
Phys 218	General Physics
4	
Math 221	Calculus for Technology I
3	
15	

TOTAL CREDIT HOURS FOR AS DEGREE

65

IUPUI - Department of Electrical and Computer Engineering Technology
Bachelor of Science Degree in Technology, Major: Biomedical Engineering Technology

Graduates of the BMET AS program are eligible for admission to the BS program in Biomedical Engineering Technology. A *typical* program of study is shown below:

Fifth Semester

Crse #	Cr Hrs	Title
ECET 284		Computer Communications
	4	
BMET 310		Introduction to Radiography Systems
	3	
Math 222		Calculus for Technology II
	3	
BUS A200		Accounting
	3	
TCM 220		Technical Report Writing
	3	
	16	

Sixth Semester

Crse #	Cr Hrs	Title
BMET 420		Technology and Special Patient Populations
	3	
ECET 483		Networking Fundamentals with Microcontrollers
	4	
OLS		Technical Elective
	3	
TCM 370		Oral Practicum for Technology
	3	
CHSS Elective		
	3	
	16	

Seventh Semester

Crse #	Cr Hrs	Title
BMET 440		Codes Regulations and Patient Safety
	3	
CHEM C111&C115		Chemistry of Life
	5	
NURS B231		Communication for the Health Care Professional
	3	
ECET 490		Senior Design Phase I
	1	
ECET 499		Ethics and Professionalism
	1	
CHSS Elective		
	3	
	16	

Eighth Semester

Crse #	Cr Hrs	Title
BMET 470		Special Topics in BMET
	3	

BMET 491	Technical Project
2	
OLS	Electives
6	
CHSS Elective	
3	
14	
TOTAL CREDIT HOURS REQUIRED FOR BS DEGREE	

127

c. Existing courses: In the plan described on the previous pages, the courses marked with an asterisk are in existence and are offered regularly. These courses include core coursework in both the electrical engineering technology area and the biomedical engineering technology area. These courses are the foundation of the associate's degree which has been in place for many years. Included in the curriculum is BMET 310, an upper division specialty course which was developed several years ago with a grant from an outside service organization, Trimedx. This course was not part of the AS program but will work well within the BS curriculum.

d. New courses There are four new courses required for the bachelor's degree. These courses include three web based courses which will be developed with funding from the Aramark Corporation. The fourth class is a senior projects class that will be tailored to match the needs of the student and will serve as a capstone course for the curriculum. These courses will be designed to blend the areas of clinical equipment and electrical engineering technology.

e. Recommended electives The curriculum includes two groups of electives. First, in the humanities, social science area, students can select from the departmentally approved electives which include (but are not limited to)

AMST A301

ANTH A103, A104

COMM T337, M150

ECON E201, E202, E325, E305

ENG L105, L115, L204, L213,C190

EALC J131, J132

FOLK F101, F131

FREN F117, F118

GEOG G110, G314,G331,G355

GER G117, G118

HIST H105, H106, H113, H114

MUS M110, M174

OLS 252,263

PHIL P110, P120, P262, P265

P331, P338

POLS Y103, Y217

PSY B104

REL R133, R383

SOC R100, R121

SPAN S117, S118
SPEA J101, V170

The second group of electives comes from the Organizational Leadership and Supervision department. Approved electives will include:

- OLS 252 Human Behavior in Organizations
- OLS 263 Ethical Decisions in Leadership
- OLS 274 Applied Leadership (this is a supervision course)
- OLS 331 Occupational Safety and Health
- OLS 368 Personnel Law
- OLS 317 Project Management
- OLS 373 Case Studies in Leadership
- OLS 375 Training Methods
- OLS 376 Personnel Supervision
- OLS 476 Compensation Planning and Management

f. Courses at another institution The Biomedical Engineering Technology program will be free-standing on the IUPUI campus and will not require the participation from other institutions.

4. Form of Recognition

- a. Type of degree to be awarded Bachelor of Science in Technology with transcript notation, Biomedical Engineering Technology
- b. Indiana University CIP Code The suggested CIP code for the undergraduate BS program in Biomedical Engineering Technology is
- c. Program, organizational and site information on diploma The degree will read as follows: Bachelor of Science in Technology Awarded for Studies in Indianapolis

5. Program Faculty and Administrators

a. Current faculty and Administrators

Administration

H. Oner Yurtseven, Dean, Purdue School of Engineering and Technology
Richard Pfile, Department Chair, Electrical Engineering Technology

Full Time

Barbara Christe, Associate Professor and Program Director, Biomedical Engineering Technology

Part Time

Michael Bernstein, Manager of Facilities, Clarian Health Partners

Robert Pennington, Director of Clinical Engineering, Indiana University Hospital

b. New faculty positions required:

No new full-time faculty positions are required. Instructors for the four new BMET courses will be part-time lecturers. Individuals selected will have considerable clinical experience and will be selected from a national pool of talent because the courses will be offered via Oncourse. Several prominent figures in the BMET community have already expressed interest in teaching for IUPUI.

6. Needed Learning Resources

a. Library holdings, equipment, laboratories, clinical and research facilities available

Library resources are up to date with collections supported well by our assigned Librarian, May Jafari. In addition, the Ruth Lilly Medical Library and the Dental School Library will provide additional and unique resources for students. Together these libraries have significant holdings in textbooks, reference books and periodicals.

b. Need for additional learning resources

No additional resources are necessary to support the degree.

7. Other Program Strengths.

a. Special Features This program will be extraordinarily unique throughout the country. Currently there is only one other institution with a similar focused bachelor's degree. That program at East Tennessee State University serves a very small student population (less than 25 students across the four year program). The field of biomedical equipment technology has evolved from vocational level instruction in the 1960's to technicians who must support complex equipment and problem-solve at the systems level. Employers are demanding workers with baccalaureate level instruction.

To best serve the diverse clientele seeking BMET degrees, many courses will be offered at a distance. This will attract our graduates who are currently employed throughout Indiana. In addition, students from across the country will be able to enroll in IUPUI coursework.

b. Anticipated Collaborative Arrangements with Other Parties A significant source of funding for the development of this degree is a generous donation from Aramark Corporation. The funds are designated to support the initial development costs of the degree. These expenses include the curriculum work necessary for three new online

classes and publicity costs. As part of this arrangement, employees of Aramark will be encouraged to enroll at IUPUI and work toward their BS degree.

C. Program Rationale

1. Institutional Factors

a. Compatibility with the institution's mission As identified in IUPUI's mission statement, we should work to "improve health care...high technology, and enhance the quality of health and human services." (<http://www.planning.iupui.edu/mission/missionvalue.pdf>) This program blends two important pieces of that mission, health care and technology.

b. Planning process resulting in this proposal A bachelor's degree program has been requested by employers for several years however, funding limitations restricted its development. In July, 2004, informal discussions with Aramark were very encouraging and curriculum planning began. An instructional framework was developed with the cooperation of many perspectives including practicing clinical engineers, hospital administrators, and faculty at other educational institutions offering associates degrees. After several revisions, the resulting program has received resounding support and interest.

c. Impact of the proposed program on other programs The students enrolled in this program will add enrollment to required courses in the electrical engineering technology area. This will be very beneficial for the department for two reasons. First, enrollments in the electrical engineering technology major are declining. In addition, biomedical engineering technology often attracts women more so than electrical engineering technology. This will improve the representation of female students within the department.

2. Student Demand

a. Description of enrollment projections A recent article in the Journal of Clinical Engineering included these comments on the field of biomedical equipment technology: "the profession is thriving by nearly every measure: salaries are way up, more women are in the field, and younger people are being successfully recruited into the profession." (page 163, December 2004) While the field is experiencing increasing popularity, the number of educational institutions offering BMET degrees is declining. This decrease has reduced the number of recent graduates and has led employers to define their ideal candidate as "breathing."

Potential students will come from three sources. First, some of our current associate degree students will decide to continue on with their studies to complete the four year degree. Secondly, there are many currently-employed BMETs who would like to earn their four year degree. Hospitals actively encourage their employees to continue their education. In addition, hospitals are very "degree focused." Hospitals prefer higher level degrees and will encourage (and fund) their employees to pursue this degree. The

third group of students will be those who will choose IUPUI because of this unique degree. The campus has made great strides in attracting students to choose IUPUI not because of location (local students) but because of the strength of the degree we offer. This bachelor's degree will contribute to this effort.

We expect that we will attract approximately 10 full-time students and 15 part-time students into the program during each year. This number reflects our estimates of student interest, employer requests and support, and our ability to offer a high quality, highly accessible program.

b. Enrollment and completion data Please see Table 1 for Enrollment and Completion Data. Tables 1, 2a, 2b, and 3 have data for the first five years of the program.

3. Transferability

The transfer of credits among various institutions is a highly variable process. Each institution has its own guidelines for the transfer of credit. Since this program will be highly unique, direct transfer opportunities to other institutions will be limited. For students looking to transfer to IUPUI, each student's record will be carefully evaluated on an individual basis. Within the state of Indiana, some transfer agreements are already in place (for example, the Passport program with Ivy Tech).

4. Access to graduate and professional programs

This degree is not necessarily preparing students for entry into graduate or professional schools. However, students can pursue a Masters Degree in Technology if desired.

5. Demand and employment factors

Every hospital across the country has need of BMET services regardless of the actual service provider. This requirement is a result of accreditation regulations which require periodic testing and maintenance of all medical equipment. Some smaller hospitals use outside service providers who support the medical equipment. Large institutions often have large BMET staff that can range from a PhD or MS department head, several clinical engineers and many technicians. It is estimated by the United States Census Bureau that there are 7,569 hospitals nationwide. Unfortunately, there are no accurate estimates of the number of BMETs in the country or a good estimate of the number of open BMET positions. However, almost all of these un-numbered employed persons do not have a bachelor's degree in the field. In addition, there are a large number of unfilled positions in hospitals as well as a large number of positions which are filled by unqualified candidates simply because of the lack of graduates.

Employers (which include hospitals, independent service organizations and manufacturers) see an evolution occurring in the required skills of BMETs. In a pattern similar to the nursing profession, BMETs are moving toward more high level skills with a heavy emphasis on systems problem solving. As nursing moved from diploma programs to associate degree to bachelor's degree requirements, so too is BMET

shifting from a field closely related to hospital maintenance to a profession which requires at least four years of post-secondary education.

6. Regional, state, and national factors

- a. Comparable programs in region or state The only comparable bachelor's degree program is at East Tennessee State University. There are no other four year degree programs which focus on clinical equipment in the health care environment.
- b. External agencies

The Accreditation Board for Engineering and Technology (ABET) is recognized by the Department of Education as the body which accredits engineering and engineering technology degrees in the United States. Several programs in the department of Electrical and Computer Engineering Technology (which houses BMET) are ABET accredited. The process is very involved and will require a site visit. In addition, there must be at least one graduate prior to a visit. The next visit is in 2006 and there will be no graduates at that time. With a six year accreditation, the following visit would be in 2012. At that time the BMET BS program will seek accreditation.

D. Program Implementation and Evaluation

Program Implementation Assessment of the Biomedical Engineering Technology program will follow the model developed for the Purdue School of Engineering and Technology by the Assessment Committee for ABET and North Central Association outcomes and assessment processes. As with other engineering technology programs, assessment of the program will have the following components: (1) assessment of student learning through evidence collected for the measurable learning outcomes developed to meet the ABET criteria and IUPUI's principles of Undergraduate learning, (2) an assessment of employer satisfaction using both a survey form and focus groups, (3) assessment of alumni satisfaction through feedback using a process similar to the process for employer feedback, and (4) assessment of the program using matriculation rates, graduation rates, placement rates and advancements.

Program Evaluation As students progress through the curriculum assessment will be guided by the objectives defined by ABET. They are:

- a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines,
- b. an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology,
- c. an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes,
- d. an ability to apply creativity in the design of systems, components or processes appropriate to program objectives,
- e. an ability to function effectively on teams,
- f. an ability to identify, analyze and solve technical problems,
- g. an ability to communicate effectively,
- h. a recognition of the need for, and an ability to engage in lifelong learning,
- i. an ability to understand professional, ethical and social responsibilities,
- j. a respect for diversity and a knowledge of contemporary professional, societal and global issues, and
- k. a commitment to quality, timeliness, and continuous improvement.

In addition, the campus has asked each program to assess student learning on its six general education principles. They are

Core Communication and Quantitative Skills

The ability of students to write, read, speak, and listen, perform quantitative analysis, and use information resources and technology and the foundation skills necessary for all IUPUI students to succeed. This set of skills is demonstrated, respectively, by the ability to: express ideas and facts to others effectively in a variety of written formats; comprehend, interpret, and analyze texts; communicate orally in one-on-one and group settings; solve problems that are quantitative in nature, and make efficient use of information resources and technology for personal and professional needs.

Critical Thinking

The ability of students to analyze information and ideas carefully and logically from multiple perspectives. This skill is demonstrated by the ability of students to: analyze complex issues and make informed decisions; synthesize information in order to arrive at reasoned conclusions; evaluate the logic, validity, and relevance of data; solve challenging problems, and; use knowledge and understanding in order to generate and explore new questions.

Integration and Application of Knowledge

The ability of students to use information and concepts from studies in multiple disciplines in their intellectual, professional, and community lives. This skill is demonstrated by the ability of students to apply knowledge to: enhance their personal lives; meet professional standards and competencies, and; further the goals of society.

Intellectual Depth, Breadth, and Adaptiveness

The ability of students to examine and organize disciplinary ways of knowing and to apply them to specific issues and problems. Intellectual depth describes the demonstration of substantial knowledge and understanding of at least one field of study. Intellectual breadth is demonstrated by the ability to compare and contrast approaches to knowledge in different disciplines. Adaptiveness is demonstrated by the ability to modify one's approach to an issue or problem based on the contexts and requirements of particular situations.

Understanding Society and Culture

The ability of students to recognize their own cultural traditions and to understand and appreciate the diversity of the human experience, both within the United States and internationally. This skill is demonstrated by the ability to: compare and contrast the range of diversity and universality in human history, societies, and ways of life; analyze and understand the interconnectedness of global and local concerns, and; operate with civility in a complex social world.

Values and Ethics

The ability of students to make judgments with respect to individual conduct, citizenship, and aesthetics. A sense of values and ethics is demonstrated by the ability of students to: make informed and principled choices regarding conflicting situations in their personal and public lives and to foresee the consequences of these choices, and; recognize the importance of aesthetics in their personal lives and to society.

E. Tabular Information

All tables list data for the first five years of the program.

1. Table 1: Enrollment and Completion Data
2. Tables 2A and 2B: Cost and Revenue Data
3. Table 3 New Program Proposal Summary

IUPUI BIOMEDICAL ENGINEERING TECHNOLOGY PLAN OF STUDY

7/2005

Name _____ SS# _____ Phone # _____

Counselor _____ Date _____ Rev _____
 Counselor's Phone # _____ Department Phone #274-2363

ASSOCIATE OF SCIENCE DEGREE - BMET

BASIC SCIENCE & MATHEMATICS (13 hrs required)			
Course/Title	Hrs	Date	Grade
MATH 153 Alg & Trig I	3		
MATH 154 Alg & Trig II	3		
MATH 221 Calculus Tech I	3		
PHYS 218 Gen Physics I	4		

TECHNICAL SPECIALTY (40 hrs required)			
Course/Title	Hrs	Date	Grade
ECET 107 Intro to Ckt Analysis	4		
ECET 157 Electronics Ckt Analysis	4		
ECET 207 AC Elec Ckt Analysis	4		
ECET 109 Digital Fundamentals	3		
ECET 155 Dig Fund II/159 Digital App	3		
ECET 209 Intro to Microcontrollers	4		
ECET 234 PC Systems I	3		
BMET 105 Intro to BMET	1		
BMET 220 Applied Human Biology	3		
BMET 240 Intro to Med Electronics	3		
BMET 320 Biomed Elec Systems	4		
BMET 290 BMET Practicum	4		

COMPUTER PROG. (3 hrs required)			
Course/Title	Hrs	Date	Grade
ECET 164 Applied Obj-Oriented Prog	3		

COMM, HUMANITIES, & SOC SCI (9 hrs required)			
Course/Title	Hrs	Date	Grade
ENG W131 Elem Comp	3		
COMM R110 Speech Comm	3		
PSY B104 Psychology as Soc Sci	3		

BACHELOR OF SCIENCE DEGREE - BMET

BASIC SCIENCE & MATHEMATICS (11 hrs required)			
Course/Title	Hrs	Date	Grade
MATH 222 Cal for Tech II	3		
STAT 301 Statistics	3		
CHEM C111&C115 Chemistry of Life	5		

TECHNICAL SPECIALTY (24 hrs required)			
Course/Title	Hrs	Date	Grade
ECET 284 Computer Communications	4		
ECET 483 Network Fundamentals	4		
BMET 310 Introduction to Radiography	3		
BMET 420 Technology and Special Pat	3		
BMET 440 Codes, Regs and Patient Sa	3		
BMET 470 Current Topics in BMET	3		
ECET 490 Senior Dsgn Ph I	1		
ECET 499 Ethics and Professionalism	1		
BMET 491 BMET Senior Project	2		

OLS/Managerial ELECTIVES (9 hrs required)			
Course/Title	Hrs	Date	Grade
Bus A200 Accounting	3		
OLS ___ #	3		
OLS ___ #	3		

COMM, HUMANITIES, & SOC SCI (18 hrs required)			
Course/Title	Hrs	Date	Grade
TCM 220 Tech Report Writing	3		
TCM 370 Oral Practicum	3		
NURS B231 Com. for the Health Profes	3		
Elective * _____	3		
Elective * _____	3		
Elective * _____	3		

courses are selected from approved OLS electives

* Communications, Humanities and Social Science electives from the approved list

Total # of hrs AS Degree 65

Total # of hrs BS Degree 127

Indiana University Purdue University Indianapolis

Academic Policies and Procedures Committee
Guidelines for Review of New Degree Proposals

Biomedical Engineering Technology (BMET) – BS Proposal

In the review of the New Degree Proposal, the APPC will consider the following items.

1. Does the Program Description clearly describe the new degree?

The purpose of this program is to prepare college graduates with bachelor’s level coursework to support the technology used in the delivery of health care.

This program will address a growing need for engineering technicians in the clinical environment who can support the rapidly expanding use of technology in patient care. The students will integrate the technical/electrical/computer aspects of medical equipment with the needs of the medical staff and patients. Graduates will be an integral member of the health care team, demonstrating excellent problem solving skills blended with an emphasis on customer service toward the medical staff to result in safe and effective patient care.

2. Does the statement of the program’s goals and objectives clearly differentiate this degree from other degrees at IUPUI?

The program prepares students for employment in support of patient care technology. This is a highly unique program across the United States. There is only one other institution which currently offers a bachelor’s degree with a similar focus.

This program does have a name which is very similar to several other campus programs. These are compared as shown below:

Degree Program	Primary Focus	Core coursework	Types of Employers
<i>Biotechnology</i>	The use of plants or animals and their cells and tissue to create or modify products for human consumption	biology, genetics, manufacturing, quality control, bioinformatics and molecular biology	Food processors, medicine and vaccine manufacturers, drug research institutions
<i>Biomedical Engineering (BME)</i>	Investigation of complex medical problems and development of engineering methods to solve them	Engineering framework including biomaterials, biomechanics, and bioelectricity	2/3 of grads continue education (grad school or medical/dental school), staff engineer in a medical research laboratory, leading edge companies exploring nanotechnology
<i>Biomedical Engineering Technology (BMET)</i>	Manage and support the manufacture and use of existing medical devices and technology in patient care	Medical device systems, electrical engineering technology, patient safety and regulations, organizational leadership and	Hospitals, medical equipment manufacturers

		supervision, clinical communication	
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3. Are the admission requirements and enrollment restrictions consistent with other IUPUI programs? If not, is the rationale clearly presented?

Admission requirements match all other degree programs in the school of engineering and technology.

4. Are the degree requirements consistent with other IUPUI programs?

The program requires 127 credit hours. Other programs within the Electrical Engineering Technology department also require 127 credit hours.

The plan of study incorporates:

- 24 hours in math and science
- 27 hours in humanities/social science
- 9 hours in Organizational Leadership and Supervision and Managerial Electives
- 38 hours in Electrical and Computer Engineering Technology
- 29 hours in Biomedical Engineering Technology

The program includes a four credit hour internship and three credits of capstone senior design work.

5. Is the sample curriculum consistent with similar IUPUI degree programs?

The sample plan of study is consistent with other technology programs in its content area coverage, credits by semester and overall program requirements.

6. Does the curriculum have potential positive or negative impact on the enrollment in the courses or degrees in other academic units?

The BMET program uses, as its base, electrical engineering technology coursework.

Additional enrollment in these courses, due to the increased enrollment in BMET, is anticipated. Across campus, there is no other program with a similar focus. A positive effect in service courses for the program such as English, Chemistry, Mathematics and Communication is anticipated.

Deleted: would be welcome

Deleted: Nationally, as well as locally, enrollments in traditional electrical engineering technology courses have been declining.

Deleted: .

7. Will the faculty resources dedicated to the program have positive or negative impact other academic units?

No new full-time faculty are needed for the program. The current AS program director will expand responsibilities to include the BS program. New adjunct faculty will be recruited.

8. Does the program rationale support the institutional need for the degree?

The expansion of the current AS degree into a four-year degree is consistent with the general campus philosophy moving focus away from two-year degrees. In addition, as identified in IUPUI's mission statement, we should work to "improve health care...high technology, and enhance the quality of health and human services."

(<http://www.planning.iupui.edu/mission/missionvalue.pdf>) This program blends two important pieces of that mission, health care and technology.

9. Is it likely that this degree will compete with existing degrees for students?

Students attracted to this program are interested in a career in the medical field but may not be interested in direct patient care. Across campus, there are few majors which prepare graduates for the clinical setting without a patient care component. Therefore, competition with other majors is minimal. Within the School of Engineering and Technology, the appeal of the clinical environment and patient care is also unique to BMET students. Most technology majors are not interested the human body in disease and injury. Consequently, it is unlikely that BMET students will be drawn away from other technology majors.

10. Is the program evaluation plan consistent with the learning outcome assessment strategies used by other IUPUI degree programs?

New coursework needed for this degree will be developed in partnership with experts from both medical products industry and the clinical setting. Evaluation of student experiences will follow a similar model to the other programs in the Electrical and Computer Engineering Technology Department. This department uses outcomes assessment following guidelines established by the Accreditation Board for Engineering and Technology (ABET).

Components include:

- Assessment of student learning through evidence collected for the measurable learning outcomes developed for the program, created to satisfy ABET criteria and IUPUI's Principles of Undergraduate Learning
- Assessment of employer satisfaction
- Assessment of alumni satisfaction
- Assessment of the program using matriculation rates, graduation rates, placement rates, certification results and advancements

11. Does an Ivy Tech Community College degree articulate with the proposed degree? If yes, state the articulation agreement. If no, explain why an articulation agreement is not in place.

Ivy Tech does not offer a Biomedical Electronics/Engineering degree. Ivy Tech does offer a BMET specialty within the electronics curriculum. The Electrical and Computer Engineering Technology department is currently working closely with Ivy Tech to establish an articulation agreement with the electronics program. This agreement will apply to Ivy Tech electronics students who wish to participate in the BMET specialty. In addition, the Ivy Tech BMET specialty curriculum has recently been changed to include two of IUPUI's BMET courses (which Ivy Tech was unable to offer itself due to staffing limitations). Consequently, a relatively seamless transition for Ivy Tech graduates who have an electronics degree and a BMET specialty is anticipated.

BS in Biomedical Engineering Technology (BMET) Assessment Plan

The BS in Biomedical Engineering Technology (BMET) will make use of multifaceted assessment techniques in keeping with the assessment plan of the Department of Electrical and

Computer Engineering Technology. The foundational elements described in Part I and Part II are cross-referenced with the program outcomes which are identified in the table in Part III.

I. Constituencies of the Program:

The constituencies of the BMET program are:

1. BMET students
2. BMET faculty
3. BMET employers
4. Alumni
5. Industrial Advisory Board
6. School and university

The nature of the feedback which will be solicited from these constituencies is described below:

BMET Students: Feedback from students is received regularly via surveys for course objectives, student satisfaction and exit surveys at graduation.

BMET faculty: Faculty, both full and part-time will regularly receive feedback via the course objectives survey results, student satisfaction surveys and course evaluations (a School of Engineering and Technology process). Faculty will also evaluate these results and other student performance data to consider necessary improvements and changes in curriculum and content coverage. Faculty will also complete a questionnaire for each course taught. This questionnaire is described in Part II.

Employers: As graduates are produced, their employers will be surveyed in a way which focuses on program outcomes and the ability of employees to meet work expectations. Survey results will be used to continuously update the program outcomes, curriculum and content to reflect changing technology and employer requirements.

Alumni: As graduates are produced, they will be surveyed each year to gather data in relation to the program outcomes and the perception of the graduate's ability to accomplish work related tasks. This survey will also be used to continuously update the program outcomes to reflect changing technology and employer requirements. Data on graduate placement and success in career progress will be collected and monitored.

Industrial Advisory Board: The advisory board consists of leading employers both in Indiana as well as nationally. Due to the geographic restrictions of the group, meetings generally occur in small groups. The Industrial advisory board assists IUPUI in curriculum development, topic coverage, timeliness and currency of content. In addition, the advisory board is a resource for adjunct faculty and national experts for course presentations.

The School and University: The department's activities are disseminated by participating in the School of Engineering and Technology assessment committee.

II. Tools Used in Assessment: The department has developed several tools which will be used for continuous evaluation and improvement of the BMET program, its curriculum, program outcomes and individual classes. These tools are:

Departmental survey of continuing students Overall satisfaction, availability of advising, faculty accessibility, quality and access to laboratories, computing, faculty office hours, opportunity to get to know other students, quality of course materials, and the opportunity to get to know faculty members will be evaluated by students in targeted classes each semester.

Self-assessment survey of objectives for all courses At the end of each semester, all students will complete a survey which asks them to assess their mastery of each objective listed for every course.

Faculty survey of objectives for all courses Instructors will also fill out the course objective survey to see if they believe objectives were covered. The information from students will be evaluated to look for objectives/topics which rate lower and may need additional faculty attention.

Exit Survey This survey will be given to each graduating student. They will be asked to self-assess their mastery of each of the program outcomes.

Departmental survey of recent graduates Graduates will be surveyed (about 6 months after graduation) to determine their satisfaction with the department, satisfaction with individual faculty members as well as questions regarding how well the program prepared them for the job market.

Employer Survey Employers of BMET graduates will be surveyed to compare program outcomes, employee success and actual work responsibilities.

End of semester reflection questionnaire At the completion of each semester, faculty will receive a questionnaire which encourages reflection regarding course objectives, textbook and course notes, level of the content and challenge to students, and future directions and variations which should/might be considered. These questionnaires will be shared with the program coordinator as well as the faculty member responsible for the course in the following semester.

III. Program Outcomes

The table below gives the outcomes for the BMET degree, how they map to Bloom’s taxonomy of learning and ABET a-k, and the planned assessment methods and goals. The assessment data will be collected by the faculty and reported to the BMET program coordinator. The program coordinator will present the results to the department chair each semester. The department chair will identify any areas of weakness and the chair, the department faculty and the effected course’s coordinator will determine what action will be taken. The changes will be documented in the ECET department annual assessment report.

Outcomes: Upon completion of the BS degree, students will be able to:	Bloom’s Taxonomy	ABET (defined below)	PUL (defined below)	Assessment methods
1. Demonstrate knowledge and skills in the use of the electrical and/or computer components of medical equipment systems as encountered in the degree program’s courses. Demonstrate a working medical vocabulary and knowledge of clinical safety requirements and regulations as encountered in the degree’s program classes.	Knowledge & Comprehension	a	1d, 1e, 3b, 4a	<p>a. Students complete a “self-assessment” survey each semester to evaluate course objectives which are mapped to this outcome. Goal: 70% of students will agree or strongly agree (4/5)</p> <p>b. Specific questions demonstrating knowledge and comprehension will be included on final exams in targeted classes: the instructors should use the same/similar questions semester-to-semester, submit any changes in question(s) to the assessment committee one month prior to the final exam. Scores on the specific questions should be reported to the assessment committee each semester. Goal: 70% of students will score 70% or better on each question</p>
2. Use current knowledge of mathematics, science and emerging BMET tools to solve problems and demonstrate solutions.	Application	b	2a, 2b, 2d, 3c, 4a, 4c	<p>a. Students complete a “self-assessment” survey each semester to evaluate course objectives which are mapped to this outcome. Goal: 70% of students will agree or strongly agree (4/5)</p> <p>b. Specific questions demonstrating application of mathematics in targeted classes will be included on final exams: the instructors should use the same/similar questions semester-to-semester, submit any changes in question(s) to the assessment committee one month prior to the final exam. Scores on the specific questions should be reported to the</p>

				assessment committee each semester. Goal: 70% of students will score 70% or better on each question
3. Identify, analyze and integrate the technical equipment requirements with the needs of medical staff and patients as required in the degree program's courses.	Analysis	f	1b, 1d, 2a, 2b, 2c, 2d, 4a, 4c	a. Students complete a "self-assessment" survey each semester to evaluate course objectives which are mapped to this outcome. Goal: 70% of students will agree or strongly agree (4/5) b. Specific questions demonstrating analysis in targeted classes be included on final exams: the instructors should use the same/similar questions semester-to-semester, submit any changes in question(s) to the assessment committee one month prior to the final exam. Scores on the specific questions should be reported to the assessment committee each semester. Goal: 70% of students will score 70% or better on each question
4. Apply and design solutions for issues identified in health care technology as demonstrated in a senior project.	Synthesis	d	2b, 2d, 3c, 4a, 4c, 6b	a. Students complete a "self-assessment" survey each semester to evaluate course objectives which are mapped to this outcome. Goal: 70% of students will agree or strongly agree (4/5) b. The design rubric will be filled out by the faculty member assessing the senior design project. Goal: 70% of students score a 3 or above on all items
5. Conduct, analyze and interpret experiments, and assess results.	Application, Analysis & Evaluation as apply to lab	c	1b, 2a, 2c, 2e	a. Students complete a "self-assessment" survey each semester to evaluate course objectives which are mapped to this outcome. Goal: 70% of students will agree or strongly agree (4/5) b. A lab practical test will be given in targeted classes. Goal: 70% of students will pass test
6. Function as a member of a 2-4 person team to complete a task in a timely manner. Demonstrate ability to organize work done by		e	1c, 5c	a. Targeted courses will assess teaming. In each case, the teaming rubric will be filled out by the faculty member assessing the success of their teams.

team members.				<p>Goal: 70% of students score a 3 or above on all items</p> <p>b. A teaming rubric will be filled out by each student (self / peer evaluation) in targeted classes.</p> <p>Goal: 70% of students score a 3 or above on all items</p>
7. Write technical reports; present data and results coherently in oral and graphic formats.		g	1a, 1c, 3a, 5c	<p>a. Written reports will be evaluated in targeted classes using departmental written report rubric. Results will be collected.</p> <p>Goal: 70% of students score a 3 or above on all items</p> <p>b. Oral reports will be evaluated in targeted classes using departmental oral report rubric. Results will be collected.</p> <p>Goal: 70% of students score a 3 or above on all items</p>
8. Demonstrate skills for life-long learning by locating, evaluating and applying relevant information using external resources such as the Internet, data books, trade publications and library resources.		h	3a, 5c	<p>a. Research strategies will be presented in BMET 220 and BMET 470.</p> <p>Goal: Recognition of strategies by 70% of students</p> <p>b. Assignment to assess the validity of websites using rating scale in targeted classes.</p> <p>Goal: 70% of students have a majority of references that score 12 or above on the rating scale</p> <p>c. Demonstrate use of library resources for research in BMET 470.</p> <p>Goal: 90% of students have references; 70% have references that go beyond data books or internet sources (e.g. technical journals or conference proceedings).</p>
9. Demonstrate ethical conduct as described in the university student code of conduct. Demonstrate knowledge of professional code of ethics.		i	2a, 3b, 5b, 6a	<p>Educate students of expectations in targeted classes, require review of Student Code of Conduct and Statement on Civility.</p> <p>a. In targeted classes, evaluate student work using turnitin.com to check for plagiarism</p> <p>Goal: 90% of students show 10% or less plagiarism as measured by turnitin.com</p> <p>b. Survey all full time faculty and any part time faculty teaching targeted classes regarding student ethics and civility</p> <p>Goal: 90% of courses report 4/5 or better on each item</p> <p>c. Students will review the College of Clinical Engineering and the Biomedical Engineering Society Codes of Ethics in</p>

				targeted classes.
10. Demonstrate a respect for diversity as described in the university civility statement. Recognize contemporary professional, societal and global issues in case studies and course projects.		j	2e, 3b, 3c, 4b, 5a, 5b, 5c, 6a	<p>Require review of Student Code of Conduct and Statement on Civility in targeted classes.</p> <p>a. Survey faculty regarding student ethics and civility (items 1, 2, & 5 on rubric) Goal: 90% of courses report 3 or better on each item</p> <p>b. Students will complete a quiz over sexual harassment and diversity in ECET 499. The instructors should use the same/similar questions semester-to-semester. Scores should be reported to the assessment committee each semester. Goal: 90% of students will score 70% or better.</p> <p>c. Students will complete a case study including global perspective in ECET 499. Goal: 90% of students will identify at least one globally significant aspect of the scenario.</p>
11. Demonstrate quality, timeliness and ability to complete increasingly complex homework and projects throughout the degree experience		k	1e, 2e, 4c, 6a	<p>a. Collect results of ECET 157 power supply project construction rubric. Goal: 70% of students get a 4 or better.</p> <p>b. Choose 2 assignments in targeted classes. Record the number of students turning the assignment in on time, late, and not at all. Students are not to know which assignments are being counted. Goal: 80% of assignments will be turned in on time (expect % on time to increase with course level.)</p> <p>c. Assess milestone / Gantt charts for each student project in BMET 491 Goal: 70% of students are no more than 1 milestone points behind schedule</p> <p>d. Assess quality of design of senior projects in BMET 491. Goal: 70% get 4 or better.</p>

This curriculum has been designed to meet the guidelines set by the **Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET)**. As students progress through the curriculum assessment will be guided by the objectives defined by ABET. They are:

- a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines,
- b. an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology,
- c. an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes,
- d. an ability to apply creativity in the design of systems, components or processes appropriate to program objectives,
- e. an ability to function effectively on teams,
- f. an ability to identify, analyze and solve technical problems,
- g. an ability to communicate effectively,
- h. a recognition of the need for, and an ability to engage in lifelong learning,
- i. an ability to understand professional, ethical and social responsibilities,
- j. a respect for diversity and a knowledge of contemporary professional, societal and global issues, and
- k. a commitment to quality, timeliness, and continuous improvement.

Indiana University Purdue University Indianapolis Principles of Undergraduate Learning

- 1(a) - Express ideas and facts effectively in written formats
 - 1(b) - Comprehend, interpret, and analyze texts
 - 1(c) - Communicate orally in one-on-one and group settings
 - 1(d) - Solve problems that are quantitative in nature
 - 1(e) - Make efficient use of information resources and technology for personal and professional needs
-
- 2(a) - Analyze complex issues and make informed decisions
 - 2(b) - Synthesize information in order to arrive at reasoned conclusions
 - 2(c) - Evaluate the logic, validity, and relevance of data
 - 2(d) - Solve challenging problems
 - 2(e) - Use knowledge and understanding to generate and explore new questions
-
- 3(a) - Apply knowledge to enhance personal lives
 - 3(b) - Apply knowledge to meet professional standards and competencies
 - 3(c) - Apply knowledge to further the goals of society
-
- 4(a) - Display substantial knowledge and understanding of at least one field of study
 - 4(b) - Compare and contrast approaches to knowledge in different disciplines
 - 4(c) - Modify their approach to an issue or problem based on contexts and requirements of particular situations
-
- 5(a) - Compare and contrast the range of diversity and universality in human history, societies,

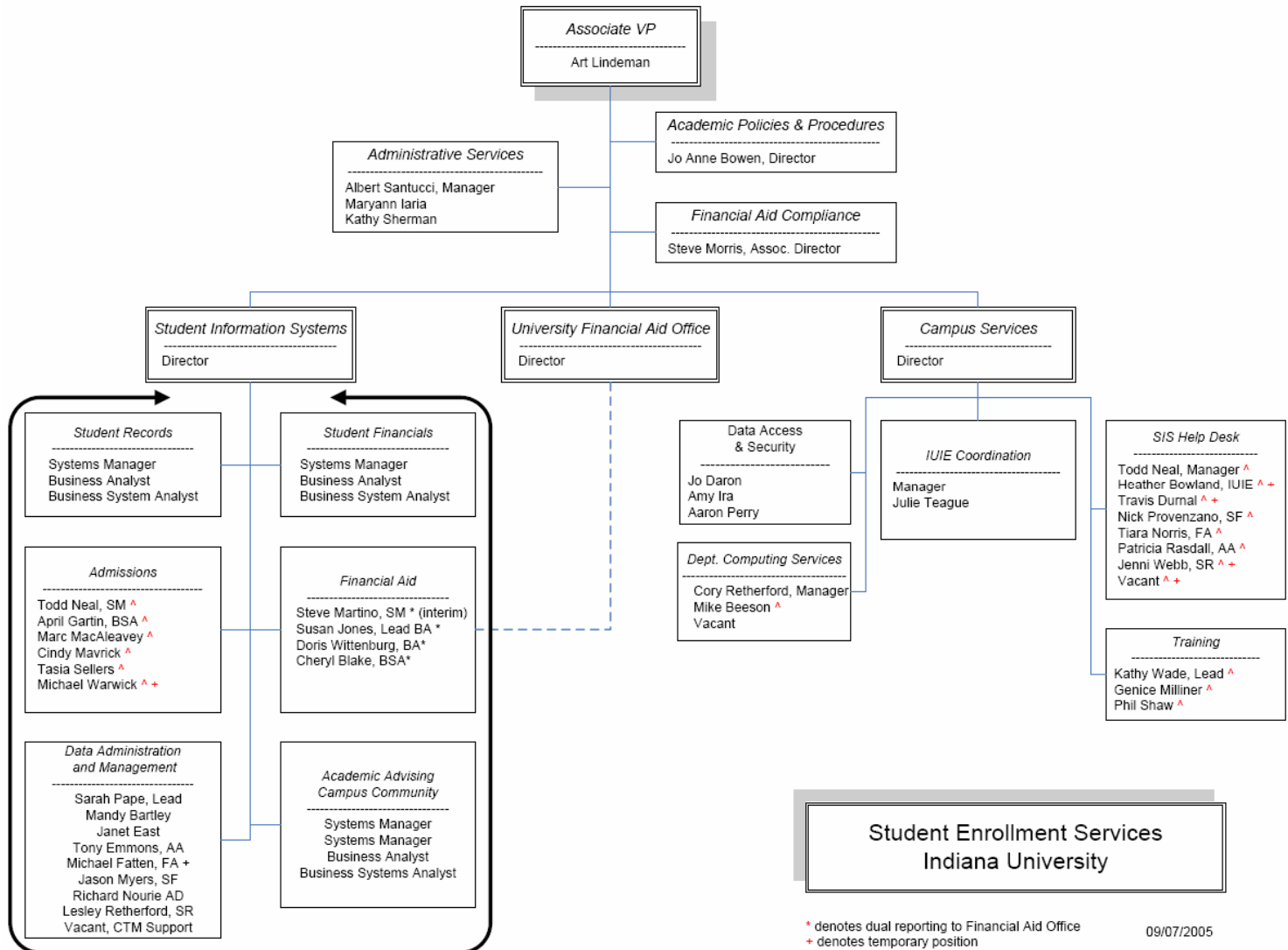
and ways of life

5(b) - Analyze and understand the interconnectedness of global and local concerns

5(c) - Operate with civility in a complex social world

6(a) - Make informed and principled choices regarding conflicting situations in their personal and public lives and to foresee the consequences these choices

6(b) - Recognize the importance of aesthetics in their personal lives and to society



**Student Enrollment Services
Indiana University**

* denotes dual reporting to Financial Aid Office
 + denotes temporary position
 ^ located at IUPUI
 09/07/2005

